Is There a Business Case for Small Savers?

This study examines quantitatively whether or not small savers—defined here as the half of all savings clients of a microfinance institution (MFI) with the smallest deposit account balances—contribute to or undermine the sustainability of the MFI. MFI sustainability has long been accorded a place of central importance in microfinance for reasons that are well known. Perhaps because of the necessary focus of microfinance for so many years on lending, achieving sustainability has often been thought of in terms of reducing loan granting and recovery costs and charging sufficiently high loan rates. Arguably, less attention has been paid to the impact of other products, such as savings accounts and particularly small savings accounts, on MFI sustainability.

The Small-Saver Problem

Recent data for five MFIs in Peru are alarming in this regard (Portocarrero, Tarazona, and Westley, 2006, Table 29).[1] These data indicate that the annual operating costs associated with small-balance savings accounts (defined somewhat differently in that study as savings accounts with balances under US$100) are generally in the range of 200–300 percent of the amount of savings mobilized. This means that for a savings account with a balance of US$50, the MFI generally incurs US$100–150 per year in operating costs.[2]

This same study (Table 27) also shows that 75 percent of all savings account holders in four Peruvian MFIs with these data have deposit balances under US$100 and that these small savers provide only 3 percent of all funds mobilized by the MFI through savings accounts.[3] In effect, then, collecting small savings deposits brings large numbers of savers to MFI branches, costs a great deal, and provides very little funding to the MFI.

Apparently for these reasons, some leading MFIs have complained loudly that increased competition in their markets is causing them to rethink whether they can continue to provide the level of cross-subsidies that they believe is required to serve small savers.

As competition continues to mount in the rapidly expanding field of microfinance, more and more MFIs are likely to ask this question, including those MFIs already taking small deposits as well as greenfields (MFIs that would start up operations as regulated entities that can both take deposits and make loans from the outset) and unregulated MFIs that are considering formalizing and funding themselves in the future by mobilizing deposits. For these reasons, and also because it is important to examine the impact of deposit products on MFI sustainability—just as we have for many years for loan products—a closer look at the true costs and overall profitability of small savers is long overdue. This is termed an investigation into the "business case for small savers" to differentiate it from the social case for small savers, in which MFIs justify providing savings services to small depositors even at very high operating costs because small savers are deemed a poor and underserved group and therefore deserving of service.

The methodology used to study the cost and profitability of small savers is preeminently quantitative. Specifically, we attempt to quantify the major costs and revenues associated with small savers and thus estimate the profitability of this client segment. Although we estimate small-saver profitability in only two MFIs, these two MFIs have been carefully selected and suggest a surprisingly large number of important channels through which small savers may be a profitable, or even highly profitable, client segment.

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1   The five MFIs consist of one CRAC (Señor de Luren) and four CMACs (Arequipa, Piura, Chincha, and Pisco).

2   After a thoroughgoing literature review, we could find only one other study with any estimates of the operating costs of small-balance savings accounts under any definition of "small," namely, Deshpande and Glisovic-Mezieres (2007), which updated the estimate for CMAC Arequipa given in the Portocarrero, Tarazona, and Westley (2006) study.

3   While we have chosen in this study to define small savers as the smallest half (instead of three-quarters) of all savers, the same general points would apply to our reduced set of clients, though with even higher costs per dollar mobilized than the 200–300 percent range cited in the preceding paragraph and with an even smaller percentage of all savings mobilized than the 3 percent just noted.

There are several reasons to think that the business case for small savers may be more favorable than is indicated by the operating costs in the five Peruvian studies: marginal cost, cross-sales, technology, higher loan rates for smaller and otherwise costlier-to-make types of loans, higher fees and/or lower interest rates on savings accounts, and the evolution of small savers to future profitability.

Marginal cost. The operating costs cited for the five Peruvian MFIs were estimated by allocating all costs, including fixed and quasi-fixed costs, to the array of loan, deposit, and other products offered by the MFIs.[4] In reality, if these five MFIs were to eliminate their small savers, the cost savings would actually be less than the figures cited earlier since the fixed and much of the quasi-fixed costs would still have to be paid. We refer to the costs that would actually be saved by eliminating small savers as the marginal costs (sometimes also called the avoidable costs).

Cross-sales. In addition to having a savings account, small savers may also take out loans, send and receive money transfers, buy insurance, pay bills, and purchase other financial products from the MFI. If the MFI earns a profit on the sale of these products, this profit may partially, fully, or more than fully compensate for the high operating costs of small savings accounts. On the other hand, small-saver cross-sales may generate losses for the MFI, and so one cannot say in advance whether cross-sales will turn out to help or hurt MFI sustainability. For example, if the products bought by small savers consist primarily of small loans and if these small loans are unprofitable, then taking into account cross-sales would actually hurt the business case for small savers.

Technology. Automatic teller machines (ATMs), point-of-sale (POS) devices, and mobile banking each have the potential to greatly reduce the operating costs of attending to savers, including small savers, provided the MFI is big enough to overcome the fixed costs of implementing these systems. Also very importantly, these technologies can help the MFI attract and retain clients and thus increase the number of savings accounts and loans, the amount of savings mobilized and the amount lent, and the sale of other products. And they may increase the average amount clients are disposed to save with the MFI since deposited funds can be more readily retrieved when needed. None of the five Peruvian MFIs whose costs were cited earlier used any of this technology at the time they were analyzed. The present study provides rigorously derived estimates of the impact of technology on the cost and profitability of small savers.

Higher loan rates for smaller and otherwise costlier-to-make types of loans. If the loans taken out by small savers are significantly smaller than average or costlier per dollar lent for other reasons, the MFI may be able to cover all its loan costs and even make this lending and small savers profitable by charging higher interest rates and/or fees for these loans.

Higher fees and/or lower interest rates on savings accounts. If the cost of serving small savers is still excessive even when all the points made in the preceding paragraphs are taken into account, the MFI always has the option to charge for the service provided. This is analogous to MFIs that want to be sustainable raising their lending rates, overall or for particularly costly subsets of borrowers. In the case of small-balance deposits, this would typically involve reducing the interest rate paid on small savings balances (possibly to zero) and/or increasing monthly or per-transaction fees on small, or possibly all, accounts. All of these measures would be preferable to making small-balance savings accounts completely unavailable to clients at any cost by raising the minimum deposit size to levels that many small savers could not reach. Again, the analogy to the lending side is instructive: one of the great achievements of microfinance has been to show that poor people are willing and able to pay high interest rates for good loan services,

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4 By definition, as the number of clients and their usage of products grow, fixed costs don't change at all and quasi-fixed costs increase only a little (much less than in proportion to product usage).

and that paying such high rates is far preferable to being without the service. Perhaps somewhat less well known is the fact that poor savers are willing to accept high negative interest rates on deposits (−30 percent and less) for safe and convenient deposit services, such as those provided by the Indian deposit collectors described in Rutherford (2000, pp. 13–17). The fact that poor people with very low balances are willing to pay significant monthly fees to MFIs and banks (including to Centenary Bank, one of the two MFIs we study) and receive little if any deposit interest in return is evidence that the use of negative deposit rates is a viable strategy in the formal banking context as well, at least for good deposit services.[5]

Evolution of small savers to future profitability. Even if small-saver loans and savings accounts are too small today to make small savers profitable, both may increase in size over time by enough to make small savers profitable in future years. As a result, small savers may be worth serving today even on a strictly business basis so that the MFI can reap the rewards of serving them in future years. As we will discuss in the final section of the paper, there are a number of strong and fairly general reasons for thinking that the average size of the savings accounts and loans of small savers may grow rapidly over time, which could transform small savers from an unprofitable client segment into a profitable one.

The next two sections of this paper summarize our results and then describe the methods we used to obtain these results. The last three sections discuss the cost, profitability, and future profitability of small savers.

Summary of Findings: Pathways to Profitability

In case studies of two MFIs, ADOPEM in the Dominican Republic and Centenary Bank in Uganda, we confirm that the savings accounts of small savers are a very high-cost product for MFIs to offer, with annual operating costs on a marginal cost basis of 59–241 percent of the deposit balances of small savers in the study year of 2008.

However, these high operating costs are more than overcome by the profits generated through cross-sales of loans and other products to small savers and by the fee income derived from their savings accounts. On balance, then, small savers are found to generate large profits, of just over 400 percent of the small-saver deposit balances in Centenary and just over 1,000 percent in ADOPEM. Expressing this same result in a different way, without the small savers, these two very profitable MFIs would lose about 30 percent of their total profits. We conclude, therefore, that based on our small-saver profitability analysis, there is a compelling business case for serving small savers in both Centenary and ADOPEM. This calculation of the profits associated with a given client segment (such as the small savers) is sometimes referred to as the calculation of **total client profitability**, reflecting the fact that we are looking at the totality of the products consumed by the client segment and the overall MFI profits that result.

An important clarification is in order here. This paper demonstrates a "business case for small **savers**": the high cost of delivering savings accounts is more than offset by profits from the other products these customers use (and by any savings account fees collected from them). But this does not automatically constitute a "business case for small **savings accounts**." Suppose for a moment that we eliminate all small savings accounts, with their attendant costs, by raising the minimum savings account size, but are still able to retain all these clients as customers for loans and other products, which hopefully are profitable. Under such an assumption (and also under the assumption, which is made here only for expositional simplicity, that the eliminated savings

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5   For example, in Centenary Bank about half of the depositors had savings balances of US$16.67 or less in 2008. With a US$16.67 savings deposit, Centenary's flat monthly fee of US$0.56 translates into an effective monthly interest rate of −3.4 percent (=0.56/16.67), which compounds to −34 percent per year, a cost that goes far beyond the 5 percent per year received by savings depositors in interest.

accounts generated little or no fee income), the provision of expensive small savings accounts would hurt, not help, MFI profitability. The profitability of providing small savings accounts depends, then, on how many customers and cross-sales the MFI would lose if it eliminated the small savings accounts (or charged higher fees for them, or otherwise reduced the losses associated with them). Measuring what that loss of clients and cross-sale profits would be is a complex task and is outside the scope of the present study. However, in the case of the MFIs analyzed, particularly ADOPEM, the profits derived from the small savers' other product purchases are large in comparison with the costs of their savings accounts, which suggests that these MFIs are better off keeping the small savings accounts if their elimination would cause the departure of an appreciable number of customers, especially loan customers. The rest of this paper concerns itself with the measurement and analysis of total client profitability and whether there is a business case for small **savers** (not small savings accounts), taking the minimum deposit size and savings account fees as they actually were during the study year of 2008. As noted in the preceding paragraph, there is a strong business case for small savers in both MFIs.

To generalize from these two MFIs to others, it is useful to examine what makes small savers profitable in the two case studies. To this end, we have identified five sources of small-saver profits in ADOPEM and Centenary, which we call five pathways to profitability: (1) loans; (2) other products besides loans and savings accounts, such as life insurance (ADOPEM) and money transfers (Centenary); (3) savings account fees; (4) technology; and (5) higher loan interest rates for smaller and otherwise costlier-to-make types of loans. Small-saver profits in ADOPEM are derived entirely from the first two pathways, especially the first, while small-saver profits in Centenary come from all five pathways.

1. Loans. Loans are an important source of small-saver profits in both MFIs. In ADOPEM, loans generate small-saver profits of US$1.22 million, or 91 percent of the total US$1.34 million in profits obtained by ADOPEM from its small savers. In Centenary, loans yield small-saver profits of US$2.00 million, or 51 percent of the total US$3.94 million in profits derived by Centenary from its small savers. Given the importance of loans in total small-saver profits, it is useful to examine the ingredients that make small-saver loans so profitable in the two MFIs:

(1) Lending in general (to all borrowers, not just small savers) appears to be profitable in both MFIs. We deduce this from the following:
  a. Both MFIs are quite profitable overall, with after-tax, return-on-asset (ROA) values in 2008 of 5.53 percent for Centenary and 7.20 percent for ADOPEM.
  b. Lending is the major revenue generator in both MFIs, providing 70 percent of total revenue in Centenary and 86 percent in ADOPEM in 2008 (with the remaining revenue generated by savings account fees; the sales of other products, such as insurance and money transfers; each MFI's liquidity investments, such as local bank certificates of deposit (CDs) and treasury bills; and foreign exchange and other operating income).

  With both MFIs quite profitable and lending such a major activity, it is very likely that lending is profitable in both MFIs as well.

(2) Small savers in both MFIs are not small borrowers. For example, at the end of 2008, the average loan balance of small savers who borrowed was 61 percent and 74 percent of the average loan balance of all borrowers in Centenary and ADOPEM, respectively.[6] This is important because if the MFI makes a profit on its overall lending operations, and if small savers have an average loan size that is not too far below the average for all borrowers,

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6 In contrast, the average savings account balance of small savers was 1.3 percent and 17 percent of the average savings account balance of all savers in Centenary and ADOPEM, respectively. These data clearly show that small savers are much bigger borrowers than they are savers. This is not terribly surprising since small savers were selected for their small savings accounts.

then it is more likely that lending to small savers will be profitable as well.[7]

(3) The fact that our analysis excludes all fixed and much quasi-fixed operating costs in computing small-saver profits (as it should—see the discussion on marginal cost in the previous section) pushes up small-saver profits in ADOPEM and Centenary compared to studies that include all of the fixed and quasi-fixed costs.[8]

(4) In ADOPEM only, there is a high rate of cross-selling of loans to small savers, with about three-quarters of ADOPEM's small savers borrowing at any given time during 2008.

As a result of these four factors, lending to small savers in ADOPEM generates large profits. Given that loans provide ADOPEM with 91 percent of the total profits it obtains from small savers, ADOPEM's pathway to small-saver profitability runs primarily through lending.

While Centenary shares with ADOPEM the first three ingredients for loan profitability, it differs on the fourth: only about 15 percent of Centenary's small savers are borrowers. Nevertheless, with lending in Centenary generally quite profitable for clients overall and with small savers taking substantial size loans (when they borrowed), lending to small savers still provided Centenary with significant profits.

2. Other cross-sold products. The remaining 9 percent of total small-saver profits in ADOPEM (or US$0.13 million) are generated from the sales of three life insurance products. In Centenary, 16 percent of total small-saver profits (or US$0.61 million) are derived from the sales of four essentially money transfer products.

3. Savings account fees. Centenary's savings account fees generate the remaining 33 percent of total small-saver profits there (or US$1.32 million).

These fees consist primarily of a monthly charge of US$0.56 on each savings account. ADOPEM levies no fees on savings accounts.

Taken together, the sum of the profits from pathways 1–3 is 100 percent of small-saver profits in both ADOPEM and Centenary. In other words, these three pathways are a disaggregation by product of the total profits derived from small savers. The remaining two pathways, technology and higher loan rates for costlier-to-make loans, are employed only by Centenary. They can be viewed as catalysts that increase the profits derived from loans, other cross-sold products, and savings accounts to the levels noted in points 1–3.

4. Technology. Centenary makes substantial use of ATMs, which is illustrated by the fact that 51 percent of the deposit and withdrawal transactions of small savers (and 47 percent for clients overall) were made with ATMs in 2008, and the rest with tellers. ATMs primarily served as a magnet that helped Centenary attract and retain clients and increase lending to small savers, the amount of other products (money transfers) sold to small savers, and the number of savings accounts held by small savers. As a result, ATMs significantly boosted profits in all three product areas—loans, other products, and savings accounts—by 43 percent, 30 percent, and 34 percent, respectively, increasing Centenary's overall small-saver profits by 37 percent to the US$3.94 million figure cited earlier.

5. Higher loan rates for smaller and otherwise costlier-to-make types of loans. Because small savers demanded loans that were both smaller and costlier to make for other reasons, Centenary charged small savers 5.8 percentage points more for loans than it charged borrowers overall (34.2 percent instead of 28.4 percent). Were Centenary to abandon its practice of charging

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7   The importance of small-saver loans not being too far below the average in size can be explained as follows. Because the cost of making and recovering loans is roughly constant over a broad range of loan sizes (say, US$100–3,000), profitability tends to fall off sharply as loan size decreases. This occurs because loan revenue falls in proportion to loan size while costs remain roughly constant.

8   The exclusion of these costs also gives more latitude for MFIs with weaker overall loan profitability performances and more modest small-saver loan sizes than those of ADOPEM and Centenary to still find that lending to small savers is profitable.

more for smaller and costlier loans, and thus reduce small-saver loan rates by 5.8 percentage points, all profits from lending to the small savers, and therefore half of Centenary's total small-saver profits from all sources (of US$3.94 million), would be lost. This illustrates that charging more for smaller and costlier types of loans can be a powerful tool to cover costs and make small savers a profitable client segment if they make substantial use of these types of loans.

To these five pathways to small-saver profitability observed in ADOPEM and Centenary, we add a sixth possible pathway:

6. Small-saver profits in future years. Employing data from ADOPEM for three recent points in time (end of 2006, 2007, and 2008), we find that the average size of small-saver savings accounts and loans grew very rapidly, a total of 105 percent and 83 percent, respectively, for these two products over the two-year period from the end of 2006 to the end of 2008. (Available data did not effectively allow a longer analysis period for ADOPEM or any analysis at all for Centenary.) Although our results in this area are based on indicators of profitability, rather than on the complete profit calculation employed for pathways 1–5, the indicator trends are so strong that it appears quite likely that ADOPEM's small savers have indeed become much more profitable during the two-year period studied. As discussed in the final section of this paper, there are important reasons for believing that this result of strong rising trends in average small-saver savings and loan sizes could hold quite generally, thus helping to make or further reinforce the business case for small savers in many MFIs.

Given all of these possible pathways to profitability—and taking into account the fact that the revenue derived from loans, other cross-sold products, and savings accounts need cover only marginal costs in order for these products to be considered profitable—our educated guess is that many MFIs are already profitably serving small savers and many more could do so.

Methods

The basic purpose of this study is to analyze the cost and profitability of small savers, quantifying the profits associated with the first five pathways described in the preceding section while also taking care to measure costs on a marginal basis. The resulting estimates appear to offer substantial new information given that our literature search did not turn up any other studies that made all or even most of these measurements for any MFI. To estimate the cost and profitability of small savers, we have had to develop a number of innovative methodologies. These methodologies are generally applicable to measuring the cost and profitability of any client segment, not only small savers. The most novel and perhaps important of these new methodologies allows one to measure the impact of technologies such as ATMs, POS, and mobile banking on the cost and profitability of small savers (or other client segment). Measuring the impact of these new delivery technologies with any reasonable degree of accuracy is a surprisingly formidable task. It appears that previous calculations suffer from large measurement errors because they did not take into account certain key elements involved in making these estimates, in particular, the potentially large impacts of the new delivery technologies in attracting and retaining clients and in increasing the number of deposit accounts and loans, the amounts saved and borrowed, and the number of transactions carried out by clients. The presentation of these and other methodological points is mainly left to a subsequent paper, though Box 1 (discussed in the next section) touches briefly on some of the key points. The present paper primarily focuses on summarizing and interpreting the main empirical findings on the cost and profitability of small savers in the two case study MFIs.

Case Study Selection Criteria

To illustrate a number of different pathways by which small savers could be profitable, we took great care in selecting the two case study MFIs.

ADOPEM and Centenary both had multiyear track records (up through the study year of 2008) of successfully delivering voluntary savings and microloans to poor clients, as measured by low loan delinquency and write-off rates, good MFI profitability, rapid growth of savers and borrowers and of savings and lending, predominance of voluntary over forced savings, and reasonably low average loan and savings balances. In addition, ADOPEM was chosen because (*i*) it had a high rate of cross-selling, particularly of loans, as indicated by the fact that 76 percent of small savers in ADOPEM also had a loan and (*ii*) it made essentially no use of new delivery technologies. In contrast, while Centenary's rate of cross-selling loans to small savers was only 15 percent, it provides an outstanding example of the use of new delivery technologies to reduce costs, attract and retain clients, and boost client saving and borrowing. Another difference between the two MFIs is that Centenary charged monthly fees on all savings accounts and imposed higher interest rates on the smaller loans taken out by small savers, while ADOPEM did neither of these.

General Characteristics of ADOPEM and Centenary

To interpret and generalize from the results obtained in the two case studies, it is useful to compare some of the key characteristics of ADOPEM and Centenary against those of MFIs in general (Table 1). The value of each indicator for MFIs in general (column (3) of Table 1) is computed as the median value over all 1,160 MFIs with 2008 data in the MIX Market worldwide data set.[9]

As can be seen in Table 1, ADOPEM and Centenary are above average MFIs by a number of measures, but not by all. These two MFIs are well above average in both overall size (lines 1, 4, 6, and

7 of Table 1) and profitability (line 11). On the other hand, they are much closer to average in the key area of loan delinquency and write-offs (lines 12 and 13), though these average levels are generally considered quite good. In the area of loan officer productivity (line 14), ADOPEM is well above average but Centenary is only a little above average. And while ADOPEM charges significantly more than average for loans (line 15), Centenary's loan charges are quite typical. Finally, the average deposit and loan sizes (lines 9 and 10) suggest that both institutions aim at fairly typical MFI savings and loan clients, though Centenary does have an important subset of commercial savers and borrowers that brings up its averages.

Defining the Small Savers

In deciding where to draw the line between small and large savers, we initially thought to use the same US$100 dividing line used by Portocarrero, Tarazona, and Westley (2006) in their five Peruvian costing studies cited earlier. The idea would be to make our results more comparable to those. It quickly became apparent that such a dividing line would be a poor choice, particularly in the case of ADOPEM. ADOPEM reaches down to much poorer savers than do the five Peruvian MFIs, with the result that 97 percent of ADOPEM savers had savings account balances of under US$100 in 2008. Hence, in terms of operating costs, analyzing ADOPEM's small savers would be almost the same as analyzing all of their savers.[10]

Adjusting the small-saver cutoff value by gross national income (GNI) per capita did not seem very helpful either, failing again in the comparison of the Dominican Republic and Peru. According to the World Bank's World Development Indicators, GNI per capita, calculated in U.S. dollars for 2008, is US$4,390 for the Dominican Republic

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9 These data were obtained from the MIX Market Web site on 18 February 2010. The median value for a given indicator is the value corresponding to the 50th percentile, meaning that half of the MFIs have values below the median and half have values above the median. For ease of expression, we sometimes use the words "typical" or "average" in referring to the median.

10 Taking a broader view, even if US$100 were a reasonable small saver cutoff value for many other MFIs in Latin America besides ADOPEM, it probably would not be so reasonable for large numbers of MFIs located in substantially poorer African and Asian countries.

Table 1: Characteristics of ADOPEM and Centenary Bank, end of 2008

Indicator	(1) ADOPEM	(2) Centenary	(3) MIX Market median value
1. Total number of active savers	88,250	491,757	3,793
a. Number of active small savers	44,125	245,879	
b. Number of active large savers	44,125	245,878	
2. Total number of borrowers who are not active savers ("pure borrowers")	22,316	0	
3. Total number of savings and loan clients (=1+2)	110,566	491,757	
4. Total number of loans outstanding	87,060	90,251	8,593
5. Total deposits *excluding* CDs (US$) [a]	2,105,689	167,409,939	
6. Total deposits *including* CDs (US$) [a]	10,996,960	191,413,460	487,209
7. Gross loan portfolio (US$)	39,151,586	151,295,500	4,005,603
8. Average deposit balance per depositor excluding CDs (= 5/1, US$) [a]	24	340	
9. Average deposit balance per depositor including CDs (= 6/1, US$) [a]	125	389	155
10. Average loan balance per borrower (US$)	440	1,633	581
11. After-tax ROA (%)	7.20	5.53	2.12
12. Portfolio at risk > 30 days (%)	3.28	4.60	3.56
13. Write-off ratio (%)	0.83	0.73	0.36
14. Borrowers per loan officer	437	282	245
15. Yield on gross portfolio (nominal) (%)	42.26	31.04	30.72

Sources: All data in this table are from MIX Market except those found in lines 1–6 and 8–9 of columns (1) and (2), which are from the ADOPEM and Centenary management information systems (lines 1–4) and the 2008 audited financial statements found in ADOPEM (2008) and Centenary Bank (2008) (lines 5–6). Line 8 is derived as the ratio of line 5 to line 1, and line 9 is derived as the ratio of line 6 to 1. See www.MIXmarket.org for the definition of indicators taken from MIX Market. MIX Market data for ADOPEM and Centenary may differ somewhat from the apparently comparable data presented above in lines 1–6 and 8–9 of columns (1) and (2) due to, among other things, the use of different exchange rates and the fact that MIX relies heavily on data obtained by means of an email exchange with a designated respondent at each MFI.

Notes: Blank cells indicate data not available. Point-in-time data, such as the total number of active savers and gross loan portfolio, are given for 31 December 2008, while flow data, such as income and expenses (which are used in variables 11 and 15), are cumulations over all of calendar 2008.

[a] Because of the large amount of deposits that consist of CDs, particularly in ADOPEM, none of which is held by small savers, we calculate total deposits both ways, excluding CDs in lines 5 and 8 and including CDs in lines 6 and 9.

and US$3,990 for Peru.[11] This gives a GNI per capita ratio for the Dominican Republic to Peru of 1.10 (=4,390/3,990). Consequently, the US$100 small-saver cutoff line for Peru would be increased to US$110 for MFIs in the Dominican Republic, meaning that an even higher percentage of ADOPEM's savers would be considered small.

We finally settled on the relative definition of small savers noted earlier: the half of all savings clients with the smallest deposit balances.

While this definition means that the cutoff line measured in U.S. dollars will vary from one MFI to another, it provides in return an important uniformity: for all MFIs, we measure the operating costs and profits of the bottom (smallest) half of their savers. If a U.S. dollar cutoff line were used instead, we could end up comparing, for example, the operating costs and profits of the bottom 10 percent of savers in one MFI to the bottom 80 percent in another MFI. If, in fact, savings account size is linked at all to client profitability,

11 These data are available to nonsubscribers at http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers. GNI is closely related to the more familiar measure of gross domestic product (GDP).

then the bottom 10 percent of savers could well contain many unprofitable clients and be highly unprofitable overall, whereas the profitability of the bottom 80 percent of savers is likely to much more closely mirror the profitability level of the overall MFI. By examining the bottom 50 percent of clients in both MFIs, we avoid this source of noncomparability.

Because deposit balances can fluctuate considerably over the course of a year, it seems better, if possible, to define small savers according to an average balance taken over many days rather than according to the balance on a single day (such as the last day of 2008). In ADOPEM, the information system allowed us to compute the average daily balance for each individual saver over all 366 days of the year 2008. By contrast, in Centenary we had to define small savers according to their balance on a single day. In light of the steadily growing number of savers at Centenary, we chose that day to be the last day of 2008 in order to analyze as many savers as possible. The following points summarize other key aspects of the small-saver definition.

- Centenary offers three kinds of deposit accounts: CDs, savings accounts, and checking accounts. ADOPEM offers only CDs and savings accounts. Because of the high minimum account sizes for CDs and checking accounts, no CD holders and few checking account holders ended up in the bottom half of all savers arrayed in increasing order according to the total amount they had on deposit with the MFI. Because it simplifies the analysis considerably, we put all of Centenary's checking account holders in the large-saver group. As a result, all small savers hold only savings accounts in both MFIs.
- Only active savers are considered. Active savers are those with a nondormant deposit account. While standards differ from MFI to MFI, nondormant deposit accounts in ADOPEM and Centenary are those in which there has been at least one transaction in the last two and three years, respectively.[12]

- Because we are examining whether a certain group of clients (small savers) is profitable or not to serve, the focus of this study is savers, not savings accounts. Hence, for each small saver we must consider the cost of all of the saver's deposit accounts and the profits earned from the loans, money transfers, and other products sold to the saver. In deciding whether a single saver with multiple deposit accounts is small or not, the balances of all of that saver's accounts are added together. Similarly, the balances of joint accounts are split equally among all account holders. As it turns out, multiple and joint accounts are quite uncommon in both ADOPEM and Centenary, and so the exact way in which they are handled is likely to be of little consequence in the present study.
- The average daily balance measure used for ADOPEM is calculated only over those days in which the client had one or more deposit accounts open. For example, if a client opens an account in July 2008 and maintains a US$100 balance for the entire second half of the year, the average balance is calculated as US$100, not US$50. To illustrate the reason for not counting missing days as having a zero balance, consider the following more extreme example: a new depositor who puts US$1,000 into a savings account during the last two days of 2008. This client seems to us to merit being classified as a large saver (who happened to open an account late in the year) and is counted as such (with a US$1,000 average balance), not as a small saver with a balance of (US$1,000) × (2/366) = US$5.46.

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12 Typically, inactive savers generate little if any deposit account costs for MFIs, including Centenary and ADOPEM. This is because inactive savers generally have no teller transactions and hence none of the substantial teller costs and teller-related nonpersonnel costs we find for active savers (rent for the space tellers occupy, paper for the transactions tellers do, depreciation of the equipment and furniture tellers use, etc.). Hence, it would seem much more relevant to know the operating costs associated with the smaller half of the active savers, rather than the smaller half of all savers, and so we carry out our analysis on this former group.

Small Savers of ADOPEM and Centenary

Applying the above rules, the cutoff point between small and large savers turns out to be US$7.24 for ADOPEM and US$16.67 for Centenary, meaning that 50 percent of ADOPEM's and Centenary's savers have balances below these respective cutoff lines, and 50 percent have balances above them.[13]

Returning to Table 1, we see that the total number of active savers in ADOPEM and Centenary at the end of 2008 is 88,250 and 491,757, respectively (line 1). The number of active small savers is half of these totals: 44,125 and 245,879 (line 1a). In addition, ADOPEM has 22,316 pure borrowers (that is, borrowers who are not active savers), giving it a total of 110,566 savings and loan clients (lines 2 and 3). Since Centenary requires all borrowers to maintain a savings or checking account (to which loan proceeds are automatically credited and from which loan payments are automatically taken), it has no pure borrower clients. Finally, while Centenary has far more active savers than ADOPEM, the total number of loans outstanding at the end of 2008 is roughly the same in the two MFIs: 87,060 in ADOPEM and 90,251 in Centenary (line 4).[14]

Introduction to the Business Case for Small Savers: Cost of Small-Saver Savings Accounts

We begin our analysis of the business case for small savers in this section by discussing the annual operating costs of small-saver savings accounts. In the next section we build on this analysis, moving on to the larger issue of the profitability of small savers (a measure also called total client profitability, as noted earlier). While small-saver profitability in the most recent year for which we had data (2008) is the main measure we shall use of whether there is a business case for small savers, the final section of this paper discusses how small-saver profits might evolve in future years and how that evolution might affect the business case for small savers.

By any measure, the savings accounts of small savers are expensive (Table 2, lines 1 and 2). Line 1 of the first data column in Table 2 shows the five average cost estimates calculated by Portocarrero, Tarazona, and Westley (2006, Table 29), which were cited at the beginning of this paper. These measure the cost of small-saver savings accounts as annual operating costs per dollar mobilized and range from 235 percent to 597 percent. These estimates were made using the traditional average cost approach (also called the full cost approach), in which all MFI operating costs, including fixed and quasi-fixed costs, are allocated to small-saver savings accounts and the remaining client segment/product combinations. By comparison, the corresponding average annual operating costs per dollar mobilized for the savings accounts of *all clients* (not just the small savers) in these same five MFIs range from 10 percent to 21 percent (see Table 29 of Portocarrero, Tarazona, and Westley 2006), far more modest expense levels than the 235–597 percent calculated for small savers.

The final three columns of Table 2 show the operating cost estimates of small-saver savings accounts that are made in the present study for Centenary with and without ATMs and for ADOPEM (which did not have ATMs). These three columns give the annual operating costs per dollar mobilized (that is, the annual operating costs in

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13 These U.S. dollar values were obtained from their local currency counterparts using the following exchange rates to convert from Dominican pesos (DR$) and Ugandan shillings (Ugx) to U.S. dollars: US$1 = DR$35 = Ugx 1,800. These exchange rates are used throughout the study, regardless of whether the values to be converted to U.S. dollars pertain to the end of 2008, all of 2008, or an average of the values at the end of 2007 and of 2008. By adopting a single exchange rate, ratios such as ROA that use a mix of these concepts will be the same in local currency and U.S. dollars. Given the fairly limited variation of the exchange rates during 2008 in both countries, our results will not differ greatly from those obtained by using end of 2008 exchange rates to convert end of 2008 indicators, end of 2007 exchange rates to convert end of 2007 indicators, and daily average 2008 exchange rates to convert 2008 flow data such as profits and costs.

14 Note that we have presented data on the number of savers (not deposit accounts) and the number of loans (not borrowers). This is because we are interested in small vs. large savers (as *clients*) and the cross-sales of other *products*, especially loans, to these two groups.

Table 2: Annual Operating Costs of Savings Accounts Held by Small Savers (in US$ and as a percent of the average savings mobilized from all small savers in 2008)

Small-Saver Savings Accounts: Operating Cost per Dollar Mobilized (%)	"Baseline": 5 Average Cost Studies	ADOPEM	Centenary With ATMs (Scenario A)	Centenary Without ATMs (Scenario B)
1. **Average cost** per dollar mobilized (traditional full costing) (= line 4 / line 6)	235%, 238%, 255%, 298%, 597%	220%	848%	nc
2. **Marginal cost** per dollar mobilized (this study's methodology) (= line 5 / line 6)		59%	181%	241%
3. Marginal cost / Average cost (= line 2 / line 1 OR line 5 / line 4)		27%	21%	nc
Operating Costs and Savings Account Balances of Small Savers in 2008 (US$)				
4. Small-saver savings accounts: total operating costs in 2008—using the **average cost** (traditional full costing) approach (US$)		290,374	8,123,480	nc
5. Small-saver savings accounts: total operating costs in 2008—using the **marginal cost** approach (US$)		77,846	1,737,396[a]	1,653,567[a]
6. Small-saver savings accounts: **2008 balance**—average of the small-saver daily totals in 2008 for ADOPEM; average of the small-saver end 2008 and end 2007 totals for Centenary (US$)[b]		131,910	958,061	684,995

Sources: All calculations in the last three columns are based on data provided by ADOPEM and Centenary. The "Baseline" percentages in the first data column are taken from Portocarrero, Tarazona, and Westley (2006), Table 29.
Notes: The exchange rates used for all conversions to U.S. dollars from Dominican pesos (DR$) and Ugandan shillings (Ugx) are US$1 = DR$35 = Ugx 1,800. "nc" indicates not calculated.
[a] Some readers may be puzzled by the fact that the operating costs of small-saver savings accounts are higher with ATMs than without. These higher costs stem from the fact, discussed in Box 1, that ATMs attract additional clients and also induce clients to make additional transactions.
[b] Data limitations at Centenary prevented us from using the average of the 366 daily totals of small-saver savings in 2008, as done with ADOPEM.

2008 divided by the average amount of savings mobilized in 2008) using both the average and marginal cost approaches (except for Centenary without ATMs, where only marginal cost is computed). These values are also high, ranging from 59 percent for marginal cost in ADOPEM to 848 percent for average cost in Centenary.

The marginal cost of small-saver savings accounts includes only the costs that the MFI would save (or avoid) if the savings accounts of small savers were eliminated, and thus excludes all of the MFI's fixed and much of its quasi-fixed costs. As noted, marginal cost is the appropriate measure to use when trying to answer the question: how much would an MFI save if it eliminated a given client segment, such as small

savers, or given client segment/product combination, such as small-saver savings accounts? As will be discussed further in the forthcoming companion methodology paper, marginal cost is the right measure to use whenever assessing viability, whether it be the viability of a client segment, product, branch office, or a combination of these, such as small-saver savings accounts. This is an important point since many (though not all) past costing studies, including many studies employing activity-based costing (also known as ABC), have used average cost in assessing viability despite the fact that this can easily lead one to incorrect conclusions. For example, a study using full costing instead of marginal costing might find that a certain product offered by an MFI generates negative profits and thus is not viable. If the MFI then drops

that product to increase its profitability, it might find instead that profits have declined because the MFI has not saved any of the fixed costs or much of the quasi-fixed costs that had been allocated to the product.

In both ADOPEM and Centenary we find that marginal costs are substantially below average costs. This reflects the large amount of fixed and quasi-fixed overhead expenses generally involved in running financial institutions, often including much or all of the following:

- The board of directors and management
- The staff of such central service departments as accounting, administration, audit, finance, information technology, legal, marketing, personnel, and risk management
- The nonpersonnel costs associated with all of these personnel (e.g., rent for the space they occupy; depreciation of the desks, furnishings, equipment, and vehicles that they use; and the electricity needed to provide ambient lighting and cooling of the space they occupy and to run their equipment)

However, even with ADOPEM's marginal cost per dollar mobilized value of 59 percent, the operating costs of small-saver savings accounts are still high, and even higher for Centenary (181 percent and 241 percent with and without ATMs, respectively).[15] While the business case for small savers looks somewhat better from a marginal cost view, small-saver savings accounts still appear to be a high-cost proposition.[16]

Total Client Profitability and the Five Pathways

In the preceding section, we confirmed the high costs of small-saver savings accounts for both ADOPEM and Centenary, with annual operating costs on a marginal cost basis of 59 percent to 241 percent of the deposit balances of the small savers.

In this section, we find that these high operating costs are more than overcome by the profits generated through cross-sales of loans and other products to small savers and by the fee income derived from small-saver savings accounts. On balance, then, small savers are found to generate large profits, of just over 400 percent of their deposit balances in Centenary and just over 1,000 percent in ADOPEM.[17] Expressing the same result in a different way, without the small savers, these two very profitable MFIs would lose about 30 percent of their total profits. We conclude, therefore, that based on our analysis of the profitability (also called total client profitability) of small savers in 2008, there is a compelling business case for serving this client segment in both MFIs.

As discussed in the summary of findings section, total small-saver profits can be disaggregated into five sources of profit, which we have also called five pathways to profitability: (1) loans; (2) other products besides loans and savings accounts, such as life insurance (ADOPEM) and money transfers (Centenary); (3) savings account fees; (4) technology; and (5) higher loan interest rates for smaller and otherwise costlier types of loans. Building on that earlier section, this section explains in greater detail how we calculate the profits derived by the MFIs from each of the five pathways.

Our computation of small-saver profits in Centenary (both with and without ATMs) and ADOPEM is shown in Table 3. Lines 1, 2, and 3 give what may be thought of as the usual three components of lending costs: operating costs, bad loan costs, and loan funding costs, respectively. These are all calculated on a marginal basis, that is, by computing

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15 The methods we used to calculate the cost and profitability of small savers in the case of Centenary without ATMs will be explained in the forthcoming companion paper on methodology. Those interested in a brief glimpse of this should see Box 1.

16 The ratio of marginal to average cost for small-saver savings accounts in ADOPEM and Centenary is 27 percent and 21 percent, respectively, as shown in line 3 of Table 2. Lines 4–6 of Table 2 present the data used to construct the cost per dollar mobilized ratios given in lines 1 and 2.

17 To get these values, we divide line 9 of Table 3 (small-saver profits in 2008) by line 6 of Table 2 (small-saver savings account balances in 2008).

Box 1: Simulating Centenary without ATMs (Scenario B)

Of Centenary's 491,757 savings and loan clients at the end of 2008, 256,221 (or 52 percent) were ATM users. We define an ATM user as a client who held an ATM card and made at least one ATM withdrawal during 2008. While we would like to have defined an ATM user as a client who held an ATM card and made at least one ATM *withdrawal or deposit* during 2008, we are forced to use our definition because we can trace only ATM withdrawals to individual clients (and thus know whether the client is a small or large saver), not ATM deposits. Fortunately, two pieces of evidence indicate there is likely to be very little difference between these two definitions.

The first piece of evidence comes from a nationally representative sample survey we conducted of 252 Centenary clients (151 small savers and 101 large savers), who were interviewed after making an ATM deposit or withdrawal transaction. This survey found that every one of the 252 interviewees who made an ATM deposit in the last month also made an ATM withdrawal. The second piece of evidence is the fact that there were 5,101,810 ATM withdrawals but only 524,460 ATM deposits made by all Centenary clients in 2008, so that withdrawals are by far the dominant ATM transaction.

To calculate the amount by which ATMs impacted small-saver operating costs, average savings account balances, and profitability, we estimated the following six key parameters for all ATM users using the above survey as well as an analytical (case-control/time series) method. We find that about the same parameter values hold for both the small- and large-saver subgroups of all ATM users:

1. Share of ATM users who would leave Centenary if there were no ATMs: 1/3
2. Share of loans that would not have been made if there were no ATMs: 1/3
3. Reduction in loan portfolio if there were no ATMs: 1/3
4. Reduction in deposit balances if there were no ATMs: 1/2
5. Share of ATM deposit transactions that would be eliminated (not done with a teller) if no ATMs: 1/2
6. Share of ATM withdrawal transactions that would be eliminated (not done with a teller) if no ATMs: 2/3

The meaning of the first parameter is that one-third of all ATM users would completely leave Centenary—taking all of their deposit, loan, and other business with them—if Centenary did not have ATMs. In the ATM user survey, the primary reason respondents gave for this is the great convenience of ATMs, which has at least two important dimensions: (*i*) the availability of ATMs 24 hours a day, seven days a week and (*ii*) the fact that transactions could generally be made more quickly with ATMs than tellers since ATM waiting lines were usually shorter and ATM locations were more numerous (ATMs were in all 32 branches plus 10 additional locations).

The two-thirds of ATM users who would stay with Centenary even without ATMs would reduce their savings balances by an average of 25 percent because of the reduced convenience of accessing their deposited funds. This means that if there were no ATMs, the overall savings balances of ATM users would fall by half, as indicated by parameter 4. (This value of 1/2 is calculated as follows: Because 2/3 of all ATM users would remain Centenary clients if ATMs were eliminated, each with a deposit balance that is, on average, 3/4 of what it was with ATMs, then overall deposit balances would be half of what they were with ATMs since $(2/3) \times (3/4) = 1/2$.)

As can be seen from the remaining parameter values, the number and value of loans to ATM users would both fall by 1/3 if ATMs were eliminated (parameters 2 and 3). Finally, parameters 5 and 6 tell us that 1/2 of ATM deposit transactions and 2/3 of ATM withdrawal transactions would not be replaced by teller deposit and withdrawal transactions if ATMs were eliminated, again because of the greater inconvenience of using tellers instead of ATMs.

A forthcoming companion paper on methodology will explain how these parameter estimates were made and then used to calculate what the cost and profitability of small savers would have been if Centenary did not have ATMs. These without-ATM cost and profitability values (shown in the last column of Tables 2 and 3, respectively) permit us to compute the *impact* that ATMs have had on small-saver cost and profitability. The companion paper will also discuss how these impact estimates might be made for MFIs employing branchless banking technologies, such as mobile phones and POS devices.

how much total operating costs, total bad loan costs, and total loan funding costs would change if small savers were eliminated.

Line 1 measures the operating costs associated with both the *savings accounts and loans* of small savers, in contrast to the operating costs given earlier in Table 2 (line 5), which measure the operating costs of only the *savings accounts* of small savers. To compute the profits from lending to small savers we must count both loan and savings account operating costs, the latter because the savings accounts mobilized from small savers provide a part of the funding for the loans extended to small savers. As can be seen in the subcategories of line 1, the personnel costs that would be saved if the small-saver loans and savings accounts were eliminated come overwhelmingly from branch personnel, mainly loan officers who make loans to small savers and tellers who attend their savings account and loan transactions. Most of the remaining personnel costs come from (*i*) branch- and headquarters-based back office staff working on the loans and savings accounts of small savers and (*ii*) loan officer and teller support and supervisory personnel, also in the branches and headquarters. The major nonpersonnel costs associated with small savers (which are mainly driven by the loans and savings accounts of small savers) fall into six categories in both ADOPEM and Centenary: transportation (especially for loan officers), rent, depreciation, paper and printing, electricity (purchased and self-generated), and telecommunications.

The bad loan costs of small savers (line 2) are small compared to their operating and loan funding costs (lines 1 and 3). This is not very surprising given the low loan delinquency and write-off rates noted earlier (Table 1, lines 12 and 13).

By means of their savings accounts, small savers provide a small share (approximately 2 percent) of their own loan funding needs in all three cases (Centenary with and without ATMs and ADOPEM). Hence, the loan funding costs shown in line 3 have two components: the relatively small amount of interest paid on the small savers' own savings accounts plus the much larger amount of interest paid on the remaining loan funding sources, which must be tapped because small savers borrow far more than they save.[18] Summing up lines 1–3, we get the total costs of small-saver savings accounts and loans, shown in line 4.

Total small-saver profits (Table 3, line 9) are obtained by summing the following three components: profits from lending, fees on savings accounts, and profits from other products. The profits from lending to small savers (line 6) are obtained by subtracting the line 4 costs from the loan interest and fee revenue given on line 5. As shown on line 7, Centenary, but not ADOPEM, collects significant fee income from small-saver savings accounts, particularly from a monthly savings account fee (called a ledger fee there). In addition, Centenary levies a fee of approximately US$0.11 for each withdrawal clients make using an ATM. Centenary also charges clients for new and replacement ATM cards, but loses money on these sales because the cost of producing and delivering the cards is greater than the fees charged (Table 3, footnotes b and c). Finally, line 8 reports the profits earned on other products besides loans and savings accounts: three life insurance products in the case of ADOPEM and four essentially money transfer products in the case of Centenary (electronic crediting of salaries to client deposit accounts, electronic payment of school fees for the children of clients, and two all-purpose money transfer services, RGTS/EFT and Western Union). Summing lines 6–8 gives line 9, the total profits derived from small savers from all sources, before income taxes.

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18 As noted earlier, the loan funding costs in line 3 measure the marginal cost of funds (as opposed to the more commonly encountered concept of the average cost of funds). Just as we measure the operating costs of serving small savers as the amount by which total operating costs would be reduced if small savers were eliminated, we measure small saver loan funding costs as the amount by which total loan funding costs would be reduced if small savers were eliminated. The forthcoming companion methodology paper delves further into how to calculate the marginal cost of funds.

Table 3: Profitability of Small Savers in ADOPEM and Centenary, 2008 (US$)

Small Savers Only	(1) ADOPEM	(2) Centenary with ATMs (Scenario A)	(3) Centenary without ATMs (Scenario B)
1. Operating costs of savings accounts and loans (=a+b)	1,045,879	4,755,262	4,174,098
a. Personnel costs (=a1+a2)	598,601	3,363,061	3,088,691
a1. Branches	543,292	3,191,986	2,996,281
a2. Headquarters	55,309	171,075	92,411
b. Nonpersonnel costs	447,278	1,392,201	1,085,407
2. Bad loan costs (provision expense net of recoveries of written-off loans)	173,393	1,029,203	840,842
3. Loan funding costs (=a+b)	1,110,986	4,279,120	3,505,724
a. Interest on small-saver savings accounts	6,398	194,193	129,881
b. Interest on remaining loan funding	1,104,588	4,084,927	3,375,843
4. Total costs of lending, including costs of own savings accounts, a loan funding source (=1+2+3)	2,330,258	10,063,584	8,520,665
5. Revenue from lending: loan interest and commission revenue [a]	3,547,056	12,064,666	9,915,274
6. Profits from lending (=5−4)	1,216,798	2,001,081	1,394,609
7. Fees on savings accounts (=a+b+c) [b]	0	1,322,599	1,015,914
a. Monthly fee on savings accounts (ledger fees)	0	1,249,177	1,015,914
b. ATM withdrawal fee	0	205,431	0
c. Sale of ATM cards (net of card production and distribution costs)[c]	0	−132,008	0
8. Profits from other products [d]	127,439	613,315	459,405
9. Total profits from small savers, before income tax (=6+7+8)	**1,344,237**	**3,936,996**	**2,869,928**

Sources: All table entries are based on data provided by ADOPEM and Centenary and refer only to small savers.
[a] For Centenary, in addition to loan interest, this line includes an upfront fee of 2 percent of loan amount and the proceeds from selling loan application forms for US$2.78 per loan. ADOPEM also charges upfront legal and processing fees totaling approximately 2–4 percent of loan amount.
[b] Centenary Bank's fees on savings accounts are as follows:
    a. Monthly savings account fee = US$0.56 per month
    b. ATM withdrawal fee = US$0.11 per withdrawal
    c. Sale of ATM cards = US$1.11 new, US$5.56 replacement
[c] The entry for Centenary Bank is computed as US$92,899 in sales revenue minus US$224,908 in expenses, where expenses consist primarily of the costs of the blank ATM cards, card embossing and printing, and distribution to clients through Centenary tellers.
[d] The breakdowns of the line 8 totals are as follows.
Profits from ADOPEM's three life insurance products:
    Transition funds = US$314
    Burial insurance = US$1,460
    Credit insurance = US$125,665
Profits from Centenary's four other products are given in each line below, first for Scenario A (with ATMs) and then for Scenario B (without ATMs):

Salary entries (electronic crediting of salary payments)	US$335,602	US$238,507
School fee payments (to client-designated schools)	US$183,248	US$154,235
RTGS/EFT money transfers	US$86,001	US$60,031
Western Union money transfers	US$8,464	US$6,632

Table 4: Small Savers: Sources of Profitability

	ADOPEM		Centenary with ATMs		Centenary without ATMs		(4) Percent Increase in Centenary Small-Saver Profits Due to ATMs = [(2) − (3)] / (3)
	(1) Profits (US$)	(1a) Percent of Total Profits	(2) Profits (US$)	(2a) Percent of Total Profits	(3) Profits (US$)	(3a) Percent of Total Profits	
6. Profits from lending	1,216,798	91	2,001,081	51	1,394,609	49	43
7. Fees on savings accounts	0	0	1,322,599	33	1,015,914	35	30
8. Profits from other products	127,439	9	613,315	16	459,405	16	34
9. Total profits from small savers	1,344,237	100	3,936,996	100	2,869,928	100	37

Note: The row numbers and labels here are the same as those used in Table 3. The profits data in columns (1), (2), and (3) here are also the same as in columns (1), (2), and (3) of Table 3.

We now consider the breakdown of total profits into the five pathways noted earlier.

Pathways 1–3: Loans, Other Products, and Savings Accounts (respectively). As shown in Table 4, the percentage breakdown of total small-saver profits into the three product pathways is quite different for ADOPEM and Centenary. Columns (1), (2), and (3) of Table 4 reproduce the profits data for ADOPEM, Centenary with ATMs, and Centenary without ATMs, respectively, that are shown in lines 6–9 of Table 3. Columns (1a), (2a), and (3a) of Table 4 show the percentage of total profits that are due to lending (line 6), savings account fees (line 7), and other products (line 8). As shown in these three columns, ADOPEM's profits are derived mostly from lending (91 percent), with 9 percent of total profits coming from the three insurance products and no profits derived from savings account fees (since ADOPEM had no such fees). Centenary's profits (both with and without ATMs) are more diversified: approximately 1/2 from lending, 1/3 from fees on savings accounts, and the remaining 1/6 from the four money transfer products.

Pathway 4: ATMs. ATMs make a substantial contribution to Centenary's profits, as can be seen in column (4) of Table 4. This column gives the percentage increase in small-saver profits that Centenary obtains from ATMs and shows that ATMs significantly increase all three profit components, lifting overall profits by 37 percent. ATMs do this primarily by helping Centenary to attract and retain clients, which in turn increases lending volume, the number of savings accounts, and the sale of other products, and hence the profits earned in all three of these areas. (Box 1 discusses the effects of ATMs in more detail.)

Pathway 5: Higher loan interest rates. Finally, because of the higher cost types of loans and smaller loans that small savers disproportionately demanded, Centenary charged small savers 5.8 percentage points more for loans than it charged borrowers overall.[19] Had Centenary abandoned its practice of charging more for types of loans that were costlier to make (namely, microenterprise, housing, and agricultural loans) and for smaller loans, and thus reduced small-saver loan rates by 5.8 percentage points, all profits from lending to

19 In 2008, Centenary's portfolio yield, a measure of the effective interest rate charged to borrowers, was 28.4 percent for all borrowers and 34.2 percent for borrowers who were small savers, giving this 5.8 percentage point differential. Portfolio yield is calculated as the following ratio (for example in 2008 in US$): (Loan interest plus commission revenue in 2008 in US$) / (Average loan portfolio in 2008 in US$).

small savers, and therefore half of Centenary's total small-saver profits from all sources, would have been lost.[20] This illustrates that charging more for smaller and costlier types of loans can be a powerful tool for making small savers a profitable client segment if they make substantial use of these kinds of loans.

A Further Exploration of the Loan Rate Differential

To gain further insight into the 5.8 percentage point differential between what small savers and all clients pay for loans, it is useful to examine the effects of loan type and size on Centenary's costs and loan rates. We start with the effect of loan type and then turn to loan size.

Centenary's five main types of loans fall into two groups:

- Those loans that are more costly per dollar lent and have higher interest rates, namely, microenterprise, housing, and agricultural loans. These loans have interest rates of 34 percent, 33 percent, and 31 percent, respectively, in 2008 on a portfolio yield basis for all borrowers (and 37 percent, 35 percent, and 34 percent, respectively, for small savers).
- Those loans that are less costly per dollar lent and have lower interest rates, namely, commercial and consumer loans. Both of these loan types have interest rates of 24 percent in 2008 on a portfolio yield basis for all borrowers (and 26–27 percent for small savers). The lower cost per dollar lent of commercial and consumer loans reflects:

a. The far larger size of commercial loans compared to the other four loan types. The average outstanding balance of commercial loans for all borrowers is about US$15,000, versus US$1,000–2,000 for the other four loan types.

b. The much more limited analysis and collection efforts needed for consumer loans, especially since all consumer loan clients are salaried employees whose paychecks are deposited directly into their Centenary accounts, from which loan repayments are automatically deducted by Centenary's computer system. Reflective of this situation, consumer loan officers disbursed 834 loans per loan officer in 2008, versus 331 for loan officers overall.[21]

Turning to the effect of loan size, small savers paid loan rates that were 2–3 percentage points higher than rates for borrowers overall for each one of the five types of loans. (This can be seen by the data just given in the two bullets above; for example, all borrowers paid 34 percent for microenterprise loans and small savers paid 37 percent.) In practice, this occurred because the generally smaller size loans taken by small savers gave these borrowers less bargaining power with which to negotiate interest rate reductions. From Centenary's point of view, this is a reasonable outcome since smaller loans of a given type are more expensive per dollar lent than larger loans.

We conclude that Centenary's loan pricing structure broadly reflects differences in cost and leads to small savers paying more for loans than

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20 Reducing the overall loan rate charged to small savers by 5.8 percentage points, starting from the current rate of 34.2 percent, implies a reduction in small-saver loan rates of 16.8 percent (= 5.8/34.2). For ease of illustration, we assume that loan demand would not have been stimulated by this rate cut, so that the amount of loan interest and commission revenue paid by small savers would have been reduced by 16.8 percent. Taking 16.8 percent of the US$12.06 million that Centenary collected from small savers in loan interest and commissions (Table 3, line 5), gives a reduction in loan revenue and therefore profits of US$2.02 million (=16.8 percent × US$12.06 million). This represents all of Centenary's profits from lending of US$2.00 million (Table 3, line 6) and a tiny bit more, or 51 percent of Centenary's total profits from all sources of US$3.94 million (Table 3, line 9). All calculations here and in the remainder of this section's text refer only to the case of Centenary with ATMs (Scenario A), not to Centenary without ATMs (Scenario B).

21 Loans *disbursed* per loan officer is a better measure of loan officer productivity in Centenary than the usual loans *carried* per loan officer. This is because most loan officer time is spent on loan analysis rather than on loan monitoring and collection.

Figure 1: Should We Serve Small Savers Now? (based on what we know now and on a strictly business basis)

		Are small savers profitable in future years?	
		Yes	No
Are small savers profitable now?	Yes →	1. Yes, serve small savers now	2. Yes, serve small savers now (but perhaps drop them in future years)
	No →	3. **Yes, serve small savers now _if_ future profits are enough to offset losses now**	4. No, don't serve small savers now

borrowers overall because small savers' loans are more expensive to make. This higher cost of small-saver loans occurs because (*i*) small savers disproportionately demand more of the three higher cost types of loans (microenterprise, housing, and agriculture) and less of the two lower cost types of loans (commercial and consumer),[22] and also because (*ii*) the average size of the small savers' loans is less than the average for borrowers overall for each one of the five types of loans.

The Evolution of Small Savers: A Final Pathway to Profitability

To the five pathways for achieving small-saver profitability, we add one more: profits in future years. The idea is that in cases in which small savers are found to be unprofitable in the year studied (2008 in the case of ADOPEM and Centenary), they still may be worthwhile serving in that year in order to reap the profits from serving them in later years. As we will discuss, there are a number of strong and fairly general reasons for thinking that the average size of small-saver savings accounts and loans may

grow rapidly over time, as we find has happened in recent years at ADOPEM.[23] This growth in average savings account and loan size could convert small savers from an unprofitable client segment into a profitable one.[24]

Figure 1 shows graphically and in a more complete and rigorous fashion why the consideration of future profits opens up an additional pathway to profitability for the small savers. For ease of exposition we refer to the year in which we do the small-saver profitability study (2008 in our case) as "now" or "the current year," and the years after that (2009 and afterwards in our case) as "the future" or "future years." Figure 1 shows the four possible cases of present and future profitability in the form of a 2 × 2 grid. The two rows tell whether or not small savers are profitable *now* (the first row indicating that they are and the second row indicating that they are not). The two columns tell whether or not small savers are profitable *in the future* (the first column indicating that they are and the second column indicating that they are not). The four cases are numbered 1–4. We defer for now the question of how we might estimate future

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22 At the end of 2008, for example, small savers held 25 percent of Centenary's overall loan portfolio, a figure that is surpassed by the 36 percent, 32 percent, and 48 percent small savers held of Centenary's portfolio of microenterprise, housing, and agriculture loans, respectively. Small savers held only 6 percent and 23 percent of Centenary's portfolio of commercial and consumer loans, respectively, which are below the 25 percent overall average. Similar results are obtained when we consider the portfolio at the beginning of 2008 (instead of at the end of 2008) or the amount of loans disbursed during all of 2008.

23 The data required to do this analysis were not available for Centenary.

24 In the summary of findings section we explained why increases in average loan size generally lead to increased profits from lending, at least if all other factors—such as loan interest rates, loan operating costs, delinquency rates, and the cost of funds—are held constant. The same is true of increases in average savings account size, again subject to the proviso that all other factors are held constant. This proviso would mean, for example, that the average number of transactions carried out per savings account should not rise as average savings account size increases, so that operating costs per savings account remain constant. With constant operating costs per savings account, the only additional cost to the MFI of larger savings accounts is the extra interest it must pay on them. Because savings account interest rates are typically quite low (often 5 percent a year or less), growing savings accounts will generally provide an MFI with one of the cheapest sources of loan funding available to it, almost certainly cheaper than issuing certificates of deposit or borrowing from all but the most subsidized of sources. As a result, the MFI's profits from lending should rise as additional funds become available to it from the growth in the average size of small saver savings accounts.

profitability, but suggest a possible approach later in this section.

The four numbered boxes in Figure 1 answer the question: should we serve small savers now, based on the information we have now and on a strictly business (profitability) basis? In three of the four cases the answer is either an unconditional yes (cases 1 and 2) or a conditional yes (case 3); in the last case (case 4) the answer is a clear no.

To see the logic behind these answers, let us begin by examining the first row (cases 1 and 2), in which a current year profitability study (like that presented in Table 3) finds small savers to be profitable. In case 1 the answer is an easy and unconditional yes since small savers are profitable now and in the future, so of course we would serve them now. Interestingly, in case 2—in which small savers are profitable to serve now but (based on the information we have now) are estimated to be unprofitable in the future—we would still serve small savers now but perhaps drop them in future years if our forecasts of their unprofitability are borne out by future data. So, again, we would unconditionally serve small savers now.

Turning to the second row, in which small savers are unprofitable now, case 4 is an easy decision since small savers are unprofitable now and in the future; hence, there is no business case for serving them now. Case 3 is the one that provides the additional pathway for finding that small savers are worthwhile to serve now, provided that future profits are large enough to offset current losses.[25]

We conclude that a multiyear analysis truly does provide an additional pathway to profitably serving small savers now because (*i*) we still serve small savers if they are found to be profitable now (regardless of their future profitability), just as we do in a single year analysis that considers only current profits, but (*ii*) we can also serve small savers now even if they are found to be unprofitable now, provided that future profits are large enough to compensate for current losses.

In the remainder of this section we explore how the future profitability of small savers might be analyzed using multiyear data. We then discuss how our findings might or might not generalize to other MFIs.

The ADOPEM Cohort Analysis and Its Interpretation

At the time we did this study, the data needed to calculate small-saver profitability were available up through 2008, but not for 2009 and afterwards. To attempt to understand how small-saver profitability might evolve in those future years, we analyzed the recent past, looking for trends in key indicators of small-saver profitability in the years leading up to and including 2008. Because the available data for Centenary did not allow us to do a satisfactory multiyear analysis, we present only the case of ADOPEM.

ADOPEM's history of mobilizing deposits from any great number of clients is relatively short. As a result, we begin our multiyear analysis there at the end of 2006, dividing all clients present at that time into three groups.[26] The 31,192 "pure borrowers" have a loan but no savings account on 31 December 2006. The remaining 23,980 clients all have a savings account on 31 December 2006 (and may or may not have a loan). We divide the savers into two equal size groups of 11,990 each, with small savers having the lowest average daily balances during 2006 and large savers having the highest average daily balances during 2006. That is, we use the same procedure employed in our main 2008 profitability analysis for dividing all savers into small and large savers. We then follow all three

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25 The forthcoming companion paper on methodology will discuss criteria for determining whether likely future profits are "large enough" to offset losses now.

26 Had we begun the analysis at the end of 2005, we would have been able to analyze the behavior of only 8,800 total savers instead of the nearly 24,000 available at the end of 2006. ADOPEM began mobilizing deposits in late 2004.

groups of clients for two years—from the end of 2006 to the end of 2007 and finally to the end of 2008—leaving each and every client in the group to which they were originally assigned regardless of what they did after 31 December 2006 (started borrowing, stopped borrowing, opened a savings account, or closed a savings account). This type of study is called a "cohort analysis," indicating that it examines fixed groups of people (cohorts) over time.

The ADOPEM cohort data are presented in Table 5. The main conclusion we draw from the cohort analysis is that because the average size of small-saver savings accounts and loans in ADOPEM grew rapidly over the study period, small savers appear to have become much more profitable during this time. Moreover, as we argue at the end of this section, there are strong reasons to believe that similar (though perhaps more moderate) rising average size and profitability trends could hold for small savers in many MFIs. Hence, this final pathway to profitability may be of real practical significance. On the other hand, our cohort analysis covers only three annual data points (spanning two years), an unfortunately short time series. Also, our analysis is based on indicators of profitability, rather than on a complete profit calculation, although the indicator trends are so strong that it seems quite likely that ADOPEM's small-saver cohort has indeed become significantly more profitable over time.

To see how these conclusions were reached, we turn to the data in Table 5, looking first at the savings accounts of small savers and then at their loans.

Just as we found earlier that small savers are not necessarily small borrowers, here we find that small savers today are not necessarily small savers tomorrow. Looking at the first three data lines of Table 5, we see that while there is 19 percent

attrition in the number small-saver savings accounts over the two-year analysis period, the average size of the remaining accounts increases by 105 percent. This pushes up total small-saver savings account balances by 68 percent. The combination of having to attend to 19 percent fewer accounts, but receiving 68 percent more in total savings, almost certainly increases the profits derived from the small-saver cohort.[27] In fact, even if total small-saver savings account balances had remained unchanged, small-saver profits would most likely have risen. This is because the 19 percent reduction in the number of small-saver savings accounts would most likely reduce the number of savings account transactions and therefore savings account operating costs. At the same time, small-saver savings accounts would have continued to provide the same amount of loanable funds as before, allowing ADOPEM to earn the same profits from making loans with these funds as before. Putting that together with the reduced savings account operating costs (from the 19 percent attrition), we know that profits from small savers would increase. Profits would almost certainly be even higher with total small-saver savings account balances rising 68 percent (instead of remaining unchanged). This is because, apart from operating costs (which we have already taken account of), the only other cost ADOPEM must pay for these extra funds is deposit interest. As discussed earlier, savings account interest rates are typically very low, and so this would provide ADOPEM with very low-cost loan funding. As a result, ADOPEM's profits from lending should rise as these additional funds become available to it from larger savings accounts.

The next three data lines of Table 5 show that small-saver loans most likely become substantially more profitable over time as well. This is because overall loan volume increases slightly (4 percent), which suggests a small

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27 At least this is true as long as we hold all other variables besides those in Table 5 constant. This proviso would rule out, for example, the existence of such contrary trends as a rapid rise in the number of transactions per account, which could push operating costs up over time despite there being fewer accounts.

Table 5: ADOPEM Cohort Analysis, end of 2006 to end of 2008

11,990 CLIENTS WHO WERE SMALL SAVERS ON 12/31/06				
	12/31/06	12/31/07	12/31/08	Total percent change from 12/31/06 to 12/31/08
Savings accounts				
Number of savings accounts	11,752	11,246	9,511	−19.1%
Average balance (US$)	5.81	8.88	11.91	105.0%
Total balance (US$)	68,294	100,825	114,535	67.7%
Loans				
Number of loans	9,606	7,087	5,468	−43.1%
Average balance (US$)	444	631	814	83.4%
Total balance (US$ millions)	4.26	4.47	4.45	4.4%
11,990 CLIENTS WHO WERE LARGE SAVERS ON 12/31/06				
	12/31/06	12/31/07	12/31/08	Total percent change from 12/31/06 to 12/31/08
Savings accounts				
Number of savings accounts	12,064	11,942	11,401	−5.5%
Average balance (US$)	45.09	42.47	44.74	−0.8%
Total balance (US$)	543,992	507,218	510,092	−6.2%
Loans				
Number of loans	9,597	7,597	6,193	−35.5%
Average balance (US$)	655	890	1,102	68.2%
Total balance (US$ millions)	6.29	6.76	6.82	8.5%
31,192 CLIENTS WHO WERE PURE BORROWERS ON 12/31/06				
	12/31/06	12/31/07	12/31/08	Total percent change from 12/31/06 to 12/31/08
Savings accounts				
Number of savings accounts	0	10,022	13,250	-
Average balance (US$)	0	20.90	20.86	-
Total balance (US$)	0	209,434	276,334	-
Loans				
Number of loans	31,200	19,617	13,698	−56.1%
Average balance (US$)	521	743	937	79.8%
Total balance (US$ millions)	16.25	14.58	12.83	−21.1%

Source: ADOPEM.

increase in interest income, while the number of loans falls considerably (43 percent), greatly reducing the operating costs of attending small-saver loans. Again, the rapid rise in average size (this time of loans, instead of savings accounts) is behind the favorable profit trend.

We conclude that as long as the average balances of small-saver savings accounts and loans increase by enough to offset the effects of attrition, and thus prevent the total balances of savings accounts and loans from falling, small-saver profits will most likely increase.[28] In the case of ADOPEM, average

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28 In fact, even if the rise in average balances falls short of this, small-saver profits may still increase. For example, with ADOPEM's 43 percent loan attrition, the operating cost savings will most likely be substantial. Even if total small-saver loan balances had dropped moderately, reducing interest income somewhat, profits could still have risen because the reduction in costs could be much greater than the loss in revenue.

savings and loan balances increased by more than this, especially savings balances, which should push up small-saver profits even further.

It will help us to understand the rapid rise in the average small-saver savings and loan balances in ADOPEM—and thus assist us in generalizing from these results to other MFIs—if we note two characteristics of ADOPEM's large savers and pure borrowers, the other two groups in Table 5. First, in contrast to the sharp rise in the average savings account balances of small savers, average savings account balances of large savers are essentially stagnant (falling 1 percent over the two-year period). Second, average loan balance of all three cohorts rises rapidly during the 2006–2008 analysis period.

What might lie behind the rapid increase in the average loan balance of all three groups? At least part of the answer is likely to be ADOPEM's use of the progressive lending scheme. Widely used by MFIs, progressive lending starts new borrowers with small loans and works progressively up to larger and larger loans, provided the preceding loans were repaid satisfactorily.

On the savings side, we believe that there are at least two factors at play in explaining the rising average balances of small savers and the stagnant average balances of large savers: the presence of many new savers and the phenomenon known as regression to the mean.

To understand the importance of new savers, we begin by recalling that there is widespread agreement that the most important issues to savers in deciding where to save are usually the safety of their deposits from loss first and foremost, followed by convenience (being able to easily deposit and withdraw their money).[29] With ADOPEM mobilizing deposits only since late 2004 and the number of savers growing rapidly

since that time, there were undoubtedly many new savers in both the small- and large-saver cohorts at the end of 2006, when these cohorts were established. (Although it is arbitrary, new savers might be defined as savers who opened their savings account in the last six or 12 months.) As new clients leave their funds on deposit longer and longer with a good MFI, such as ADOPEM, many are likely to become increasingly reassured that their funds are safe and convenient to access, and thus become increasingly willing to deposit additional funds. Consequently, in a cohort analysis, the average deposit balance would have a tendency to rise over time in both the small- and large-saver cohorts.[30]

On the second point, regression to the mean is a phenomenon that is widely observed for many economic variables, including household savings. The idea is that a variable that is extreme on its first measurement will tend to draw closer to the average (or mean) in later measurements. The reason for this tendency is that extreme values are often due, at least in part, to transitory effects. For example, very low household savings levels may be due to unusually low profits from a family business, job layoffs, unusually large medical or other expenses, or other negative shocks. Very high household savings levels may be due to such factors as having recently had unusually good success in business or in controlling household expenditures. Returning to ADOPEM, as a result of this phenomenon, we expect there to be a tendency for the average savings balance to rise over time in the small-saver cohort since this group is likely to contain many depositors whose savings level is unusually and transitorily low. Similarly, the average savings balance of the large-saver cohort will have a tendency to fall over time.

Now let's look at the combined effect of these two factors. In the small-saver cohort, both factors

29 For example, see Branch (2002) and Deshpande (2006).

30 This may be viewed as a form of progressive lending only in reverse, with clients depositing more as the MFI earns their trust.

act in the same direction, pushing up the average savings balance of this group. This may explain, at least in part, the rapid rise in the average savings balance of ADOPEM's small-saver cohort. In the case of the large-saver cohort, the two factors act in opposite directions, tending to cancel each other out. This may at least partly explain the stability of the average savings balance of ADOPEM's large-saver cohort.

These three arguments (one for lending and two for savings) are likely to carry over from ADOPEM to many other MFIs, since

- Progressive lending is widespread among MFIs.
- Microfinance is generally a rapid growth industry. Moreover, the relatively recent introduction of savings products in many MFIs means that deposit-taking will often be an especially fast growing area within microfinance as new markets are penetrated and new savings clients are rapidly acquired. Consequently, there may be particularly high percentages of savings clients who are new to an MFI at any point in time.
- Regression to the mean is a well-accepted, general phenomenon, with household savings a classic illustration of the principle.

We conclude that there are important general forces tending to push up the average savings and loan balances of small-saver cohorts over time. This means that even if small savers are not profitable to serve now, they could be in future years, providing one final reason why MFIs may find it beneficial to serve small savers even from a business point of view.

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