*In*Focus Note # 2: How the Poor Use their Savings Accounts – A Supply Side View

May 2012

This InFocus Note is the second of a three-part series that shares the results from the ***In Focus Study****, a knowledge-building exercise sponsored by the Bill & Melinda Gates Foundation (BMGF).* [1] *Over the course of two years, Bankable Frontier Associates (BFA) conducted extensive analytical studies of four banks in developing countries that have specific savings account offerings targeted towards low-income populations. The studies aim to provide the Financial Services for the Poor (FSP) team at BMGF with a comprehensive understanding of the economics around providing savings services for the poor. To maintain confidentiality we refer to the participating institutions as Banks A, B, C & D.*

In this InFocus Note 2, we present data that shows what account holders actually do – how often they transact, how much money they have in savings accounts, how long they keep money in their accounts, etc. – and how this affects the profitability of providing services through these accounts.

The prospect of providing commercially viable savings services to low-income clients

The mainstream banking industry is skeptical at best about the viability of providing commercial savings services to low-income clients. The predominant assumptions about low-income clients are that they transact frequently in small amounts, require time and attention from bank staff, and maintain low balances with frequent withdrawals. Thus, the cost of servicing is perceived to be high, without any concomitant financial benefit. Given the difficulty of charging clients for savings services, interest-bearing credit has been seen as the more commercially viable method of providing sustainable financial services for the poor. However, a holistic set of appropriate service offerings would be incomplete without a complementary savings option.

The inclusive finance industry is actively seeking ways to improve the commercial viability of savings products for the poor. Senior management at all four *In Focus* banks remain optimistic about the possibility of at least breaking even at the product level. We share their optimism. To appreciate our stance, one must understand what drives the profitability of a bank account, and then see what the implications are based on the client behaviors we observe.[2]

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[1] The production of this Focus Note was partially supported by the Center for Emerging Markets Enterprises at the Fletcher School of Law and Diplomacy at Tufts University.

[2] CGAP recently undertook similar efforts with the objective of developing a guide for mobile providers and supporters (e.g. large foundations) on the correct metrics and data to track to develop a deeper customer-centric view: http://www.cgap.org/gm/document-1.9.56842/CGAP_Data_Analytics_and_Low_Customer_Activity.pdf.

Account level profitability: What are the financial drivers?

As noted in GAFIS Focus Note #3,[3] the business case for savings rests on three foundations that rely on the following financial drivers:

1. Net interest income (float income): this is the net of the float revenue allocated from internal treasury on savings balances minus the interest expense paid to clients;
2. Fixed costs: include cost of opening accounts and monthly account maintenance costs; and
3. Transaction activity contribution: the net of the revenue from fee-generating transactions minus transaction costs (both direct and indirect).

In turn, these three drivers are affected by account-level factors regarding transactions undertaken and balances maintained by clients: account balance, longevity of balance, and frequency of transaction. Their effects are outlined in Table 1 below.

Table 1: Account-level profitability factors

Factor	Effect	Indicator
Account balance	Generally, the source of revenue is derived from a transfer price applied to the balance. Account balances can drive additional income if there are minimum balance requirements and associated fees. Account balances may also impose a cost to the bank through periodic interest payments to the account.	Average daily balance
Longevity of balance	This affects the transfer pricing rate applied to outstanding account balances, since balances should be paired up with treasury bills (or equivalent) of similar duration.	Average life, defined as the average number of days a unit of currency stays in the account
Frequency of transactions	Each transaction incurs a cost to support, but can also be a source of revenue if transaction fees are imposed. Both the costs and fees depend on the type of transaction and the channel through which it is conducted.	Number of transactions, by type and channel, per account, per month

Note that these drivers bear both revenue and cost implications. Transactions incur a servicing cost, but banks are sometimes able to impose a fee, as with ATM withdrawals. Account balances may require interest payments at a fixed periodic rate, but clients may not leave money in the accounts long enough to secure a high enough float to offset a significant proportion of maintenance expenses.

These drivers not operate in silos, though. Rather, interplay between multiple drivers creates diversified outcomes – a smaller balance that stays in the account for a long period of time might end up providing the same float revenue as a larger balance that stays in the account for a short period of time. We can

[3] Bankable Frontier Associates, *GAFIS Focus Note 3: The Impact of Gateway Dynamics on the Business Case for Small Balance Savings*, 2012. GAFIS (Gateway Financial Innovations for Savings) is a special project of Rockefeller Philanthropy Advisors, Inc., funded by BMGF, and managed by BFA.

therefore appreciate the importance of understanding what clients actually do with their accounts by noting that *any* combination of transaction frequency, balance longevity and balance amount is possible. Finding commonalities in client behavior across banks, allows us to begin to generalize on what the more profitable combinations of drivers are. One of the goals of the *In Focus* exercise is to uncover those combinations for the banks, and attempt to provide generalizations based on them.

Product Description

Of the four institutions we studied, three are in Africa and one in Latin America. Two savings products each from banks A and D and one product from banks B and C were considered to be within the scope of this study. Table 3 provides some details about the products for context.[4]

Table 2: Bank and product features

	Bank A		Bank B	Bank C	Bank D	
Product label (for In Focus purposes)	A1	A2	B1	C1	D1	D2
Number of clients for studied products	~50k	~ 100k	~100k	> 1m	~500k	~500k
Interest paid on account	Yes	Yes	Yes	Yes	Yes	Yes
Stated target client segment is poor / unbanked?	Yes	No	Yes	Yes	Yes	No
Average balance per account ($)	$29	$62	$239	$229	$221	$1,625
Average balance per product type/ GNI pc	4%	8%	80%[5]	14%	2%	18%
Channels used by account holder	Branch	Branch	Branch	Branch, ATM	Branch, ATM, Agent	Branch, ATM, Agent
Monthly fees	No	Yes	No	No	No	Yes*
Other transactional fees	Yes	Yes	Yes	Yes	Yes	Yes

* If minimum balance is not maintained. The minimum balance is approximately US$ 100.

Products A1, B1, C1 and D1 are specifically targeted towards the poor who may also be previously unbanked. Products A2 and D2 are not necessarily marketed to lower income segments, but are included because they were the savings products offered to these segments before A1 and D1 recently came into existence. Furthermore, they still cater to lower income clients who have not yet made the switch.

Revenue Drivers: Account Balances and Average Life of Balances

In the countries where the banks are based, as with most markets, account balances provide an important source of low cost funding for banks. These funds are particularly valuable in emerging markets because their local capital markets are either liquidity constrained or commercial sources of funding are quite expensive, or both. By cross-funding other divisions/products within the same bank, the savings business

[4]Additional identifying information cannot be provided due to confidentiality agreements with the banks.

[5] For this country, this metric provides a somewhat inflated perspective of the balance values, since at the time of the study, the bank operated only in one urban center.

unit can "charge" interest on outstanding balances that can contribute greatly to the bottom line of these accounts.[6]

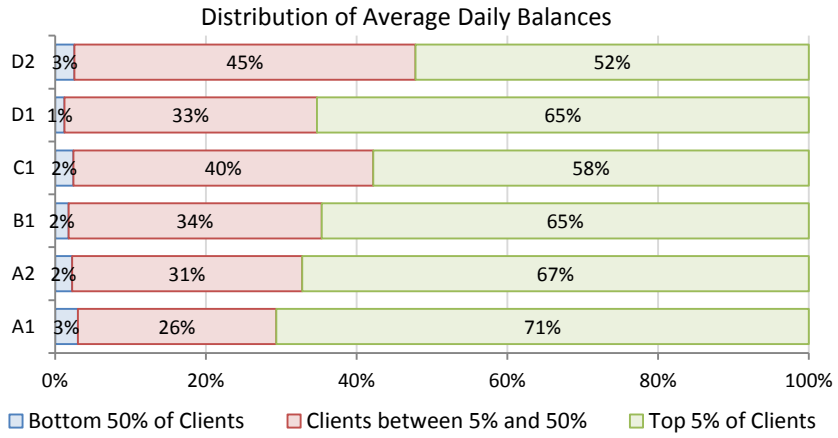
To determine the appropriate transfer pricing rates, we also consider how long funds are held as part of the account balance(s). For instance, a more stable deposit base (in aggregate at the product portfolio level) will attract higher float rates, since the allocated rate is usually determined by pairing up the average life with the duration of a "risk-free" rate, such as a government treasury bond. For example, if balances stay in accounts for 20 days on average, an interbank rate may be more appropriate, while it would be the 180-day T-bill rate if it stays for 200 days. Note that attribution of float rates is neither this straightforward nor uniform across banks, with the treasury department taking into consideration various other factors before attributing a float rate.

Through the perspective of just these two drivers, it is in the banks' interests for clients to maintain as high balances as possible, and for as long as possible. Yet, as the following discussion will highlight, most savings accounts do not exhibit either characteristic.

Revenue driver 1: 5% of accounts maintain about half the total savings balances; conversely, half the accounts have less than 5% of the total balance.

When looking at the value of balances across accounts, we found that within all the banks, a significant portion of the account balances reside within a small fraction of "super saver" account holders (Fig. 1). In fact, the top 5% of accounts, in aggregate, hold at least half of the total savings balance at all the banks except one. In a few cases this proportion increases further to two-thirds of total savings balances. Conversely, the 'bottom' half of accounts, in aggregate, hold only a small fraction of the account balances – in none of the banks is this proportion more than 3% of outstanding balances.

Figure 1: Distribution of Average Daily Balances, by Product

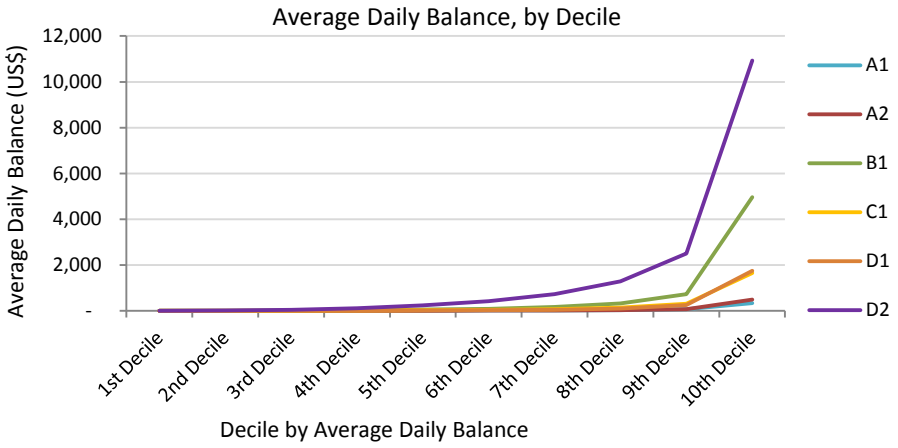


If we segment the accounts by average daily balance values, we find an exponential increase in the average balance in progressive segments (see Fig. 2). The vast gulf between the "super savers" and clients with the lowest balances is significant. The 10% of clients with lowest balances for all the products has an

[6] The interest rate charged is the float rate.

average balance of less than $2.50. The median savings balance for all but one of the products is between $10 and $100.

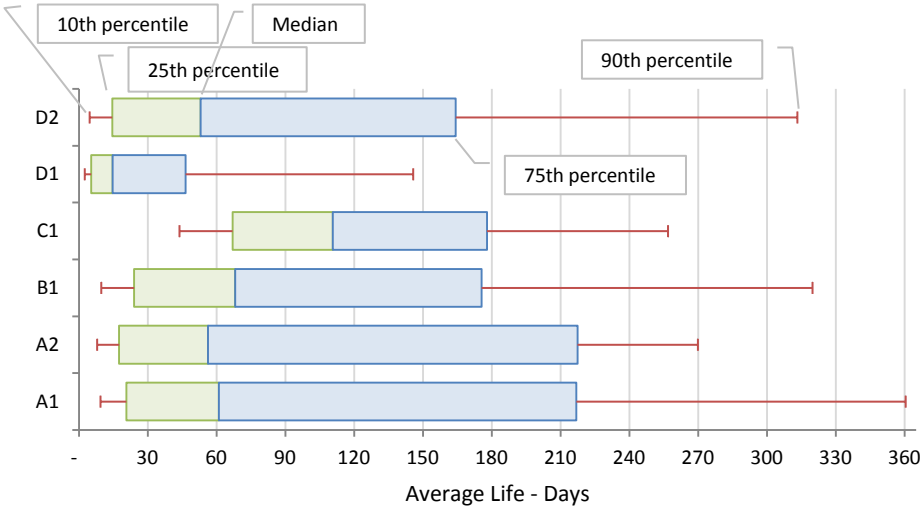
Figure 2: Average Daily Balance, by Balance Decile



Revenue driver 2: A unit of currency stays in the average account for less than 120 days.

The median average life[7] is less than four months for the six products (Fig 3). Three quarters of the accounts across all products have an average life of 7 months or less. D1 has the lowest median average life of 15 days, while C1 has the highest, at 111 days. When assigning appropriate transfer pricing rates, the banks can be expected to apply it to the weighted average life, where the weights are the actual account balances in question.

Figure 3 Average Life, by Product



[7] The methodology used to calculate average life for A1, A2, B1 and D1 is discussed in Annex A. The average life for C1 is calculated as outlined in Bald, Joachim (2009). *Stability of Small Balance Deposits*, Technical Note, Washington D.C.: CGAP/The World Bank. Accessed from: http://www.cgap.org/gm/document-1.9.34819/TN_Stability_Small_Balance_Deposits.pdf

Cost Drivers: Transaction Frequency and Channel Usage

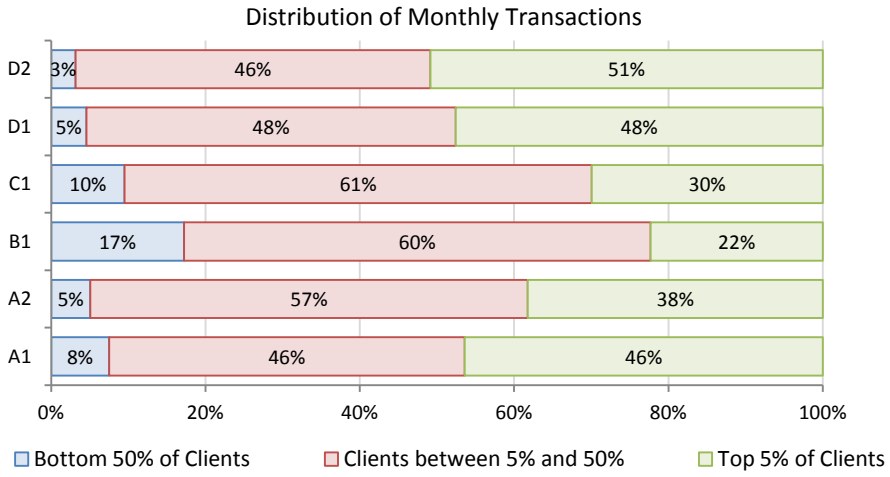
Each client-driven transaction imposes a cost to the bank. These costs vary greatly depending on the type of transaction and the channel in use. Branch-based transactions impose the greatest cost. Banks may try to ameliorate or even cover the entirety of the transaction cost through fees. However, the amount they can charge may not correspond completely with what each transaction costs, given various realities of the market, such as the purchasing power of the client and available competition.

While we cannot discuss the exact fee/tariff strategies of these products, we can note that they are cognizant of the needs of their clientele. Some do manage to more than cover the variable costs associated with servicing transactions.

Cost Driver 1: Across most banks, 5% of accounts are responsible for a significant percentage of transaction volume.

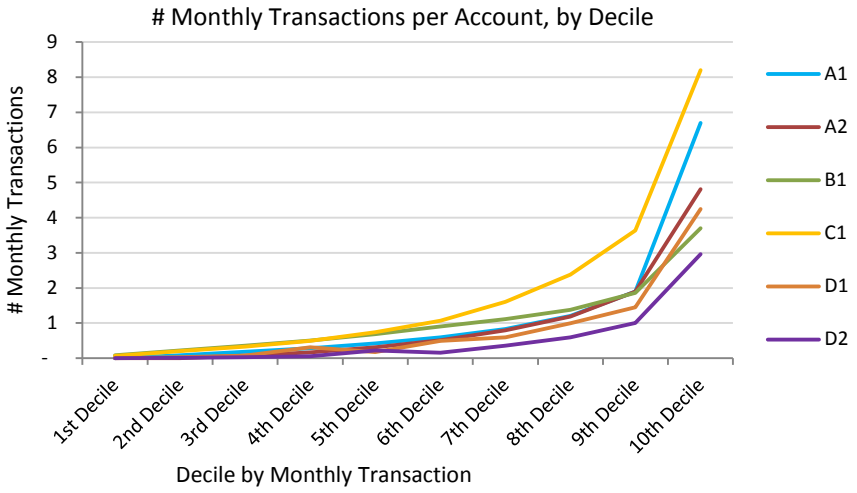
5% of client accounts are responsible for between 25-50% of the transaction traffic (Fig 3). These transactions could include deposits, withdrawals or transfers, could happen at branches, ATMs or agents, and could be in cash or electronic in nature.

Figure 3: Distribution of Number of Transactions per Account per Month, by Product



While this distribution is not as skewed as that for balances, it still means that on a per transaction basis, these "super users" are responsible for most of the product-level costs associated with supporting transactions. Furthermore, the distribution of transactions across various activity ranges is exponential in nature (Fig 4). The lowest 10% of users transact less than once a year, while the highest transact between three and nine times a month, on average.

Figure 4: Average Daily Balance, by Transaction Decile



Cost driver 2: Most clients predominantly use one channel

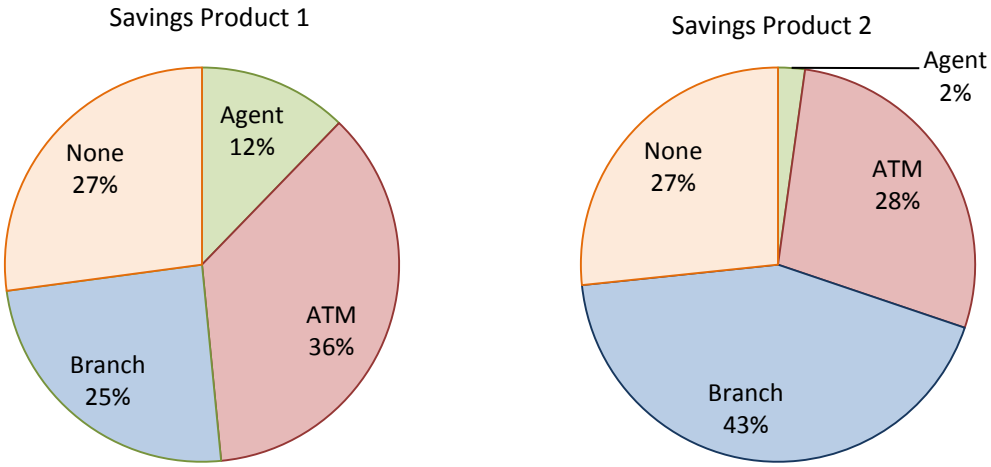
Rather than covering costs of expensive branch channels with fees alone, banks are also turning to alternative, lower cost mechanisms to serve their customers. These facilities, which include ATMs, agents, and mobile platforms, often play a core role in the bank's decongestion strategy for their over-burdened branches.

While each of the banks in InFocus were piloting various low-cost mechanisms for extending service to these communities, only one of the banks had achieved scale outreach using an alternative channel, sufficient to conduct analysis. We therefore limit the following discussion to data provided by this bank, with the understanding that more research is necessary to corroborate or contradict these findings for the other three banks as their new channels develop.

We found that most of this bank's clients exhibited a preference for a single channel, as determined by the percentage of their transactions that went through the branch, agent, or ATM. We refer to this as the *dominant channel*, defined as the channel through which the number of transactions occurring exceeds those occurring through other channels by at least 50%.[8] Fig 5 shows the breakdown of savings accounts in this bank exhibiting these different dominant channel tendencies.

[8] For example, if a user conducts 5 transactions at ATMs, 3 at branches and 2 at agents in a given month, he will be said to have an ATM-dominant channel preference since 5 exceeds the number of transactions occurring at branches or agents by more than 50% again (i.e. 4.5 and 3). However, if he had conducted 4 transactions at branches, he will be considered as not showing a particular channel preference.

Figure 5: Percent of Account Holders who Exhibit Various Dominant Channel Preferences for Savings Products 1 and 2

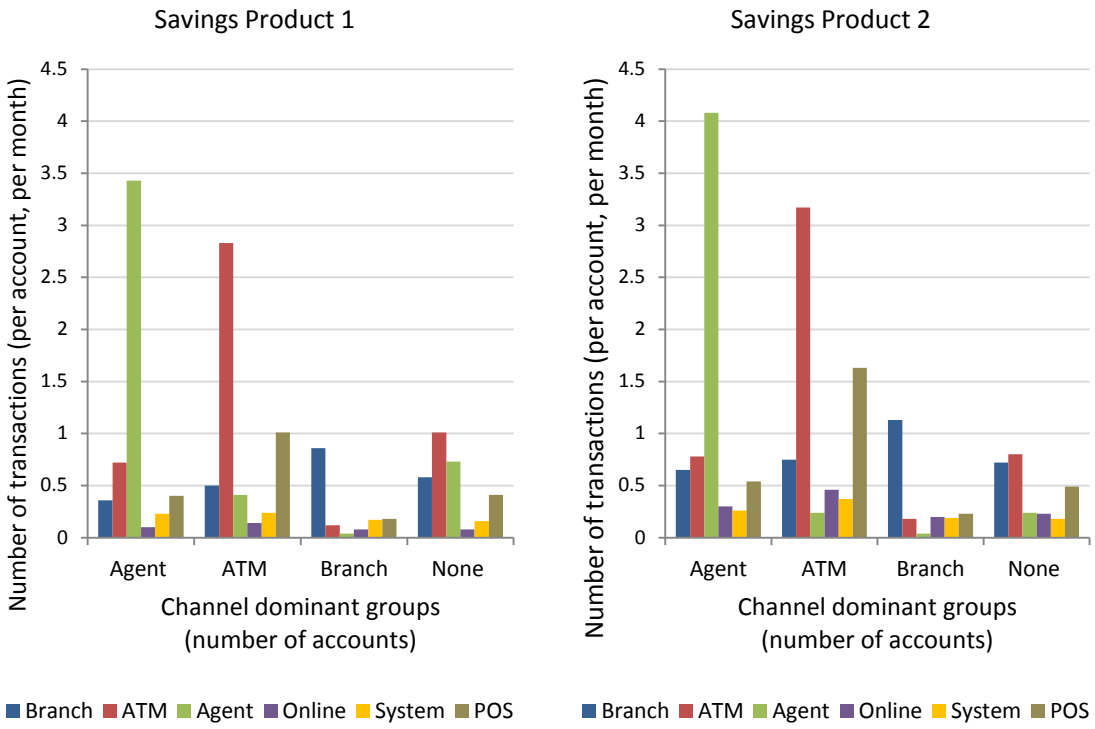


These results are somewhat surprising considering the applicable fee structures. Both products do not charge for ATM or agent-facilitated transactions, but do charge for branch-based ones. We therefore initially hypothesized that agent- and ATM-dominant groups would be larger than the branch-dominated group for both products. But it is clear from Savings Product 2 that pricing strategies alone are not enough. Qualitative interviews with bank staff attribute the continued usage of branches to safety, convenience and unavailability of certain functions through other channels, which are all characteristics that over time they can hopefully rectify.

C3. Non-branch channels are used more often

Despite the relative size of the groups, it is interesting to see that the ATM and agent-dominant groups are on average engaging the bank much more frequently each month. About three transactions occur per account per month for accounts with agent- and ATM-dominant usage. For branch-dominant accounts, less than one transaction occurs per account per month. As discussed in *In*Focus Note 1, this is often because of convenience afforded by proximity and time saved compared to branches, thus enabling more frequent usage. In so far as the banks at least partially instituted these channels to serve the poor and unbanked, these results may be taken as a positive sign of successful inclusion of the underserved by the bank.

Figure 6: Relative usage of various channels within dominant channel groups



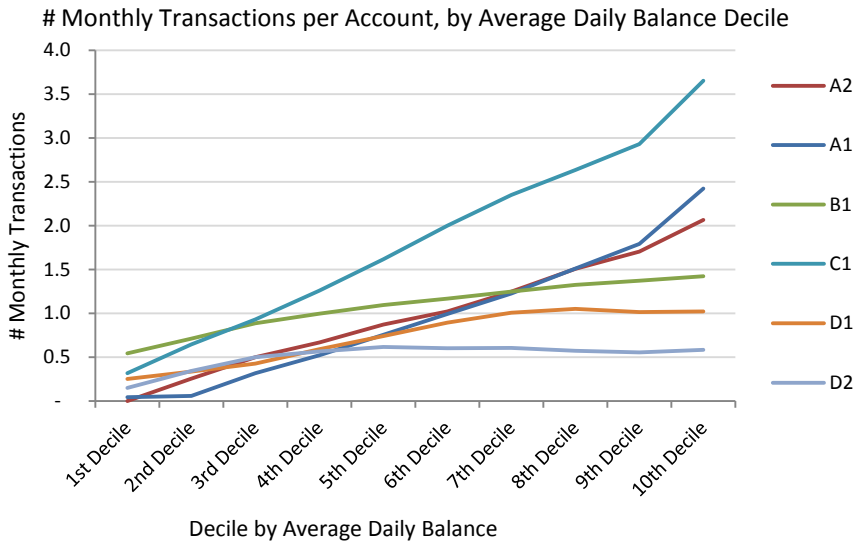
Putting Revenue Drivers together with Cost drivers

As we noted earlier, *any* combination of transaction frequency, balance longevity, and balance amount is possible. Thus, it is not so much what each revenue and cost driver does on its own, but what they do in concert, that determines the final profitability for each product and for sub-segments within each product's customer segment.

RC 1: The "super savers" are also the "super users"

Our analysis in fact shows a positive relationship between balance levels and transaction frequency – clients who keep the most money in the bank also transact most frequently. The figure below presents the number of transactions per month by decile, where the deciles are the balance deciles. We see that the number of transactions increases quite linearly with the increase in balances.

Figure 7: Number of Transactions per month, per account, by average daily balance deciles



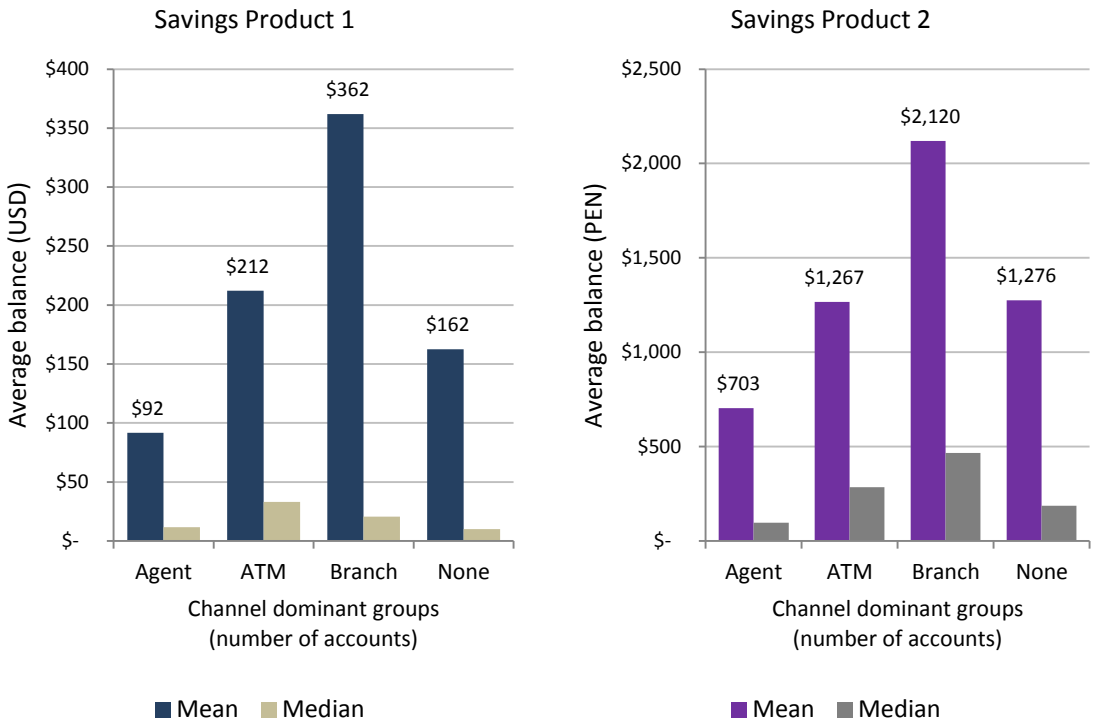
As mentioned previously, higher balances garner larger float revenue, but the concomitant increase in transaction volumes impose increased costs to support them. Do balances grow fast enough to pay for the higher number of transactions, after taking into account that some of such transactions generate variable revenues to help cover the variable costs? Or, does the higher number of transactions require more than what the additional balance amounts earn?

Delving into a fully loaded costing exercise is outside the scope of this Note. However, these results indicate that higher balance segments more than make up in income what the additional transactions are costing the bank, net of variable revenues from transactions. We can see this intuitively by noting that while account balances went up exponentially in subsequent account balance buckets (Fig 2), the number of transactions went up linearly across the same buckets (Fig 7).

RC2. "Super users" are not necessarily "super savers"

Even though the "super savers" are "super users," the converse is not necessarily the case. "Super users" are not always "super savers." In particular, even though ATM- and agent-dominant client groups transact more frequently than branch-dominant ones, the latter group actually accumulate larger account balances (Fig 8). Branch-dominant accounts have almost double the average balance of ATM-dominant ones, and ATM-dominant ones in turn have almost double the average balance of agent-dominant accounts.

Figure 8: Account balances across channel dominant groups



Reducing the number of transactions could be a mutually beneficial goal to try and increase the "stickiness" of funds that flow through accounts that mostly use agent and ATM channels.

RC3. High account balances occur with high average life.

We have seen how high balances are associated with high transaction activity. High average life values are also associated with high balances, which is expected if savings accumulation is to occur. However, high transaction volume is associated with *low* average life within our study group. The net effect of these three relationships on the six products results in average daily balance rising only when *both* transaction activity and average life are high (Annex B).

We find two distinct patterns of interaction between transaction frequency and the longevity of account balances:

1. *For C1, D1 and D2:* The highest balances occur at the confluence of the highest transaction frequency decile and the highest average life decile. This implies that these product account holders who transact a lot and manage to maintain balances in their accounts for long periods of time accumulate the highest balances. This is represented by the dark green squares in the lower-right corner of the respective 'heatmaps' within Annex B.
2. *For A1, A2 and B1:* The highest balances do not occur at the confluence of the highest deciles, but at some combination of still relatively high deciles for both transaction frequency and average life. B1's is the most removed from the 10th-10th decile combination, occurring at 6th transaction decile and the 8th average life decile. This implies that balances accumulate more slowly even when the actual

balances stay in the account for longer. Perhaps this is because of the need for funds to be made to "work" through appropriate transactions before balance accumulation can occur.

Understanding the causal drivers of the interplay between transaction frequency, balance longevity and balance amounts is critical, because therein lies the answer of how to sustainably support fund accumulation.

These results potentially leave us in a bind. Transaction frequency and balance levels have a positive relationship, but traditional banking channels cannot sustainably support the increased activity. The move to alternative mechanisms may be cheaper, and does seem to encourage usage, but not with the same concomitant increase in balances.

The *In Focus* analysis provides a one-time snapshot of usage patterns, but additional time-series analysis is required to gain a deeper understanding of behavioral trends. We have developed a new analytical model that is particularly aimed at picking up patterns in various cross sections of accounts, and considering how they differ in transactional and balance profile. We will be discussing this methodology further in the third Focus note.

Conclusions

What do our stylized findings from the analysis of transaction and balances of savings portfolios of banks of different sizes across a range of countries tell us? We build implications from each discussion above.

First, they reinforce the finding that savings is an 80:20 (or often 90:10) proposition: considerably less than 20% of the customers are responsible for 80% of the savings balances and transactions. The issues for banks wishing to grow a profitable savings business are thus twofold. On the one hand, they stand to benefit from identifying which customers belong to the "20%" and what aspects of the products they find attractive. In particular, understanding the nature of the super-saving clients who have without special inducement, used these generic accounts to accumulate balances over time may be valuable."

On the other hand, 80% were motivated enough to open an account, but not really make much use of it. Understanding the needs of this majority group would help banks determine if and how they can meet them. This not only has the obvious business case argument behind it, but will further financial inclusion through usage over time.

Second, customers differ widely in their transactional frequency and channel usage; hence understanding the drivers of channels really matters. The data does not allow us to establish causality of why a customer switches from a high cost channel such as a branch to a low cost one, such as an agent. Yet, in banks which allow and even encourage these options, customers do select the channel(s) which suit them. Transaction pricing can influence this choice.

Third, the relatively low median average life of between 15 to 120 days suggests that the retail deposit base may not always be as stable as some have hoped. However, the large variation observed again suggests the need to sub-segment savings balances. Banks will also want to take into account the average life behavior of entire segments of its portfolio. If the movements of balances are relatively uncorrelated, parts of the portfolio may be more stable, which would give higher average life numbers. On the other

hand, if balance movements are more correlated, as one could expect if a significant proportion of customers received revenue that was cyclical in nature (e.g. farmers), volatility at the level of the account would translate to volatility in the balances of the entire segment.

In summary, this Note goes beyond the simplistic treatment of savings accounts that focuses on account balances and number of savers only. It looks at the distribution of those savings balances, and combines it with transaction profiles and balance longevity measures to identify multiple customer segments. These segments have different implications for the viability of financial inclusion.

The third and final Note in this series will combine the findings presented here with demand-side analysis to make recommendations that will support a shift from the conventional "wide net" approach to financial inclusion to a more targeted approach to the business of providing savings services to the poor.

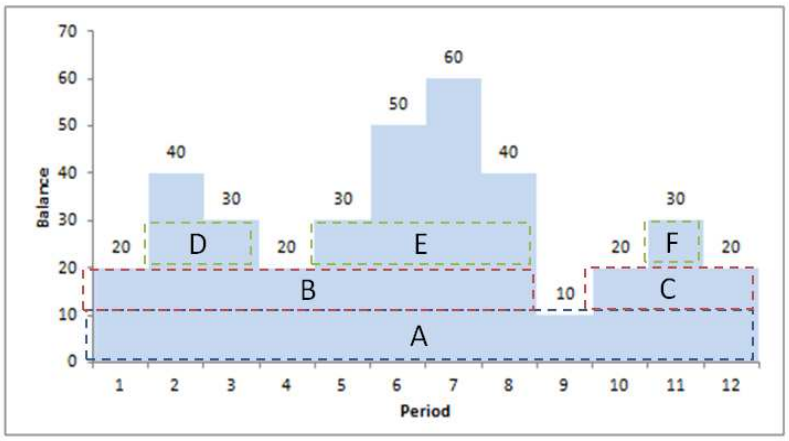
Annex A - Calculating average life – a recursive methodology

BFA used a recursion-based[9] methodology to compute average life for accounts. This methodology was used instead of existing ones available in the public domain[10] that are generally unable to discern between different levels of volatility for the accounts, which may otherwise have similar end-of-period balances in aggregate over a given set of time periods.

The methodology is illustrated using end-of-month balances for a hypothetical account presented below:

Figure 9: Account balance spread for account over a year

Period	Days	Balance
1	31	20
2	28	40
3	31	30
4	30	20
5	31	30
6	30	50
7	31	60
8	31	40
9	30	10
10	31	20
11	30	30
12	31	20



First, we determine how many days a contiguous portion of balance remains in the account. In Figure 9 above, portion A remains in the account for all 365 days. However, portion F remains for 30 days only. Next, we obtain the sum-product of these portions, where the currency amount is multiplied by the number of days. This gives us 11,240 currency-days for our example. We then obtain the sum total of finite currency movements that are associated with each portion. For example, we add 10 days for portion A, 10 days for portion F and so on. This gives us 100 days. We finally obtain the average life by dividing the sum-product by the accumulated currency movement amount. This gives us a (weighted) average life of 112.4 days.

Because the balances can fluctuate in any order and in any frequency, we designed software modules that employ recursion-based techniques to accommodate all possible variations. A BFA paper discussing the technical details of this methodology is forthcoming.

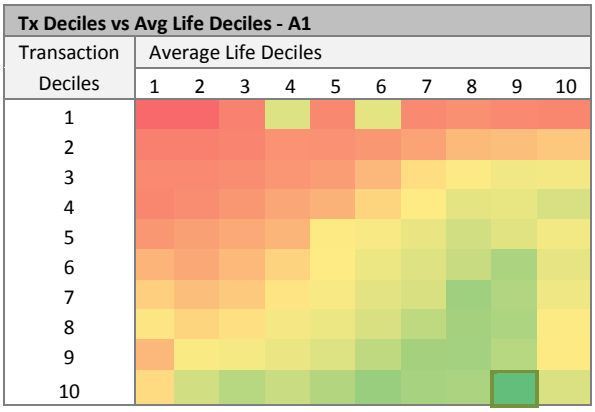
This methodology was used on banks A, B and D, but could not be used on Bank C because it requires end-of-day balances to be calculated, and this was not possible with the data available for C. .

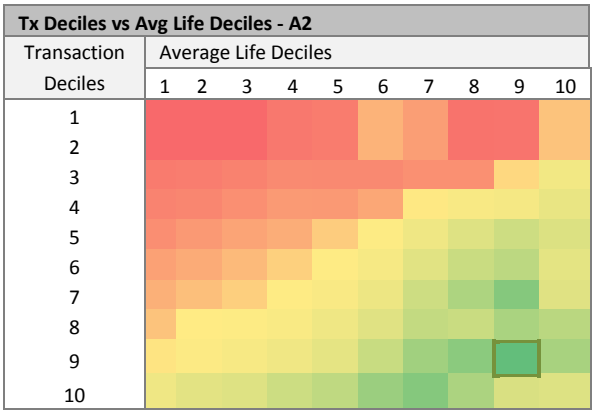
[9] A recursive process is one where smaller parts of the problem are repeatedly fed into the processing algorithm, and the final answer synthesized from the values returned by each part.

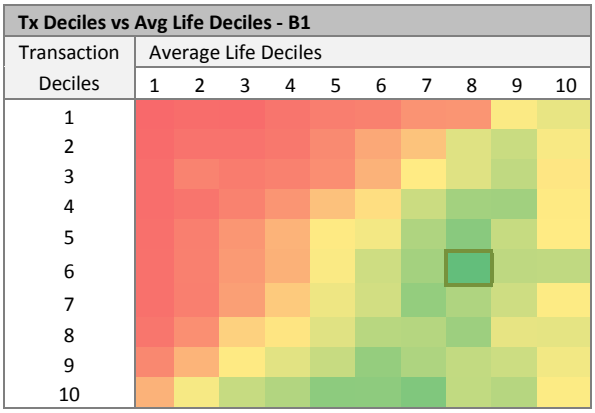
[10] An example would be Bald, Joachim (2009). *Stability of Small Balance Deposits*, Technical Note, Washington D.C.: CGAP/The World Bank. Accessed from: http://www.cgap.org/gm/document-1.9.34819/TN_Stability_Small_Balance_Deposits.pdf.

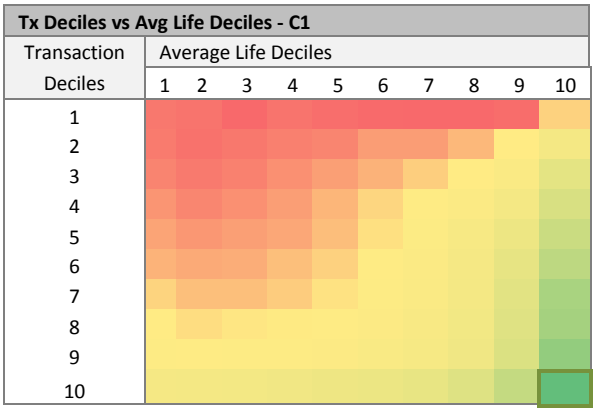
Annex B – Transaction Frequency Deciles vs. Average Life Deciles Heatmap

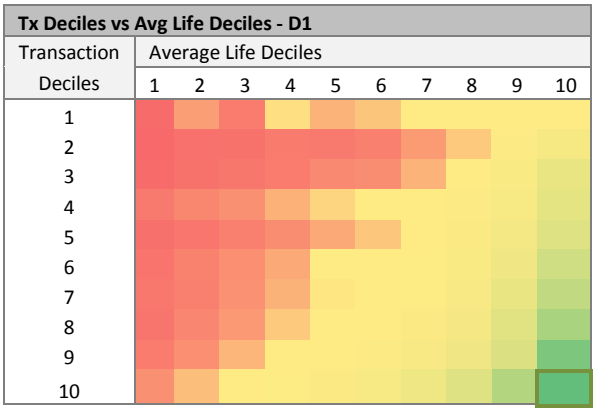
Heatmaps were created to investigate the distribution of average balances across average life deciles and transaction frequency deciles. The scales for each of the heatmaps are self-contained – dark green represents the highest balances, dark red represents the lowest, and yellow represents those in between for each product.

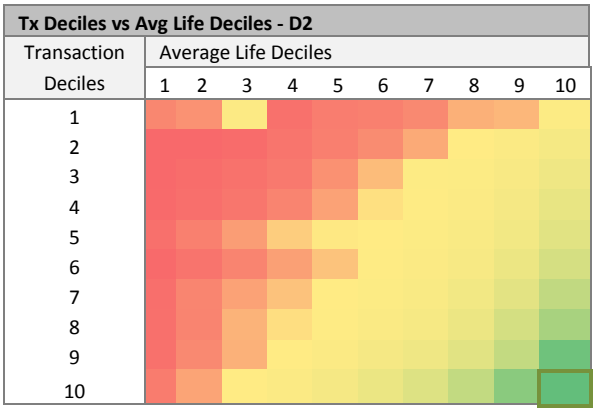












The decile combination that represents the highest balance is demarcated by a dark green square.