

PNACD-813

THE STATIC VIABILITY MODEL

A STEP BY STEP GUIDE

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I INTRODUCTION

The static viability model is a practical tool that microfinance institutions (MFIs) can use to make critical decisions about the sustainability of their credit programs. The model, which is computer based, was developed by Charles Waterfield in 1992. Since then, the author has incorporated many changes to increase the model's relevance to emerging MFIs. The CMF has worked with this model and found it a valuable training and learning tool for MFIs. The model increases the user's understanding of the critical variables that affect the viability of a credit program and the relationships among those variables.

However, the CMF has two major concerns related to application of the model. First, as the model is computerized, it is not readily accessible to programs that don't have a computer. In Uganda, many MFIs are operating in an environment where the physical and human infrastructure doesn't allow even limited computer application. Second, the presentation of the model in Chapter 11 of CARE's Savings and Credit Sourcebook¹ is not easy for beginners to understand. To users working with financial models for the first time and with limited understanding of financial concepts, the instructions accompanying the model are overwhelming, complex and difficult to follow without guidance.

To address these concerns, the CMF decided to develop a manual version of the static model. This was done by converting computer-based formulas and instructions in the model into paper-based procedures that enable the user to work through the model step by step. Computer-based users can also follow these instructions, instead of transferring the information to paper, transfer it to the relevant section of the model.

The guide starts with an overview constructed from introductory notes made by the model's developer. The next section contains a list of steps on "how to" use the static model with or without a computer.

II OVERVIEW

1 What is the static viability model?	The static viability model enables an MFI to determine the level of financial self-sufficiency of its credit program at some given point in time, preferably when the program has stabilized at a certain level of activity.
2 Why use a model to make projections for financial viability?	Models are practical tools one can use to predict future effects of decisions made today. A model helps the user to make these predictions based on past experience.
3 Who can use this model?	The static model can be used by the Board, Program Manager, Credit Manager, Accountant, Donors or any other persons working to build up the level of financial self-sufficiency of the MFI.

¹ This document was provided to MFIs that attended the CMF's Program Managers Training Course Module 1: Introduction to Microfinance Best Practices.

<p>4 What questions can the model answer?</p>	<p>The static viability model helps an MFI to find answers to questions about financial self-sufficiency. Given the MFI's cost structure, interest rates, loan volume and methodology (what services are delivered and how), what percentage of the MFI's costs can be covered by income generated from interest and fees? In the search to address this large and important question, the user must carefully think through – and perhaps change – many aspects of the program. Some of the questions that will arise are</p> <ul style="list-style-type: none"> ❑ How can my program offer services that reach a large number of poor people? ❑ What services can my program afford to offer to poor people, given the resources available? ❑ How many loans should be given out per month? ❑ What should be the loan term for each type of loan? ❑ How big should the loans be? ❑ Given our lending methodology, what tasks should the loan officers perform? ❑ How should the loan officers allocate their time? ❑ How many loan officers do we need? ❑ How many clients should each loan officer be responsible for? ❑ How big should the portfolio be for each loan officer? ❑ How much capital does the credit program have? ❑ Is this capital sufficient, given the number of loan officers and the size portfolio that each one should be managing? ❑ How much extra capital/loan funds does the credit program need? ❑ Can we afford to borrow funds from commercial institutions? ❑ What interest rate should we charge on loans? ❑ What method should we use to calculate interest on loans (declining balance or flat)? ❑ What commission should we charge on loans? ❑ What should our targeted repayment rate be? ❑ What is the effect of a high default rate on the program? ❑ What is the cost per staff member, taking into account salaries, transportation costs, and other administrative costs? ❑ Given the current methodology (e.g. the loan size, loan term, number of clients for each loan officer, etc.) and financial decisions (e.g. commission rate, interest rate, etc.) does the program generate sufficient income to cover costs? i.e. Is it financially viable?
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	<ul style="list-style-type: none"> <input type="checkbox"/> If the credit program is not generating sufficient income to cover costs, what long term-subsidy is needed? <input type="checkbox"/> Who is willing to give the credit program a subsidy and for how long? <input type="checkbox"/> What action(s) should we take to improve the level of self-sufficiency? <input type="checkbox"/> Will an increase in loan funds improve the financial self-sufficiency? <input type="checkbox"/> If we expanded by opening up more branches, would this help to increase financial self-sufficiency?
5 Are there any things that this model cannot do?	<p>The static viability model cannot</p> <ul style="list-style-type: none"> <input type="checkbox"/> Tell the user the cost structure, interest and fee structure, and methodology the user must make these decisions and then determine what impact they have on program viability <input type="checkbox"/> Answer questions about the change in the variables over time (e.g. what will be the total income generated in the first and second years of operation?) <p>To answer this type of question, you need a dynamic model that enables you to project information month by month over a period of time</p>
6 When should I use this model?	<p>The static model could be used to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Design a credit program <input type="checkbox"/> Plan for financial self-sufficiency <input type="checkbox"/> Check/analyze the current level of financial viability
7 What facilities do I need to help me work with this model?	<p>You need the following facilities in order to work with the static model</p> <ul style="list-style-type: none"> <input type="checkbox"/> A calculator <input type="checkbox"/> Paper and pencil <input type="checkbox"/> A computer if available (this saves you a lot of time performing calculations)
8 How much time do I need to work through this model?	<p>This depends on the skill and experience of the user. You need 2-3 hours to work through the static model on a computer and more if you are performing the calculations manually</p>
9 What do I need to do to get accurate results?	<p>To produce accurate and realistic results through this model, you need to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Follow instructions given in the step by step guide <input type="checkbox"/> Base your estimates on what is practical, not the ideal situation (e.g. a caseload of 500 clients per loan officer for an individual lending program may not be practical) <input type="checkbox"/> Restrain from making overly ambitious estimates (e.g. 2% bad debt reserve in a program that has had much higher levels of bad debt) <input type="checkbox"/> Go through the model using numbers based on one loan

	<p>methodology If your MFI has more than one loan methodology e.g. individual loans and solidarity groups, you need to prepare Tables A,B,C,D,E and F for each methodology and then sum the program income and loan portfolios. Cost information – Tables G and H – need only be filled out once. Table J also needs to be filled out only once using the program totals</p> <p><input type="checkbox"/> Be consistent in using units e.g. If you choose to use US Dollars for loan amounts, all other financial information must be stated in US Dollars</p>
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III STEPS FOR WORKING THROUGH THE STATIC VIABILITY MODEL PROGRAMS LENDING TO INDIVIDUALS OR SOLIDARITY GROUPS

STEP 1 Complete the following definitional sections of the model

A Methodology We are using the Static Viability model for (Tick one)

- an individual lending methodology
- a solidarity group methodology
- a village banking methodology

N B The MFI you are analyzing may have multiple lending methodologies for its credit program, but you need to have a separate analysis for each distinct methodology. Use this guide for lending to individuals or solidarity groups

If you are using a computer, indicate the chosen methodology in the box provided (line 69G)

B The projections in this model are made using (Tick one)

- Uganda Shillings
- United States Dollars

If you are using a computer, fill out the Currency Information section. Remember to use only one currency throughout the analysis

C The annual interest rate (nominal or quoted rate to clients) is _____

D We calculate interest using (Tick one)

- Declining balance
Computer users with declining balance, fill in line 10
- Flat method
Computer users with flat interest, fill in line 11

E Based on our knowledge of prevailing investment opportunities, the average interest earned on investments/bank deposits is _____

Computer users fill in line 12

F Based on our knowledge of the national economic situation, the annual inflation rate is _____

Computer users fill in line 13

Go to Table D1: LOAN OFFICER'S CASELOAD

Table D1 helps the analyst to determine if the 'caseload' for each loan officer is realistic. The 'caseload' is the total number of clients that each loan officer can serve. When calculating this number, it is extremely important to keep in mind all the tasks that the loan officer must accomplish each month, including follow-up of clients that received loans in previous months. You must also consider the transportation time spent getting from the office to the meeting place and back.

Note: The analysis in Table D on caseload is for one loan officer.

Note: We have used the term 'loan officer' rather than 'agent' (the term used in the computer model). However, the meaning of the two terms is the same and refers to the person who works directly with the clients to deliver financial services.

STEP 2 **Decide on the number of loans that each loan officer can disburse each month**

Based on your experience and knowledge of the chosen methodology, estimate the number of clients that can receive loans from one loan officer each month. If a group methodology is used, count the total number of individual members. In making this estimate, don't forget that loan officers also have to follow-up the clients who received loans in previous months.

_____ The total number of loans that each loan officer can disburse each month is _____

Transfer this information to Table D1 line 1 and Table D1 line 5

STEP 3 Decide on the average contractual loan term

Decide on the average time period that each borrower should have to pay back the loan (Typically, this ranges between 3 and 6 months. Shorter loans are easier for the MFI to control.)

If the MFI has several types of loans with different loan terms, you must calculate the average as follows:

Multiply the % of loans with each loan term by the number of months, then add the results. Example:

70% of loans have a loan term of 4 months

30% of loans have a loan term of 6 months

$$(70 \times 4) + (30 \times 6) = 28 + 18 = 46 \text{ is the average contractual loan term}$$

The average contractual loan term is _____

STEP 4 Calculate the average effective loan term

The effective loan term is the amount of time that clients actually take to repay their loans. If any clients make their repayments late, then this effectively lengthens the loan term. Obtain the effective loan term for the loan portfolio by dividing the contractual loan term by the average % of clients repaying on time each month.

Example If 90% of clients make on-time repayments, then
 $46 \div 9 = 5.1$ The effective loan term is 5.1 months

The average effective loan term is _____

STEP 5 Calculate the loan officer caseload (the total number of clients that each loan officer can serve)

Total clients = $\frac{\text{Number of loans disbursed per month}}{\text{Average effective loan term}}$

Using the information from Step 2 (Number of loans disbursed per month) and Step 4 (Average effective loan term), plus the formula above, calculate the total number of clients that each loan officer can serve.

The number of clients that one loan officer can serve is _____

- *Transfer this number to Table D1, line 4*

STEP 6 Decide on number of first loans per month

The Static Viability model shows a picture of the program portfolio at the point where available loan funds are fully used to service existing clients. However, there will always be a percentage of turnover, that is, old clients and/or groups dropping out and new clients and/or groups joining the program.

- Estimate the percentage of clients/groups that are expected to drop out of the program at any given time.

Put the percentage here _____

- Multiply the percentage by the “number of loans disbursed per month” calculated in Step 2 above. Round to the nearest whole number, or to the nearest number that corresponds to group size (if you expect entire groups to drop out). This number is the average number of ‘first loans’ serviced by the average loan officer in an average month.

Put the number of first loans here _____

- *Transfer this number to Table D1, Line 2*
- *Also transfer it to Table D1, line 7, column a (Note if you are using a computer, this transfer – as well as others in this guide – will be performed automatically by the program)*

STEP 7 Determine the number of follow-up loans

Some loans will be disbursed to first-time borrowers and the remainder will be disbursed to clients who have received loans in the past. Get the number of follow-up loans by using the information from Step 2 (Number of loans disbursed per month), Step 6 (Number of first loans per month) and the formula:

$$\text{Number of follow-up loans} = \text{Number of loans disbursed per month} - \text{Number of first loans per month}$$

Put the number of follow-up loans here _____

- *Transfer this number to Table D1, line 3*
- *Also transfer it to Table D1, line 8, column a*

STEP 8 Calculate the number of borrowers requiring supervision each month

This number can be easily calculated from information already generated

Borrowers requiring active supervision = ‘Total number of active borrowers’ (line 4) minus ‘Number of loans disbursed per month’ (line 1 or line 5)

- *Enter this information on Line 6 of Table D1 and also on Line 9, Column a*

GO TO TABLE E LOAN PROCESSING TIME

STEP 9 Work out the time each loan officer takes to prepare clients before disbursement of a loan to a new client or group

Note that loan analysis time for first loans is usually more than for follow-on loans because of the need to create awareness, develop a relationship with clients, build up the groups, etc This step requires you to work out the amount of time actually spent with new clients and/or groups Time needed by the loan officer to travel to and from the client is considered separately To analyze the use of time for first loans, you need to go through the following process

A

- Does the loan officer meet the clients in group sessions? YES/NO
If no, go to part B of this step
- If yes, how many sessions are required before the first loan is disbursed?

_____ sessions

- What is the average time spent in each group session?

Tick only one

- ½ hour (5 hour)
- 1 hour
- 1 ½ hours (1 5 hours)
- 2 hours
- 3 hours

- *Multiply the number of sessions by the average time spent in each group session and put the answer in Table E, line 1, column a Note that this is the time spent for one group only – a new group that has just joined the program Also note that all time must be expressed as a decimal eg 15 minutes is 25 hours, 30 minutes is 50 hours, 45 minutes is 75 hour and so on This rule applies to all subsequent calculations of time*

- *Fill out Line 2, column a of the table, i.e. number of borrowers in an average group*
- *Divide Line 1 by Line 2 to get the number of hours that the loan officer spends with an average group on a per borrower basis. Enter this number on Line 3, column a*

B

- Does the client visit the office to discuss his or her financing requirements? YES/NO
If no, skip to part C of this step

- If YES, what percentage of clients visit the office? _____

what is the average time per client for this visit or visits? _____

- *Multiply the % who visit by the average time per visit to get the average visit time. Put your answer on Line 4 of Table E*

C

- Are visits to clients' businesses a part of the methodology? YES/NO
If NO, skip to part D of this step

If YES, what percentage are visited? _____

what is the average length of time for this visit or visits? _____

- *Multiply the % that are visited by the visit time to get the average. Put your answer on Line 5 of Table E*

D

- How much time is spent for each borrower
In completing loan-specific paperwork? _____

Note: If paperwork consists of group forms, the time spent to complete these forms must be divided by the number of borrowers in a group to get the time spent per borrower

- *Put your answer on Line 6 of Table E*

E

- Does the methodology include security arrangements (collateral, co-signers, etc.) that require the loan officer's time? YES/NO

If NO, skip to part F of this step

If YES, what is the average time per client for verifying collateral? _____

- *Put your answer on Line 7 of Table E*

F

- ❑ *Add your answers in Lines 3 through 7 and put this on Line 9 of Table E*
- ❑ *Then transfer this information to Line 7, column b) of Table D1*
- ❑ *Multiply column b) by column a) to get the total hours per month that each agent spends with new clients or groups preparing them for their first loans. Enter this total on Line 7, column c*

STEP 10 Loan Analysis Time for Follow-on loans

This section refers to the time required to process follow-on loans. This time is usually shorter than for first loans as the number of visits pre-loan is often significantly less, as is the time for ancillary tasks such as collateral verification.

Ask the same questions that were posed for first visits in Step 9. Fill out column b) of Table E.

- ❑ *Transfer your answer in Line 9, column b) of Table E to Line 8, column b) of Table D1*
- ❑ *Multiply Line 8, column b) of Table D1 by column a) to get the total hours per month that each agent spends with clients or groups that have been in the program for some time preparing them for second, third, fourth or subsequent follow-on loans. Enter this total time on Line 8, column c*

GO TO TABLE F CALCULATION OF AVERAGE MONTHLY VISIT TIME

STEP 11 Analysis of Average Monthly Visit Time (or ‘Supervision’ Time)

Overview of Table F. This table enables the analyst to consider time spent on supervision, training and/or technical assistance after the loans (either first loan or follow-on loan) have been disbursed. Calculations in this section are based on time spent in one month.

A Percentage of time spent with ‘newer’ vs ‘older’ borrowers

Note first that Table F allows you to separately analyze ‘newer’ borrowers and ‘older’ borrowers. ‘Newer’ borrowers are considered separately from ‘older’ borrowers because they may require more time with the loan officer.

- ❑ *Decide first whether ‘newer’ clients require more monthly visit time than do ‘older’ clients. Then decide what percentage of clients fit into each category.*

- *Transfer this information to the row on Table F that is directly above line 1 The percentage of 'newer' and 'older' clients should add up to 100% These percentages are used in the rest of the table for both post-loan group visits and individual visits*
- Now calculate the number of 'newer' clients and 'older' clients that each loan officer must supervise Get the total number of clients to be supervised from Line 6 or Line 9 of Table D1 Multiply this number by the percentages for 'newer' and 'older' clients
- *Transfer this information to the row on Table F that is directly above Line 1 You now have both the percentage and number of 'newer' vs 'older' clients*

B Time spent with clients in group meetings

Lines 1 through 3 of Table F calculate the amount of time that the loan officer spends supervising clients through regular group meetings This information is calculated for one month If the methodology does not include group sessions, go to Part C

- Estimate the average time spent by the loan officer in group meetings (for one group) each month for both 'newer' and 'older' clients
- *Transfer this information to Table F, line 1 Remember to enter fractions of hours as decimals*
- *Insert the number of clients per group on Table F, line 2 This number must be the same as the number entered on Table E, line 2*
- Divide line 1 by line 2 to get the 'per borrower' time spent in group meetings *Put your answer on line 3*

Do this for both 'newer' and 'older' clients

C Time spent with clients individually

Individual visit times can be tailored not only for 'newer' vs 'older' clients, but also for 'brief' vs 'full' visits

- Decide, in the context of the methodology, what constitutes a brief or a full visit The average time for each type of visit is then entered into the column marked 'hours' for lines 5 and 6 of Table F *Enter this information as a decimal, if for example a 'brief' visit is 15 minutes, enter this as .25 (25% of an hour)*

- Calculate the percentage of clients who receive full, brief or no visits each month
Enter this in the % column for lines 4, 5 and 6 The three percentages should add up to 100%

- Calculate the average visit time for individual assistance using the following formula

(% brief visits multiplied by the average time spent giving brief individual visits) +
(% full visits multiplied by the hours spent in an average full visit)

Do this for both 'newer' and 'older' clients

- *Transfer these results (which should be a percentage) to Line 7 of Table F, 'hours' column*

- Calculate a weighted average post-loan visit time per client by using the formula

(average visit time for newer borrowers in group meetings shown on Line 3 + average visit time in individual meetings shown on Line 7) multiplied by the % of newer borrowers shown above Line 1

plus

(average visit time for older borrowers in group meetings shown on Line 3 + average visit time in individual meetings shown on Line 7) multiplied by the % of older borrowers shown above Line 1

The result, shown as a decimal, will be the average visit time for supervision

- *Transfer this information to Table D, Line 9, column b*

RETURN TO TABLE D1

STEP 12 Calculate the total time the loan officer needs to work with clients

- Multiply the number of borrowers requiring supervision (Line 9, column a of Table D1) by the average visit time (Line 9, column b) This gives the total hours per month that a loan officer will need for supervision. *Enter this result on Line 9, column c*
- Now add column Lines 7, 8 and 9, column c This is the total time that the loan officer will need for visiting clients *Enter the result on line 10, column c*
- Next calculate the total hours per month that a loan officer is expected to work Multiply weekly hours by 4.3 to get average monthly hours *Enter the result on Table D Line 11 column c*

- Divide Line 10 by Line 11 This gives the percentage of his or her total work time that the loan officer needs to work with clients *Enter this % on Line 12, column c* This time in most cases will not be more than 60% of the total time that the loan officer has available
- If the time spent with participants is more than 60% of total time, your expectations of the loan officer's caseload are probably unrealistic You need to review Tables D, E and F to see how time with clients can be reduced Alternatively, you can reduce the number of clients that each loan officer is expected to serve In this case, go back to Lines 1 through 6 of Table D1 to review the caseload This reality check is important Do not proceed to the next step until the loan officer's caseload is realistic

STEP 13 Estimate time required for transportation, paperwork, meetings, staff training, and unproductive uses

A Estimate transportation time

- Review the location of clients and the type of transport the loan officer uses With this information, estimate the average transportation time for an average loan officer

The loan officer spends on average _____ hours per day on transportation

- Multiply by 5 days / week and then by 4.3 weeks/month to get _____ hours per month
- *Divide this by the total hours shown on Line 11, column c to get the % that this represents and enter this % on Line 13, column c*

B Estimate time required for paperwork and administration, staff meetings and staff training, and unproductive time

This category refers to all time at the office, or unproductive, that has not been considered elsewhere

NOTE Be sure not to double count with 'paperwork' time that has already been estimated for loan processing (see first loan and follow-on loan analysis)

- Calculate the amount of time required for each category of work
- Divide this by the total hours shown on Line 11, column c
- *Transfer the information on percentage of time for each category to Lines 14 through 16 of Table D1*

- *Add the percentages shown on Lines 12 through 16 and put the total on Line 17. This should not be greater than 100%*

Review this information for realism. If it is not realistic, you will need to adjust the loan officer's caseload so that he or she has adequate time in the office to do the required tasks. Alternatively, adopt a methodology that requires less time from the loan officer for paperwork and meetings. Again, do not proceed until the caseload is realistic.

GO TO TABLE A1 INCOME PROJECTIONS

STEP 14 Calculate the weighted average loan size and term

Table A, Income Projections, begins the process of defining the financial structure - income and expenses - that matches your program's choice of services. Once the financial variables are defined, you will need to determine if the resulting level of self-sufficiency is acceptable. If not, you will need to make adjustments in services, fee structure, and expenses to arrive at an acceptable level. To make income projections, you need to go through the following process:

- You calculated the 'number of loans per month per loan officer' in Step 2. *Transfer this information from Line 1 of Table D1 to Line 1 of Table A.*
- You calculated the effective loan term in Step 4. *Transfer this information to Table A, Line 2.*
- *Multiply Line 1 by Line 2 to get Line 3 of Table A, 'Active borrowers per agent'. This should be the same as Line 4 of Table D1.*

GO TO TABLE B WEIGHTED AVERAGE LOAN SIZE AND TERM

In Table B, you must decide on the progression of loan sizes that the program will use. You must answer questions such as: What is the average loan size for first-time borrowers? How do loan sizes increase over time? ✓

The average loan sizes must be the long-term average, after the program matures and has a large percentage of clients receiving their second, third and subsequent loans.

- *Enter the average size of the first loan on Table B line 1. Also enter the percentage of loans that will be first loans.* ✓

Note: Because the model is predicting the status after the program has matured, the percentage of first loans will decrease over time, eventually equaling the expected long-term graduation / rejection / desertion rate of clients from the program.

- *Then calculate the percentages and sizes of subsequent loans and enter these on lines 2 through 6*

Note For logical consistency the percentage of second loans must be equal to or smaller than the number of first loans (since it is from first loans that second loans come), likewise for third, fourth and fifth loans. The last category – sixth and future – can, and in most cases should, be a larger percentage than previous categories because it represents more than one loan cycle.

- Calculate the weighted average loan size using the formula

Percentage of first loans multiplied by the average size of first loans
 plus
 Percentage of second loans multiplied by the average size of second loans
 plus
 Percentage of third loans multiplied by the average size of third loans
 plus
 Percentage of fourth loans multiplied by the average size of fourth loans
 plus
 Percentage of fifth loans multiplied by the average size of fifth loans
 plus
 Percentage of sixth loans multiplied by the average size of sixth loans

- *Enter the weighted average loan size on Line 7 of Table B*

STEP 15 Determine the average outstanding loan balance

There are two common scenarios for loan repayment that have an impact on the percentage of the loans disbursed that are outstanding at any given time.

Scenario A

- Clients are expected to make regular, even payments throughout the life of the loan and
- The loan is without any grace periods and
- Loan disbursement is constant from month to month

In this case, the value of loans outstanding at any point in time will be equal to half of the amount disbursed. Therefore, the percentage of the average loan outstanding will be 50%.

- *If these conditions hold for your program, then put 50% on Line 8 of Table B*

Scenario B

- Loans are repaid in one installment at the end of the loan period

- Loan disbursement is constant from month to month

In this case, the value of loans outstanding at any point in time will be equal to 100% of the amount disbursed

- *If these conditions hold for your program, then put 100% on Line 8 of Table B*

If neither of these scenarios apply to your MFI, then you will need to consult pages 240 – 242 of Chapter 11 of the CARE Savings and Credit Sourcebook or contact the CMF for help with the calculation

- *Next, calculate average outstanding loan balance by multiplying the percentage on Line 8 by the weighted average loan size calculated on Line 7 Put your answer on Table B, line 9*

GO TO TABLE A1 INCOME PROJECTIONS

STEP 16 Determine the total value of the loan portfolio

- *Transfer your result from Table B, line 9 to Table A1, line 4*
- *Multiply Line 3 by Line 4 to get the average size of the loan portfolio that one loan officer is expected to manage Enter this amount on Line 5 of Table A1*
- *Decide on the number of loan officers that the program will employ The number of loan officers that you can afford to place in the field depends on the total value of loan funds that are available Enter this number on Table A1, Line 6 You may need to adjust this number after reviewing the results on Line 7*
- *Calculate the total value of the loan portfolio by multiplying the portfolio per loan officer (line 5) by the number of loan officers (line 6) Enter the value of the portfolio on Table A1, line 7*

IMPORTANT POINT The model assumes that the total portfolio is working at all times, that is, that all the money in the portfolio is in the hands of clients at any given time and earning interest and fees. If this is not the case, then interest and fee income will be overstated. You need to work out how much, on average, is with clients at any given time and make sure that this amount agrees with the total loan portfolio amount (Line 7 of Table A1). The model does allow the MFI to have some cash 'float', that is, cash that is not lent out at any given time, but this amount is *added* to the total portfolio amount that is shown on Line 7 (see Table G, line 10, 'percentage utilization')

NOTE Table A1 cannot be completed at this point. Lines 8 and 9 will be determined after Table C, Yield, has been completed. Lines 10 and 11 will be completed after Table G, Program Cost Projections, has been prepared.

STEP 17 Work out the yield on the portfolio

The yield is the income from both the interest and the commission charged on loans. To arrive at interest and commission income, you need to complete Table C.

GO TO TABLE C

Fill out lines 1 – 4 of Table C using information from Table A.

- *Transfer information on 'number of loans per month per loan officer' from Table A1, line 1 to Table C, line 1.*
- *Transfer information on 'number of loan officers' from Table A1, line 6 to Table C, line 2.*
- *Multiply line 1 by line 2 and then by 12 (months per year) to get 'number of loans per year'. Enter this result on line 4.*

A Commission Income

Go to the section in Table C on Commission Income (Lines 11 – 15).

Commission income is based on the total amount that is loaned annually. To get this total:

- *Transfer the information on the 'number of loans per year' (line 4 in Table C) to line 11.*
- *Transfer the information on 'average loan size' from Table B, line 7 to Table C, line 12.*
- *Multiply line 11 by line 12 to get the 'total loaned annually'. Put your answer on line 13 of Table C.*
- *Put the percentage commission that will be charged on line 14.*
- *Multiply the total amount that is loaned annually (line 13) by the commission percentage (line 14) to arrive at commission income. Put the figure for commission income on line 15.*

B Interest Income

At the beginning of your work on this model, you decided on the annual interest rate and the way it would be charged – either declining balance or flat. This was recorded in Step 1, Question D.

If you recorded declining balance method, fill out lines 16-18 on Table C To get annual interest income

- ❑ *multiply total portfolio (from Table A1 line 7) by the annual interest rate (Step 1, Question C) Record your answer on Line 18*

If you recorded flat rate method, fill out lines 19 –25 of Table C To get annual interest

- ❑ *Line 19, Active borrowers per loan officer refer to Table A1 line 3*
- ❑ *Line 20, Number of loan officers refer to Table A1 line 6*
- ❑ *Line 21, Active borrowers in program = Active borrowers per loan officer (line 19) x Number of loan officers (line 20)*
- ❑ *Line 22, Average initial loan amount refer to Table B line 7 (NOT line 8)*
- ❑ *Line 23, Amount on which interest is charged = Active borrowers in program x average initial loan amount*
- ❑ *Line 24, Annual interest rate refer to Step 1 Question C*
- ❑ *Line 25, Annual interest income = Line 23 x Line 24*

C Annual Yield

- ❑ *Fill out lines 29 and 30 of Table C using information that you worked out for commission income (Line 15) and interest income (Line 18 or Line 25)*
- ❑ *Line 32 = Line 29 + Line 30*
- ❑ *Line 33, Total portfolio Get from Table A1, line 7*
- ❑ *Line 34, Annual yield on portfolio is calculated by dividing the total annual earned income (Line 32) by the total loan portfolio (Line 33)*

GO TO TABLE A1

- ❑ *Transfer the figure for annual yield (Line 34) to Table A, line 8 This number should be expressed as a decimal or as a percentage*
- ❑ *Multiply line 7, ‘total program portfolio’ by line 8, ‘annual yield’ to get ‘total annual earned income’ Enter this result on line 9*

NOTE Table A will not be complete until line 10, *interest earned on investments*, is calculated This requires information from Table G, Program Expenses

STEP 18 Work out total program expenses in Table G Program Cost Projections and Table H Administrative Costs

In making cost estimates for your size of program, you need to include personnel costs administrative costs, financial costs (i.e. cost of funds), bad debt reserve, devaluation of the portfolio through inflation and imputed subsidy of capital

A Personnel Costs

GO TO TABLE G

Prepare Table G, Lines 1-5, using actual numbers in your program or your estimate of staffing needs. Note that the number of loan officers in Line 1 comes from Line 6 of Table A. In determining staffing levels, you should take into consideration the fact that many 'Best Practice' MFIs have a field staff percentage that is between 40% and 60% of total staff.

- Fill in the numbers of each type of staff on Lines 1 through 5 column (a)*
- Insert the average cost per person in column (b)*
- Multiply (a) by (b) to get the total costs for each type of staff. Enter this result on column (c)*
- Line 6 Add up columns a, b and c of Lines 1 - 5*

B Administrative Costs

GO TO TABLE H

Next complete Table H Administrative Costs per Annum (lines 1 – 9), using actual numbers in your program or your estimates of the fixed assets (motorbikes, computers, etc.) that will be required to run the program.

- Line 1 On a separate sheet, list the assets of your MFI. Then fill out Line 1*
- Line 2 Decide on the appropriate depreciation period*
- Line 3 Line 1 divided by Line 2 = the depreciation expense for the current year*
- Lines 4 – 8 List other categories of administrative expense (e.g. rent, utilities, office supplies, etc.) and estimate the amount required for these expenses for one year*
- Line 10, Total Administrative Costs Add up lines 3 – 8*
- Line 11, Number of Actual Employees Get this figure from Table G, line 6, column a*
- Line 12, Administrative Cost per Person Divide total administrative costs (line 10) by number of actual employees (line 11)*

GO BACK TO TABLE G

- Transfer the administrative cost per person from Line 12 of Table H to Line 7 of Table G*
- Multiply Line 6 by Line 7 to get Total Administrative Cost*

C Cost of Funds

Annual Cost of Funds is calculated on lines 9-15 of Table G

- *Line 9 Transfer the value of the active loan portfolio from Table A1, line 7*
- *Line 10, Percentage Utilization* An MFI will need to have access to more funds than the amount that is actively lent. This will enable it to maintain some cashflow liquidity. In institutions that hold savings, higher levels of liquidity are required in order to meet client requests for withdrawals, and in regulated institutions, liquidity may be necessary to meet statutory reserve requirements. *Determine the percentage utilization, (depending on your cashflow requirements) and then enter this information on line 10 of Table G*
- *Line 11, Total Funds Required = 'Active loan portfolio' divided by 'Percentage utilization'* IMPORTANT POINT Note that the total funds required are larger than the active portfolio. This is because the model assumes that the total active portfolio is working (that is, earning interest) at all times. If this is not the case (that is, there are idle funds in addition to the funds that are budgeted in this section) then income will be overstated. Please refer to the 'important point' mentioned in Step 16
- *Line 12, Program Equity* Enter on this line the amount of money that your MFI owns that can be invested in the loan portfolio
- *Line 13, Required Borrowed Funds* Subtract line 12 from line 11
- *Line 14, Weighted Interest Rate of Borrowed Funds* Enter the annual interest rate for funds acquired from commercial sources or donor loans
- *Line 15, Annual Cost of Funds* Multiply Line 13 by Line 14

D Annual Bad Debt Reserve

Annual Bad Debt Reserve is the projected level of uncollectible loans

- *Line 16, Active loan portfolio* Transfer the amount from Line 9, Table G
- *Line 17, Projected Reserve Percentage* Estimate a percentage based on the experience of the program. IMPORTANT NOTE The percentage entered by the analyst is calculated on the value of the portfolio, NOT the total value of disbursements. If, for example, the program projects a bad debt of 5% of portfolio, this will translate into a bad debt per loan of 1.25% if the average loan term is three months. This is because the loan money will turn over 4 times a year, each time being exposed to default risk. It is very important to understand this distinction so that bad debt is not underestimated
- *Line 18, Annual Bad Debt Reserve* Multiply line 16 by line 17 (See the CMF Accounting Manual for a description of how this reserve should be set up on the MFI's books)

E Annual Devaluation of Equity

Annual Devaluation of Equity calculates the amount that the loan fund is being eroded over time by inflation

- *Line 19, Program Capital* This is the same as the 'program equity' entered on Table G, Line 12
- *Line 20, Annual inflation rate* Enter the current rate in Uganda This was estimated in Step 1, part F
- *Line 21, Annual Devaluation of Equity* Multiply line 19 by line 20

F Capital Subsidies

The Imputed Subsidy of Capital calculates the extra cost of capital that would be incurred if the program had to pay 'market' or 'commercial' rates for its capital

- *Line 22, Required borrowed funds* Transfer from Table G, line 13
- *Line 23, Degree of interest rate subsidy* Subtract the rate entered on line 14 from the 91-day Treasury Bill rate If the result is positive, there is a capital subsidy, *enter the rate on line 23* If the result is negative, then there is no capital subsidy and this section should be skipped
- *Line 24, Imputed Subsidy of Capital* Multiply line 22 by line 23

STEP 19 Complete the income projections

- Calculate the difference between the total funds required (Table G, line 11) and total loan portfolio (Table G, line 9) The difference represents excess funds that can be invested by the program
- The average interest rate that the program would receive on these funds was defined in Step 1, E
- Multiply this interest rate by the excess funds to get the interest earned on investments

GO TO TABLE A

- *Put this value into Table A, Line 10*
- *Add line 9 and line 10 to get the Total Annual Income Enter this amount on Line 11*

Table A is now complete, with all income earned by the program accounted for

STEP 20 Compute Level of Financial Self-Sufficiency

GO TO TABLE J

Line 1, Personnel Cost Transfer the total from Table G, line 6, column c

Line 2 Administrative Cost Transfer the total from Table G, line 8

Line 3, Loan Loss Reserve Transfer from Table G, line 18

Line 4 Operating Costs Add lines 1, 2 and 3

Line 5, Cost of Funds Transfer from Table G, line 15

Line 6, Devaluation of Equity Transfer from Table G, line 21
Line 7, Total Costs Add lines 4, 5 and 6
Line 8, Total Income Transfer from Table A1, line 11
Line 9, Imputed Subsidy of Capital Transfer from Table G, line 24

Use the following formulas to compute your program's self-sufficiency level

A Operational self-sufficiency

$$\frac{\text{Total Annual Income (Table J, line 8)}}{\text{Operating Costs (Table J, line 4)}}$$

B Financial Self-sufficiency

$$\frac{\text{Total Annual Income (Table J, line 8)}}{\text{Operating Costs + Financial costs + Devaluation of Equity (Table J, line 7)}}$$

C Full Financial Self-sufficiency

$$\frac{\text{Total Annual Income (Table J, line 8)}}{\text{Total Costs + Imputed Subsidy of Capital (Table J, line 7 + line 9)}}$$

STEP 21 Planning for greater self-sufficiency

- Review Table J to see the level of self-sufficiency that has been achieved by your program at its 'steady state' If the level of full financial self-sufficiency is not 100%, review your interest rate and fee structures, your program costs and your lending methodology to see if the position could be improved with some changes in policies, procedures and cost structures

SECTION I: INCOME AND PORTFOLIO PROJECTIONS

TABLE A1: INCOME PROJECTIONS FOR PROGRAMS LENDING TO INDIVIDUALS

1	Number of loans disbursed per month per loan officer	
2	Effective loan term (in months)	x
3	Active borrowers per loan officer	=
4	Average outstanding loan balance	x
5	Average portfolio per loan officer	=
6	Number of loan officers	x
7	Total program portfolio	=
8	Annual yield	x
9	Total Annual Earned Income	=
10	Interest earned on Investments	+
11	Total Annual Income	=

TABLE B: WEIGHTED AVERAGE LOAN SIZE AND TERM

	Loan Progression	%	Average Size
1	First loans		
2	Second loans		
3	Third loans		
4	Fourth loans		
5	Fifth loans		
6	Sixth and future loans		
7	Weighted Avg	x x x x x	
8	% of initial loan outstanding (50% - 100%)		
9	Average Outstanding Loan Balance		

TABLE C: ANNUAL YIELD ON PORTFOLIO

PROGRAMS LENDING TO INDIVIDUALS OR SOLIDARITY GROUPS Lines 1 - 4			
1	Number of loans per month per loan officers		
2	Number of loan officers	x	
3	Months per year	x	12
4	Number of loans per year	=	
VILLAGE BANKING PROGRAMS Lines 5 - 10			
5	Months per year		12
6	Effective loan term	/	
7	Loans per borrower per year	=	
8	Number of borrowers per loan officer	x	
9	Number of loan officers	x	
10	Number of loans per year	=	

TABLE C: ANNUAL YIELD ON PORTFOLIO (CONT.)

COMMISSION INCOME All Programs		
11	Number of loans per year	
12	Average loan size	x
13	Total loaned annually	=
14	Commission rate	x
15	Total annual commission income	=
DECLINING BALANCE INTEREST		
16	Total portfolio	
17	Annual interest rate (declining balance)	x
18	Annual interest income	=

TABLE C: ANNUAL YIELD ON PORTFOLIO (CONT.)

FLAT INTEREST		
19	Active borrowers per loan officer	
20	Number of loan officers	x
21	Active borrowers in program	=
22	Average initial loan amount	x
23	Amount on which interest is charged	=
24	Annual interest rate (flat method)	x
25	Annual interest income	=
YIELD CALCULATION		
26	Annual commission income	
27	Annual interest income	+
32	Total annual earned income	=
33	Total portfolio	/
34	Annual yield on portfolio	=

Note Some lines have been deleted from the computer model, but line numbers have not been changed

SECTION II: LOAN OFFICER CASELOAD ANALYSIS TABLE D1: INDIVIDUAL LOANS OR SOLIDARITY GROUPS

Information in Table D is for one loan officer				
1	Number of loans disbursed per month			Ref (Tab A,L1)
2	Number of first loans per month	-		Ref (Tab B,L1)
3	Number of follow-up loans per month	=		
4	Total number of active borrowers			Ref (Tab A,L3)
5	Number of loans disbursed per month	-		
6	Borrowers requiring monthly supervision	=		
Analysis of use of time		(a)	(b)	(c)
		Clients/month	x	Hours/client = Hours/month
7	First loan analysis (Line 2)			
8	Follow-on loan analysis (Line 3)			
9	Loan supervision, training (Line 6)			
10	TOTALS			
11	Hours worked/month			
12	Time spent with PARTICIPANTS			
13	Time spent in TRANSPORTATION			
14	Time spent in PAPERWORK and ADMINISTRATION			
15	Time spent in STAFF MEETINGS and STAFF TRAINING			
16	Time lost to vacation, holidays, strikes, sickness, weather, etc			
17	Total distribution of time (should be less than 100% of time shown on Line 11)			

TABLE E: LOAN PROCESSING TIME - FOR LENDING TO INDIVIDUALS OR SOLIDARITY GROUPS

NOTE These times are PER LOAN expressed in HOURS		(a) FIRST LOANS	(b) FOLLOW-ON LOANS
1	Hours spent by loan officer in group sessions		
2	Number of borrowers in group	/	
3	Loan Officer-hours in group per borrower	=	
4	Loan Officer -hours with client in office	+	
5	Loan Officer-hours at client's business	+	
6	Loan Officer-hours preparing paperwork	+	
7	Verification of cosigners, collateral, etc	+	
8	Other	+	
9	Loan officer hours per borrower	=	

TABLE F: CALCULATION OF AVERAGE MONTHLY VISIT TIME FOR LENDING TO INDIVIDUALS OR SOLIDARITY GROUPS

	Time spent in Group Sessions	NEWER BORROWERS	
		%	#
1	Loan Officer hours per month attending meetings for one group	/	
2	Number of borrowers per group		
3	Loan officer -hours in group meetings per borrower per month		=
	Time spent with individuals	%	Hours
4	Borrowers not receiving individual visits this month		
5	Borrowers receiving brief individual visits		
6	Borrowers receiving full individual visits		
7	Total hours (individual assistance)	100%	
	Weighted average visit time	x x x x x	

TABLE F· CALCULATION OF AVERAGE MONTHLY VISIT TIME FOR LENDING TO INDIVIDUALS OR SOLIDARITY GROUPS

	Time spent in Group Sessions	OLDER BORROWERS	
		%	#
1	Loan officer hours per month attending meetings for one group		
2	Number of borrowers per group		
3	Agent-hours in group meetings per participant per month		
	Time spent with individuals	%	Hours
4	Borrowers not receiving individual visits this month		
5	Borrowers receiving brief individual visits		
6	Borrowers receiving full individual visits		
7	Total hours (individual assistance)	100%	
	Weighted Average	x x x x x	

SECTION III: COSTS

TABLE G. PROGRAM COST PROJECTIONS

		(a) # Personnel	(b) Annual Cost Per Person	(c) Total Cost
1	Loan officers			
2				
3	Support staff			
4	Mid-level management			
5	Upper management			
6	TOTAL PERSONNEL			
7	Administrative cost per person	x		
8	TOTAL ADMINISTRATIVE COST	=		
9	Active loan portfolio			
10	Percentage utilization	/		
11	Total funds required	=		
12	Program equity	-		
13	Required borrowed funds	=		
14	Weighted interest rate of borrowed funds	x		
15	ANNUAL COST OF FUNDS	=		
16	Active loan portfolio			
17	Projected reserve percentage	x		
18	ANNUAL BAD DEBT RESERVE	=		
19	Program capital			
20	Annual inflation rate	x		
21	ANNUAL DEVALUATION OF EQUITY	=		
22	Required borrowed funds			
23	Degree of interest rate subsidy	x		
24	IMPUTED SUBSIDY OF CAPITAL			

TABLE H: ADMINISTRATIVE COSTS PER ANNUM

NOTE Complete these expenses for a specific scale of program based on staff size		Expenses
1	Total Fixed Assets	
	Depreciation period (years)	/
3	Depreciation of fixed assets	=
4		+
5		+
6		+
7		+
8		+
10	Total Administrative Costs	=
11	Number of actual employees	/
12	Administrative cost per employee	=

SECTION IV: PROGRAM SUSTAINABILITY AND FINANCIAL RATIOS

TABLE J: SELF-SUFFICIENCY

	Category	Amount	Sustainability
1	Personnel		
2	Administration	+	
3	Loan loss reserve	+	
4	OPERATING COSTS (Level 1)	=	
5	Cost of Funds	+	
6	Devaluation	+	
7	TOTAL COSTS (Level 2)	=	
8	TOTAL INCOME		
9	Imputed subsidy of capital (Level 3)		