USER'S MANUAL
TOWNSEND THAI MONTHLY MICRO SURVEY
HOUSEHOLD FINANCIAL ACCOUNTING

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December 28, 2016

References

Townsend Thai Monthly Survey Questionnaires

Internal Revenue Service Department. "Publication 946 (2009): How to Depreciate Property." Web site: http://www.irs.gov/publications/p946/index.html

Samphantharak, Krislert and Robert M. Townsend. "Households as Corporate Firms: An Analysis of Household Finance Using Integrated Household Surveys and Corporate Financial Accounting." Cambridge University Press, 2009.

Synopsis

This manual explains how to construct each item in the household financial accounts mainly following the framework suggested by Samphantharak and Townsend (2009) for all households in the survey sample. As the questionnaires were not designed perfectly for this purpose, there are some extended assumptions and approximations we impose on this procedure.

Step 1: We construct the balance sheets and the income statements for each household in each month. We do not construct the statement of cash flows directly from the survey data. However, we derive the statement of cash flows from the changes of the items in the balance sheets (together with net profits from the income statements). This step is divided into several parts according to the transactions recorded in the survey: assets, production activities, inventories, consumption & expenditures, and financing & savings.

Steps 2 and 3: We consolidate all recorded transactions into the aggregate items as presented in the accounts. We correct for the transactions that are double counted.

Step 4: We add the initial value of each stock variable from the baseline survey. Then we add the flow variables into the previous period stocks to get the current values of stock variables for each month for each household.

Step 5: We derive the statements of cash flows from the constructed balance sheets, and income statements.

Step 6: We double check accounting identities between the balance sheets, income statements, and statements of cash flows of each household, month-by-month.

Notations BS = Balance Sheet IS = Income Statement

STEP 1: COMPUTING THE MONTHLY FLOWS

I. ASSETS

Asset transactions are asked in four different modules: Household Assets (2M), Agricultural Assets (3M), Livestock Assets (8M), and Business Assets (a section in 12M).

I.1 Agricultural, Business, and Household Assets

Entries

In-transactions (of 3M):

- Cash purchase: *am7a2*=1 and *am7d*~="E" then use *am7b*
  BS = increase in agricultural assets, decrease in cash
  IS = no change
- Credit purchase: *am7a2*=1 and *am7d*="E" then use *am7b*
  BS = increase in agricultural assets, increase in borrowing
  IS = no change
- In-kind purchase: *am7a2*=1 then use *am7F*
  BS = increase in agricultural assets, decrease in inventory
  IS = no change
- Gift received or inherited: *am7a2*=3 or 5 then use *am8*
  BS = increase in agricultural assets, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Brought in by a new-coming member or moved from another asset category: *am7a2*=9 or 11 then use *am8*
  BS = increase in agricultural assets, increase in contributed capital
  IS = no change
- Made, built, or repaired for using by household: *am7a2*=13 or 21 then use *am8*
  BS = increase in agricultural assets, increase in cumulative savings from operation
  IS = other incomes
- Given by employer to perform job: *am7a2*=19 then use *am8*
  BS = increase in agricultural assets, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Taken from another household: *am7a2*=25 then use *am8*
  BS = increase in agricultural assets, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers

Out-transactions (of 3M):

- Cash sale: *am19*=1 then use *am20*
  BS = decrease in agricultural assets, increase in cash
  IS = no change

- In-kind sale: *am19*=1 then use *am20a*
  BS = decrease in agricultural assets, increase in inventory
  IS = no change
- Gift made: *am19*=3 then use *am24a*
  BS = decrease in agricultural assets, decrease in cumulative saving from non-operation
  IS = outflow of gifts and transfers
- Retired or abandoned: *am19*=5 then use *am24a*
  BS = decrease in agricultural assets, decrease in cumulative savings from operation
  IS = non-cash realized capital loss
- Brought out with an out-moving member, or moved to another asset category: *am19*=9 or 11 then use *am24a*
  BS = decrease in agricultural assets, decrease in contributed capital
  IS = no change
- Stolen, lost, missing, or destroyed: *am19*=13 or 15 then use *am24a*
  BS = decrease in agricultural assets, decrease in cumulative savings from operation
  IS = non-cash realized capital loss
- Returned to store: *am19*=17 then use *am24a*
  BS = decrease in agricultural assets, increase in cash
  IS = no change
- Returned to the real owner: *am19*=21 then use *am24a*
  BS = decrease in agricultural assets, decrease in other borrowings
  IS = no change

Miscounted Assets from Previous Surveys:

There are cases that households miscounted the number of assets in some previous months and later reported the under- or over- counted assets in the in- or out-transaction section of the questionnaire respectively. We adjust these cases by first figuring out the actual transaction months that the households acquired or relinquished each of these assets and then recording the value of each of the transactions in its corresponding actual transaction month, instead of the month that the households reported the miscounting.

Unfortunately, the questionnaires asked the households to report the actual calendar month, but not year, of each transaction. Therefore, we assume that the actual transaction month is the calendar month within the last twelve months of the miscount reporting month. Moreover, we implicitly make the assumption that the households interpreted *am8* as the value of assets at the point of acquisition or relinquishment, which is the actual transaction month. The actual calendar month of acquiring each agricultural asset is stored in the variable *am15*, and the variable *am32* stores the actual relinquishing month. When *am15* or *am32* is missing, we use the baseline month for the actual transaction month. Since we have no information on how the household acquired or relinquished the miscounted assets, we treat them as contributed capital as for the cases of baseline transactions.

- Undercounted assets: *am7a2*=23 then use *am8*
  BS (transaction month) = increase in agricultural assets, increase in contributed capital
  IS = no change
- Over-counted assets: *am19*=23 then use *am24a*
  BS (transaction month) = decrease in agricultural assets, decrease in contributed capital
  IS = no change

Remark For Business Assets (12M) and Household Assets (2M), replace respectively

- *am7a2* with *tm9b5* and *km7a2*
- *am7b* with *tm9b6* and *km7b*
- *am7d* with *tm9b8* and *km7d*
- *am7f* with *tm9b10* and *km7f*
- *am8* with *tm9b14* and *km8*
- *am15* with *tm9b23* and *km15*
- *am19* with *tm9c5* and *km19*
- *am20* with *tm9c6* and *km20*
- *am20a* with *tm9c7* and *km20a*
- *am24a* with *tm9c11* and *km24a*
- *am32* with *tm9c20* and *km32*

Depreciation of Fixed Assets:

We categorize assets by their recovery periods according to the General Depreciation System (GDS) under the Modified Accelerated Cost Recovery System (MACRS) published by the Internal Revenue Service (IRS) Department of the United States. Then, we use 150% declining balance method to depreciate fixed assets in each recovery-period category.

Computing Depreciation Rate

Monthly depreciation rate (δ) = 1.5/(recovery period in years*12)

if the asset is depreciable. For assets with non-depreciable values, such as gemstones and precious metals, we set monthly depreciation rate (δ) equal to zero.

Entry

- Depreciation of agricultural assets: depreciation of month-t agricultural assets = assets(t-1)*δ
  BS = decrease in agricultural assets, decrease in cumulative savings from operation
  IS = depreciation in agricultural assets

- Depreciation of business assets: depreciation of month-t business assets = assets(t-1)*δ
  BS = decrease in business assets, decrease in cumulative savings from operation
  IS = depreciation in business assets

- Depreciation of household assets: depreciation of month-t household assets = assets(t-1)*δ
  BS = decrease in household assets, decrease in cumulative savings from operation
  IS = depreciation in household assets and land improvement

Adjustment for Negative Assets:

In some months, stock of assets of some class lives becomes negative. A possible reason for this is that households relinquished some assets at higher values than their post-depreciated values that we estimate and record in the account. In other words, there were realized capital gains when households relinquished assets. Such capital gains should, in theory, affect cumulative savings from operation and income of the households.

Another possible reason that can give rise to negative stock of assets in some months is that households failed to report acquisition of assets at some earlier, but unknown, months. A correction of such cases can be done at some earlier months by increasing assets as well as contributed capital on the balance sheet.

Unfortunately, we cannot conclude for all cases what the cause of negative assets actually is. Therefore, we enter the negative value as statistical discrepancy in our accounts and leave it for researchers to interpret and exploit statistical discrepancy at their discretion. In any case, household's wealth increases; thus, we insert statistical discrepancy under households' net wealth. We adjust for the negative stock of assets as follows:

Entry

- Negative asset adjustment: adjustment = max(0, - agricultural/household/business asset)
  BS = increase in agricultural assets, increase in statistical discrepancy
  IS = no change

I.2 Livestock Inventory

There are two types of questionnaires about livestock in the survey. First, we treat the animals themselves as ones of the productive capitals or assets and record them in livestock inventory module. Second, we consider other products from the animals such as milk and eggs as a separate activity and record them in livestock activity module. We discuss how to enter the transactions regarding livestock inventory here while we postpone the discussion of livestock activity to the later section.

Entries

- Similar to Agricultural/Household/Business assets, except for household consumption of livestock, and capital gains and losses from birth, maturity, and death of animals.

In-transactions:

- Cash purchase: *im6e*=1 and *im6h*~="E" then use *im6f*
  BS = increase in livestock assets, decrease in cash
  IS = no change
- Credit purchase: *im6e*=1 and *im6h*="E" then use *im6f*
  BS = increase in livestock assets, increase in account payables
  IS = no change
- In-kind purchase: *im6e*=1 then use *im6j*
  BS = increase in livestock assets, decrease in inventory
  IS = no change
- Gift received: *im6e*=3 or 5 then use *im6c*
  BS = increase in livestock assets, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Capital gain from birth: *im6e*= 7 then use *im6c*
  BS = increase in livestock assets, increase in cumulative savings from operation
  IS = unrealized capital gain
- Capital gain from grown-up: *im6e*= 9 then use *im6c*
  BS = increase in livestock assets, increase in cumulative savings from operation
  IS = unrealized capital gain

Out-transactions:

- Cash sale: *im7e*=1 or 3 then use *im7f* (should be ≤ *im7c*)
  BS = decrease in livestock assets, increase in cash
  IS = no change
- Credit sale: *im7e*=1 or 3 then use *im7c* - *im7f* - *im7j*
  BS = decrease in livestock assets, increase in account receivables
  IS = no change
  * If *im7c* - *im7f* - *im7j* < 0, then assume credit sale = 0.
- In-kind sale: *im7e*=1 or 3 then use *im7j* (should be ≤ *im7c*)
  BS = decrease in livestock assets, increase in inventory
  IS = no change
- Gift made: *im7e*=5 or 7 or 9 then use *im7c*
  BS = decrease in livestock assets, decrease in cumulative saving from non-operation
  IS = outflow of gifts and transfers
- HH consumption: *im7e*=11 then use *im7c*
  BS = decrease in livestock assets, increase in inventory
  IS = no change
- Capital loss from mortality: *im7e*=13 then use *im7c*
  BS = decrease in livestock assets, decrease in cumulative savings from operation
  IS = non-cash realized capital loss
- - Capital gain (minus capital gain): *im7e*=15 then use *im7c*
  BS = decrease in livestock assets, decrease in cumulative savings from operation
  IS = - unrealized capital gain (minus)

Depreciation of Livestock Inventory:

Similar to agricultural, business, and household assets, we use 150% declining balance method with the recovery periods in GDS to compute depreciation of livestock inventory. However, only the recovery periods for cattle, horses, hogs, sheep, and goats are available. We assume that poultry has a recovery period of three years, which is the minimum among available recovery periods for livestock, and the others have a recovery period of five years.

Monthly depreciation rate (δ) = 1.5/(recovery period in years*12)

- Depreciation of fixed assets: Depreciation of month-*t* livestock = Livestock (t-1)* δ
  BS = decrease in livestock assets, decrease in cumulative savings from operation
  IS = depreciation of livestock asset (Aging)

II. LAND

There are several issues emerging from the land module: assets (land owned by the households), rents (received and/or paid), and land improvement (paid by the households).

II.1 Acquisition of Land

Entries

- Land acquired by cash purchase: *rf11a* = A, B, C, D, or Q, then use *rf11b*

BS = increase in land, decrease in cash
IS = no change

- Land acquired by credit purchase: *rf11a* = E, F, G, H,…, or M, then use *rf11b*
  BS = increase in land, increase in borrowing
  IS = no change

- Land acquired by inheritance or gift: *rf11a* = N, O, or P then use *rf11b*
  BS = increase in land, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers

II.2 Sale of Land

Entries

- Land sold: *rm14l*
  BS = increase in cash, decrease in land
  IS = no change

II.3 Rents

Entries

- Rent received in cash: *rm4c*
  BS = increase in cash, increase in cumulative savings from operation
  IS = other revenue

- Rent received in kind: *rm4h*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

- Rent paid in cash: *rm10c*
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = other expense

- Rent paid in kind: *rm10h*
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = other expense

II.3B Input & Equipment Provided

Entries

- Payment received in cash: *rm5h + rm6c*
  BS = increase in cash, increase in cumulative savings from operation
  IS = other revenue

- Rent received in kind: *rm5m + rm6h*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

Remark: sometimes values specified in *rm5f* are not cost incurred by households but rather values of the assets that the households provided, i.e. value of a tractor. Therefore, we have to exclude the cases that households reported asset values in *rm5f* in order to avoid double counts here and in the asset modules.

- Provided inputs: *rm5f* if *rm5c* = 1 or if *rm5c* = 3 and the input is not an asset.
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = other expense

II.4 Land Improvement

Entries

- Land improvement paid in cash: *rm13e2 + rm13e4 + rm13e6* if *rm13e1, rm13e3, rm13e5* = A, B, C, D, or Q
  BS = decrease in cash, increase in land improvement
  IS = no change
- Land improvement paid by borrowing: *rm13e2 + rm13e4 + rm13e6* if *rm13e1, rm13e3, rm13e5* = E, F, G, H, I, J, K, L, or M
  BS = increase in land improvement, increase in borrowing
  IS = no change
- Land improvement from gift and inheritance: *rm13e2 + rm13e4 + rm13e6* if *rm13e1, rm13e3, rm13e5* = N, O, or P
  BS = increase in land improvement, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers

- Depreciation of land improvement assets: depreciation of month-*t* land-improvement assets = land improvement assets(*t*-1)*δ
  BS = decrease in land-improvement assets, decrease in cumulative savings from operation
  IS = depreciation in land-improvement assets

Remark: the monthly depreciation rate of land improvement is calculated in the same way as that of a household asset with the recovery period of 39 years. The reason for using 39 years is because land-improvement assets typical in the data set are largely residential structures.

II.5 Change in Value of Land

This is possibly from outside factor such as a road or a factory that has been built nearby. The questionnaire asks only the new (current) value of land so we have to compute the previous value of the plot first, and then find the change in the value.

Intermediate Computation

1. Find Land Form that corresponds to *rm15b*
2. Compute the previous value of the plot:
   - Previous value = *rf7i + rf7k*
3. Compute the change in value of the plot:
   - Change (RXV)= *rm15c* - Previous value

Entries

- Change in value of land: RXV
  BS = increase in land, increase in cumulative savings from operation

IS = unrealized capital gain

II.6 Tax

Entries

- Land tax: *rm12c*
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = property tax

III. Production Activities & Income (Excluding Cultivation)

III.1 Labor Income

Entries

- Labor income in cash: *jm4d + jm6e + jm7j*
  BS = increase in cash, increase in cumulative savings from operation
  IS = labor revenue
- Labor income in kind: *jm4e + jm6f + jm7k + jm10o*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = labor revenue
- Cost of labor supply: *jm7e*
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = labor cost

III.2 Livestock Activities

These activities include production of outputs from animals such as milk and eggs but exclude the animals themselves.

Input Acquired

Entries

- Input purchased in cash: *vm3q*
  BS = decrease in cash, increase in inventory
  IS = no change
- Input purchased in kind: *vm3r*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Input purchased on credit: credit

BS= increase in Inventory, increase in Accounts payable
IS = no change

- Input received as gift: *vm3s* if *vm3f* ~= 9 or 11
  BS=increase in livestock input inventory, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Inputs from household production: *vm3s* if *vm3f* = 9
  BS = increase in inventory, decrease in inventory
  IS = no change
- Inputs from other sources (assumed to be gathering from nature): *vm3s* if *vm3f* = 11
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

Input used

Entries

- Raw input used: *vm4f*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Labor input paid in cash: *vm6l + vm6y*
  BS = decrease in cash, increase in inventory
  IS = no change
- Labor input paid in kind: *vm6m+vm6z*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Equipment paid in cash: *vm8m*
  BS = decrease in cash, increase in inventory
  IS = no change
- Equipment paid in kind: *vm8n*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Other expenses (assumed that all of them were in cash): *vm10b*
  BS = decrease in cash, increase in inventory
  IS = no change

Outputs Produced

Entries

- Output produced: *vm11e*
  BS = decrease in inventory, increase in inventory
  IS = no change

Outputs Consumed by Household, Sold, or Given Away

Intermediate Steps

1. Total output acquired (TO) = (sum) *vm11e*
2. Total input used (TI) = (sum) *vm4f + vm6l + vm6m* + (sum) *vm6y* + (sum) *vm6z* + (sum) *vm8m*

+ (sum) *vm8n* + (sum) *vm10b*

3. markup (*t*) = [TO(*t*) + TO(*t*-1) + TO(*t*-2) + TO(*t*-3)] / [TI(*t*) + TI(*t*-1) + TI(*t*-2) + TI(*t*-3)]
4. Cost of production of livestock product (VMX) = vm12e / markup if vm12n = 1, 3, or 5
5. Cost of production of livestock product gifts (VMX11) = vm12e / markup if vm12n = 11
6. Household consumption of output (LHH) = (sum)[vm11e*vm11f / vm11c]
7. Cost of household consumption of output (LHX) = LHH / markup

Entries

- Revenue in cash: *vm12e* if *vm12n*=1
  BS = increase in cash, increase in cumulative savings from operation
  IS = livestock revenue
- Revenue in kind: *vm12e* if *vm12n*=3
  BS = increase in inventory, increase in cumulative savings from operation
  IS = livestock revenue
- Revenue from sale on credit: *vm12e* if *vm12n*=5
  BS = increase in account receivables, increase in cumulative savings from operation
  IS = livestock revenue
- Cost of production of livestock product: VMX if *vm12n*=1, 3, or 5
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = livestock expense
- Outputs used by household LHH
  BS = increase in inventory, increase in cumulative savings from operation
  IS = livestock revenue
- Cost of outputs used by household: LHX
  BS = decrease in Inventory, decrease in cumulative savings from operation
  IS = livestock expense
- Outputs given away as gift: vm12e if *vm12n*=11
  BS = decrease in cumulative saving from non-operation, increase in cumulative saving from operation
  IS = outflow of gifts and transfers, livestock revenue
- Cost of outputs given away as gift: VMX11
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = livestock expense

III.3 Fish/Shrimp

The format of the Fish/Shrimp module is analogous to the Livestock Activity module.

Input Acquired

Entries

- Input purchased in cash: *fm6q*
  BS = decrease in cash, increase in inventory
  IS = no change

- Input purchased in kind: *fm6r*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Input purchased on credit: credit
  BS = increase in inventory, increase in Accounts payable
  IS = no change
- Input received as gift: *fm6s* if *fm6f* ~= 9 or 11
  BS=increase in inventory, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Inputs from household production: *fm6s* if *fm6f* = 9
  BS = increase in inventory, decrease in inventory
  IS = no change
- Inputs from other sources (assumed to be gathering from nature): *fm6s* if *fm6f* = 11
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

Input Used

Entries

- Raw input used: *fm7f*
  BS = decrease in inventory, increase inventory
  IS = no change
- Labor input paid in cash: *fm9l + fm9y*
  BS = decrease in cash, increase in inventory
  IS = no change
- Labor input paid in kind: *fm9m + fm9z*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Equipment paid in cash: *fm11m*
  BS = decrease in cash, increase in inventory
  IS = no change
- Equipment paid in kind: *fm11n*
  BS = decrease in inventory, increase in inventory
  IS = no change

- Other expenses (assumed that all of them were in cash): *fm13b*
  BS = decrease in cash, increase in inventory
  IS = no change

Outputs Produced

Entries

- Output produced: *fm14e*
  BS = decrease in inventory, increase in inventory

IS = no change

Outputs Consumed by Household, Sold, or Given Away

Intermediate Steps

1. Total output acquired (TO) = (sum) *fm14e*
2. Total input used (TI) = (sum) *fm7f + fm9l + fm9m* + (sum) *fm9y* + (sum) *fm9z* + (sum) *fm11n* + (sum) *fm13b*
3. markup (t) = [TO(t) + TO(t-1) + TO(t-2) + TO(t-3)] / [TI(t) + TI(t-1) + TI(t-2) + TI(t-3)]
4. Cost of production of fish (FMX) = fm15e / markup if fm15n = 1, 3, or 5
5. Cost of production of fish gifts (FMX11) = fm15e / markup if fm15n = 11
6. Household consumption of output (FHH) = (sum)[fm14e*fm14f / fm14c]
7. Cost of household consumption of output (FHX) = FHH / markup

Entries

- Revenue in cash: fm15e if fm15n = 1
  BS = increase in cash, increase in cumulative savings from operation
  IS = fish revenue
- Revenue in kind: fm15e if fm15n = 3
  BS = increase in inventory, increase in cumulative savings from operation
  IS = fish revenue
- Revenue from sale on credit: fm15e if fm15n = 5
  BS = increase in account receivables, increase in cumulative savings from operation
  IS = fish revenue
- Cost of production of fish product: FMX if fm15n = 1, 3, or 5
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = fish expense
- Outputs used by household: FHH
  BS = increase in inventory, increase in cumulative savings from operation
  IS = fish revenue
- Cost of outputs used by household: FHX
  BS = decrease in Inventory, decrease in cumulative savings from operation
  IS = fish expense
- Outputs given away as gift: fm15e if fm15n = 11
  BS = increase in cumulative savings from operation, decrease in cumulative savings from non-operation
  IS = fish revenue, outflow of gifts and transfers
- Cost of outputs given away as gift: FMX11 if fm15n = 11
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = fish expense

III.4 Business Activity

Input Acquired

Entries

- Input purchased in cash: *tm3q*
  BS = decrease in cash, increase in inventory
  IS = no change
- Input purchased in kind: *tm3r*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Input purchased on credit: credit
  BS = increase in inventory, increase in accounts payable
  IS = no change
- Input received as gift: *tm3s* if *tm3f* ~= 9 or 11
  BS = increase in inventory, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Input from household production: *tm3s* if *tm3f* = 9
  BS = increase in inventory, decrease in inventory
  IS = no change
- Inputs from other sources (assumed to be gathering from nature): *tm3s* if *tm3f* = 11
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

Input Used

Entries

- Raw material used: *tm4f*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Labor paid in cash: *tm6l + tm6y*
  BS = decrease in cash, increase in inventory
  IS = no change
- Labor paid in kind: *tm6m + tm6z*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Rental equipment paid in cash: *tm8m*
  BS = decrease in cash, increase in inventory
  IS = no change
- Rental equipment paid in kind: *tm8n*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Other expenses (assumed to be in cash): *tm10b*
  BS = decrease in cash, increase in inventory
  IS = no change

Goods for Resale: Acquisition

Entries

- Goods for resale purchased in cash: *tm2n8*
  Note: *This value could also be in-kind purchase but we do not have additional information to distinguish purchases in cash and in kind. Therefore, we assume that all transactions recorded in this question were done in cash.*
  BS = decrease in cash, increase in inventory
  IS = no change

- Goods for resale purchased on credit: *tm2n11*
  BS = increase in account payable, increase in inventory
  IS = no change

- Goods for resale acquired by other means (assumed to be gift): *tm2n14*
  BS = increase in inventory, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers

Goods for Resale: Sale

Computing the profit from resale of goods is relatively complicated as (1) we did not keep track of the resale goods inventory, (2) we did not ask the quantities and prices of the resale goods purchased, and the quantities and prices of the resale goods sold, (3) we did not distinguish revenues from resale of goods and sale of outputs produced, and (4) we did not distinguish between cash and credit sales. Given these constrained data, we follow the steps described below:

Intermediate Steps

1. Compute total business revenue (TR) = *tm17a* + *tm17b* + *tm16g5*
2. Compute cost of business revenue (TC) = (sum) *tm2n5* + (sum) *tm3q* + (sum) *tm3r* + (sum) *tm3s* + (sum) *tm6l* + (sum) *tm6y* + (sum) *tm6m* + (sum) *tm6z* + (sum) *tm8m* + (sum) *tm8n* + (sum) *tm10b*
3. markup (*t*) = [TR(*t*) + TR(*t*-1) + TR(*t*-2) + TR(*t*-3)] / [TC(*t*) + TC(*t*-1) + TC(*t*-2) + TC(*t*-3)]
4. Compute share of cash-plus-credit revenues as fraction of total (cash-plus-credit + in-kind) revenues = *tm17a* / (*tm17a* + *tm17b*). Call it "theta".

Cash Resale

1. Compute revenue from cash resale (TRC) = (*tm17a* - *tm12e1**theta) * mean(*tm12r*).
2. Compute cost of cash resale (TXC) = TRC / markup.

Credit Resale

3. Compute revenue from credit resale (TRR) = (*tm17a* - *tm12e1**theta) * mean(*tm12s*).
4. Compute cost of credit resale (TXR) = TRR / markup.

In-kind Resale

5. Compute revenue from in-kind resale (TRK) = [*tm17b* - *tm12e1**(1-theta)].
6. Compute cost of in-kind resale (TXK) = TRK / markup.

Entries

- Revenue from cash resale: TRC
  BS = increase in cash, increase in cumulative savings from operation
  IS = business revenue

- Cost of cash resale: TXC
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = business expense
- Revenue from credit resale: TRR
  BS = increase in account receivables, increase in cumulative savings from operation
  IS = business revenue
- Cost of credit resale: TXR
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = business expense
- Revenue from in-kind resale: TRK
  BS = increase in inventory, increase in cumulative savings from operation
  IS = business revenue
- Cost of in-kind resale: TXK
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = business expense

Business Output

Output Sold in Cash

1. Compute cash revenue from business output (RC) = sum(*tm12e1*) * theta * mean(*tm12r*)
2. Compute cost of business output sold in cash (VC) = RC / markup

Output Sold on Credit

3. Compute credit sale from business output (RR) = sum(*tm12e1*) * theta * mean(*tm12s*)
4. Compute cost of business output sold on credit (VR) = RR /markup

Output Sold In-Kind

5. Compute in-kind revenue from business output (RK) = sum(*tm12e1*) * (1 – theta)
6. Compute cost of business output sold in kind (VK) = RK / markup

Output Household Consumption

7. Compute household consumption of output = *tm16g5*
8. Compute cost of household consumption of output = *tm16g5*/markup

Entries

- Output produced: *tm12d*
  BS = increase in inventory, decrease in inventory
  IS = no change
- Cost of business output sold in cash: VC
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = business cost
- Cash revenue from business output: RC
  BS = increase in cash, increase in cumulative savings from operation
  IS = business revenue
- Cost of business output sold on credit: VR

BS = decrease in inventory, decrease in cumulative savings from operation
IS = business cost

- Credit sale from business output: RR
  BS = increase in account receivables, increase in cumulative savings from operation
  IS = business revenue
- Cost of business output sold in kind: VK
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = business cost
- In-kind revenue from business output: RK
  BS = increase in inventory, increase in cumulative savings from operation
  IS = business revenue
- Cost from household consumption of business output: HC
  BS = Decrease in Inventory, Decrease in Cumulative savings from operation
  IS = Business cost
- Revenue from household consumption of business output: *tm16g5*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = business revenue

III.5 Other Income

This module consists of two main parts. The first part has a list of revenues or transfers to the household under several categories that were not recorded in other modules. The second part has an open-ended question about the remaining of the incomes elsewhere, including the first part of this module.

Categorized Other Income

Entries

- Transfers and financial aids in cash: *ym1b + ym2b + ym7b + ym8b + ym9b*
  BS = increase in cash, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Transfers and financial aids in kind: *ym1c + ym2c + ym7c + ym8c + ym9c*
  BS = increase in inventory, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- Commissions in cash: *ym10b*
  BS = increase in cash, increase in cumulative savings from operation
  IS = labor revenue
- Commissions in kind: *ym10c*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = labor revenue
- Income from financial returns (interests and dividends) in cash: *ym15b + ym16b*
  BS = increase in cash, increase in cumulative savings from operation
  IS = interest revenue
- Income from financial gains in cash: *ym17b*
  BS = increase in cash, increase in cumulative savings from operation
  IS = cash realized capital gain

- Rental income and other incomes (gambling, pensions, etc) received in cash: *ym3b + ym4b + ym5b + ym6b + ym11b + ym12b + ym13b + ym14b*
  BS = increase in cash, increase in cumulative savings from operation
  IS = other revenue
- Rental income and other incomes (gambling, pensions, etc) received in kind: *ym3c + ym4c + ym5c + ym6c + ym11c + ym12c + ym13c + ym14c*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

Remaining Income I

In this question, we have to look at each descriptive answer from the household and assign a code categorizing the activity into the groups.

Entries

- Income from fish and shrimp in cash (code = F): *ym18c*
  BS = increase in cash, increase in cumulative savings from operation
  IS = fish revenue
- Income from fish and shrimp in kind (code = F): *ym18d*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = fish revenue
- Labor income in cash (code = J): *ym18c*
  BS = increase in cash, increase in cumulative savings from operation
  IS = labor revenue
- Labor income in kind (code = J): *ym18d*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = labor revenue
- Income from hunting and gathering (such as charcoal, bamboo shoots) in cash (code = N): *ym18c*
  BS = increase in cash, increase in cumulative savings from operation
  IS = labor revenue
- Income from hunting and gathering in kind (code = N): *ym18d*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = labor revenue
- Income from livestock in cash (code = V): *ym18c*
  Note: These activities were not recorded in livestock module because the number of animals was smaller than the cutoff level e.g. income from raising fewer than 25 chickens.
  BS = increase in cash, increase in cumulative savings from operation
  IS = livestock revenue
- Income from livestock in kind (code = V): *ym18d*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = livestock revenue
- Income from business in cash (code = T): *ym18c*
  Note: Examples of these activities are income from driving a motorcycle, fortunetelling, giving a haircut, etc.

BS = increase in cash, increase in cumulative savings from operation
IS = business revenue

- Income from business in kind (code = T): *ym18d*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = business revenue
- Income from cultivation in cash (code = C): *ym18c*
  Note: Examples are sales of vegetables.
  BS = increase in cash, increase in cumulative savings from operation
  IS = cultivation revenue
- Income from cultivation in kind (code = C): *ym18d*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = cultivation revenue
- Other income in cash (code = O): *ym18c*
  Note: Examples include income from rental vehicles and selling soil from owned land.
  BS = increase in cash, increase in cumulative savings from operation
  IS = other revenue
- Other income in kind (code = O): *ym18d*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

Remaining Income II: Sales of Assets and Land

Incomes from sales of assets or land that are not recorded in asset and land modules are also recorded under this question. This is because these assets were not asked explicitly and/or worth less than 2,000 baht. Since these assets or land are not recorded in the asset and land modules (i.e. they are neither in the baseline nor the monthly updates), we have to add the present values of these assets into the baseline (month 0) data as initial assets too. If the assets are non-depreciable, including land, we add the current values to the baseline month instead.

Intermediate Steps

- Monthly depreciation rate (δ) = 1.5/(recovery period in years*12) ,for depreciable assets
- Monthly depreciation rate (δ) = 0 ,for non-depreciable assets
- Cash present value (CPV) = $\frac{\text{ym18c}}{(1-\delta)^{\text{month}}}$
- In-kind present value (KPV) = $\frac{\text{ym18d}}{(1-\delta)^{\text{month}}}$

Entries

- Sale of agricultural assets in cash (code = A): *ym18c*
  BS (Current month) = increase in cash, decrease in agricultural assets
  IS (Current month) = no change
- Sale of agricultural assets in kind (code = A): *ym18d*
  BS (Current month) = increase in inventory, decrease in agricultural assets
  IS (Current month) = no change
- Baseline adjustment for sale of agricultural assets (code = A): CPV + KPV

BS (Baseline) = increase in agricultural assets, increase in contributed capital

- Sale of household assets in cash (code = K): *ym18c*
  BS (Current month) = increase in cash, decrease in household assets
  IS (Current month) = no change
- Sale of household assets in kind (code = K): *ym18d*
  BS (Current month) = increase in inventory, decrease in household assets
  IS (Current month) = no change
- Baseline adjustment for sale of household assets (code = K): CPV + KPV
  BS (Baseline) = increase in household assets, increase in contributed capital
- Sale of business assets in cash (code = TA): *ym18c*
  BS (Current month) = increase in cash, decrease in business assets
  IS (Current month) = no change
- Sale of business assets in kind (code = TA): *ym18d*
  BS (Current month) = increase in inventory, decrease in business assets
  IS (Current month) = no change
- Baseline adjustment for sale of business assets (code = TA): CPV + KPV
  BS (Baseline) = increase in business assets, increase in contributed capital
- Sale of land in cash (code = R): *ym18c*
  BS (Current month) = increase in cash, decrease in land
  BS (Baseline) = increase in land, increase in contributed capital
  IS = no change
- Sale of land in kind (code = R): *ym18d*
  BS (Current month) = increase in inventory, decrease in land
  BS (Baseline) = increase in land, increase in contributed capital
  IS = no change

Remaining Income III: Sales of Cultivation Inventories

The value of sales of cultivation inventories (i.e. crop inventories) is recorded in other income module. The transactions were also recorded in crop inventory module (7M). However, only quantity (in kilograms, for example) was asked in 7M questionnaire. Specifically, when crop inventory is sold, the quantity sold is recorded in 7M while the value of the sold inventory is recorded in 18M, under the question ym18.

We assign code = M to income from sales of cultivation inventories. The way to enter the transactions is described in the section on Cultivation & Crop Inventories.

Remaining Income IV: Insurance Indemnity

Sometimes households report indemnity received in Other Income module, but this kind of funds received should be treated differently from income. We assign code = I for indemnity received by the households.

Entries

- Insurance indemnity received as cash (code = I): *ym18c*

BS = increase in cash, increase in cumulative insurance indemnity
IS = no change

- Insurance indemnity received in kind (code = I): *ym18d*
  BS = increase in inventory, increase in cumulative insurance indemnity
  IS = no change

IV: CULTIVATION & CROP INVENTORIES

Crop-related activities are recorded in three different modules. First, the cultivation activities are in module 5M. Second, crop inventories are in module 7M. Finally, sales of crop inventories are recorded in other income module 18M under other incomes section.

While acquisitions of inputs and sales of outputs are interviewed directly at the household level, uses of inputs and harvesting of outputs are recorded at the crop-plot level. Therefore, we construct the financial statement for each crop-plot of each household separately and then sum up all crop-plots of the same household to get the household-level cultivation financial statement for each household. What makes the account construction complicated is the fact that households store harvested crops in inventory and sell the outputs later.

1. Computation at the Crop-Plot Level

Input Used

Entries

- Use of raw material: *cfo4f1*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Labor input paid in cash: *cfo6l + cfo6y*
  BS = decrease in cash, increase in inventory
  IS = no change
- Labor input paid in kind: *cfo6m + cfo6z1*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Equipment and animal rental paid in cash: *cfo8m*
  BS = decrease in cash, increase in inventory
  IS = no change
- Equipment and animal rental paid in kind: *cfo8n*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Other costs (assumed to be in cash): *cm6b*
  Note: Use cm6c to determine crop-plot. If there are more than one crop-plots related to a particular expense, we split the expense equally among those crop-plots.
  BS = decrease in cash, increase in inventory
  IS = no change

Output Harvested

Intermediate Steps

Each of the crop-plots may yield outputs in many months. We compute cost of production of the output harvested in each particular month as follow.

1. Find the total outputs from all *cfo10c* in each crop-plot (TO).
2. Compute percentage of total output for each month's *cfo10c* (%MO) = "month *cfo10c*" / TO.
3. Compute cost of monthly output (MI) = %MO * cultivation work-in-progress inventory.

Entries

- Output harvested: *cfo10e*
  BS = increase in inventory, increase in cumulative savings from operation
  IS = cultivation revenue
- Cost of harvested output: MI
  BS decrease in inventory, decrease in cumulative savings from operation
  IS: cultivation cost

Note that at the end of each crop-plot activity, work-in-progress inventory will be completely deducted and have zero value.

2. Aggregation to Household Level

Add all the crop-plots of the same household to get household-level balance sheet and income statement.

3. Computation at the Household Level

Input Acquired

Entries

- Cash purchase: *cm5q*
  BS = decrease in cash, increase in inventory
  IS = no change
- In-kind purchase: *cm5r*
  BS = decrease in inventory, increase in inventory
  IS = no change
- Gift: *cm5s* if *cm5f* ~= 9 or 11
  BS = increase in inventory, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers
- HH production: *cm5s* if *cm5f* = 9
  BS = increase in inventory, decrease in inventory
  IS = no change
- Inputs from other sources (assumed to be gathering from nature): *cm5s* if *cm5f* = 11
  BS = increase in inventory, increase in cumulative savings from operation
  IS = other revenue

Output Sold Immediately after Harvesting

As revenue and cost of these crops have been recorded already, we do not account for them again. Sales of crop output immediately after harvesting are recorded as the sales of cultivation finished-good inventories without realized profit.

Entries

- Output sold for cash: *cm7e* if *cm7n* = 1
  BS = increase in cash, decrease in inventory
  IS = no change
- Output sold in kind: *cm7e* if *cm7n* = 3
  BS = increase in inventory, decrease in inventory
  IS = no change
- Output sold on credit: *cm7e* if *cm7n* = 5
  BS = increase in account receivables, decrease in inventory
  IS = no change
- Output given away: *cm7e* if *cm7n* = 11
  BS = decrease in inventory, decrease in cumulative saving from non-operation
  IS = outflow of gifts and transfers

Sale of Crop Inventory

Entries

- Sale of crop inventory in cash: *ym18c* if code = "M"
  BS = increase in cash, decrease in inventory
  IS = no change
- Sale of crop inventory in kind: *ym18d* if code = "M"
  BS = increase in inventory, decrease in inventory
  IS = no change

V: CONSUMPTION & EXPENDITURE

V.1 Rice Inventory

There are four types of rice related in the questionnaire: (1) non-milled regular rice, (2) non-milled sticky rice, (3) milled regular rice, and (4) milled sticky rice. These are items 1 to 4, respectively, in weekly expenditure module. Note that weekly questionnaire was conducted on weekly basis only up to 24. From month 25 on, it has been done on biweekly basis.

Entries

- Purchase of rice inventory in cash: *xw1a* (for items 1, 2, 3 and 4)
  BS = decrease in cash, increase in inventory
  IS = no change
- Purchase of rice inventory on credit: *xw1b* (for items 1, 2, 3 and 4)
  BS = increase in account payables, increase in inventory
  IS = no change
- Rice inventory received as gift: *xw1d* (for items 1, 2, 3 and 4)
  BS = increase in inventory, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers

V.2 Rice Consumption

To estimate the value of rice consumption, we start by estimating the average price of milled rice (regular and sticky) in the household's inventory. Then, we calculate the value of rice consumed by each household using the average price of rice in that household's inventory.

Intermediate Steps

1. Compute the market price of milled regular rice and milled sticky rice (items 3 and 4) purchased in month *t* for each household

$$P_{in}(t) = (xw1a + xw1b) / (mm3b2 + mm3c2)$$

2. Compute the weighted-average price of rice in each household's inventory in month *t*

$$P(t) = [P(t-1)*W(t-1) + P_{in}(t)*W_{in}(t)]/[W(t-1) + W_{in}(t)]$$

where $W_{in}(t) = mm3a2 + mm3b2 + mm3c2 + mm3d2 + mm3e2 + mm3f2 + mm3g2 + mm3h2 + mm3i2$

3. Update the weight of rice in inventory of each household in month *t*

$$W(t) = W(t-1) + W_{in}(t) - W_{out}(t)$$

where $W_{out}(t) = mm4a2 + mm4b2 + mm4c2 + mm4d2 + mm4e2 + mm4f2 + mm4g2 + mm4h2 + mm4i2$

4. For each of items 3 and 4, compute value of rice consumption (V)

$$V = P(t)*mm4a2$$

Note: For the price of rice in baseline inventory, we use the median price in the first four months in each province. If the purchasing price is not available in any month, we assume that household purchases rice at the price of rice in the household's inventory.

Entries

- Rice consumption: V
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = food consumption

V.3 Non-Rice Consumption and Expenditure (23M, 23W)

Non-rice consumption and expenditure are recorded in two separate modules. Monthly questionnaire (23M) asks for expenditures that happen infrequently (such as clothing and taxes) or happen on monthly basis (such as utility bills). Weekly questionnaire (23W) instead asks for expenditures that happen frequently—mostly the expenditure on consumption of non-durables. Again, weekly questionnaire was conducted on weekly basis from month 1 to 24. However, from month 25 on, it has been done on biweekly basis. We use only items 5 to 26 here as items 1 to 4 are expenditures on rice.

Entries

- Food consumption paid in cash: *xw1a* for items 5-19
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = food consumption
- Food consumption paid on credit: *xw1b* for items 5-19
  BS = increase in account payables, decrease in cumulative savings from operation
  IS = food consumption
- Non-food consumption paid in cash: *xw1a* for items 20-26
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = non-food consumption
- Non-food consumption paid on credit: *xw1b* for items 20-26
  BS = increase in account payables, decrease in cumulative savings from operation
  IS = non-food consumption
- Consumption of household production (Crop): *xw1c* for items 5, 10 and 11
  Note: Because we didn't record income from these crops' production for household consumption elsewhere, we treat this transaction as if the household produced and sold its output without cost and purchase it back for consumption at the same selling price.
  BS = no change
  IS = cultivation revenue, food consumption of household production
- Consumption of household production (Livestock, Fish, Business): *xw1c* for items 6-9 and 12-19
  BS = decrease in inventory, decrease in cumulative saving from operation
  IS = consumption of household production
- Consumption of household production (Business-nonfood): *xw1c* for items 20-26
  BS = decrease in inventory, decrease in cumulative saving from operation
  IS = consumption of household production
- Consumption of goods acquired by other means (assumed to be gift): *xw1d* for items 5-19
  BS = increase in cumulative saving from non-operation, decrease in cumulative savings from operation
  IS = food consumption
- Consumption of goods acquired by other means (assumed to be gift): *xw1d* for items 20-26
  BS = increase in cumulative saving from non-operation, decrease in cumulative savings from operation
  IS = non-food consumption
- Consumption paid in cash: *xm1a* for items 1-40, 43-44 and 48-50
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = non-food consumption

- Consumption paid on credit: *xm1b* for items 1-40, 43-44 and 48-50
  BS = increase in account payables, decrease in cumulative savings from operation
  IS = non-food consumption
- Consumption of household production: *xm1c* for items 1-40, 43-44 and 48-50
  BS = decrease in inventory, decrease in cumulative saving from operation
  IS = non-food consumption of household production
- Consumption of goods acquired by other means (assumed to be gift): *xm1d* for items 1-40, 43-44 and 48-50
  BS = increase in cumulative saving from non-operation, decrease in cumulative savings from operation
  IS = non-food consumption

V.4 Taxes

Entries

- Tax paid in cash: *xm1a* for items 41
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = income tax
- Tax paid on credit: *xm1b* for items 41
  BS = increase in account payables, decrease in cumulative savings from operation
  IS = income tax
- Tax of household production: *xm1c* for items 41
  BS = no change
  IS = other revenue, income tax
- Tax of goods acquired by other means (assumed to be gift): *xm1d* for items 41
  BS = increase in cumulative saving from non-operation, decrease in cumulative savings from operation
  IS = income tax
- Tax paid in cash: *xm1a* for items 42
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = property tax
- Tax paid on credit: *xm1b* for items 42
  BS = increase in account payables, decrease in cumulative savings from operation
  IS = property tax
- Tax of household production: *xm1c* for items 42
  BS = no change
  IS = other revenue, property tax
- Tax of goods acquired by other means (assumed to be gift): *xm1d* for items 42
  BS = increase in cumulative saving from non-operation, decrease in cumulative savings from operation
  IS = property tax

V.5 Health Expenditure

Entries

- Health expenditure in cash: *hm6h + hm6o1+ hm6p2 + hm8h + hm8m1 + hm8n2*
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = non-food consumption expenditure
- Health expenditure in kind: *hm6r + hm8p*
  BS = decrease in inventory, decrease in cumulative savings from operation
  IS = non-food consumption expenditure

V.6 Insurance

Insurance premium is a pre-paid expense for services obtained from the insurance policy. In principle, we should calculate the value of "prepaid insurance" and put it in the asset side of the balance sheet, and depreciate it over time until the insurance policy expires. In practice, this is impossible, especially for policy without precise maturity such as life insurance. Instead, we treat insurance expenses the same way as we treat expenditure on consumer durables (cloth, household items, etc.), i.e. under consumption. When the household receives cash from insurance company or insurance fund, we treat the transactions similar to government transfers (but with a new line item to distinguish it as "insurance indemnity.")

Entries

- Insurance premium paid in cash: *xm1a* for items 45-47
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = insurance premium (under consumption)
- Insurance premium paid on credit: *xm1b* for items 45-47
  BS = increase in account payables, decrease in cumulative savings from operation
  IS = insurance premium
- Insurance premium of household production: *xm1c* for items 45-47
  BS = no change
  IS = other revenue, insurance premium
- Insurance premium of goods acquired by other means (assumed to be gift): *xm1d* for items 45-47
  BS = increase in cumulative savings from non-operation, decrease in cumulative savings from operation
  IS = insurance premium
- Insurance premium: *dm3b*
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = insurance premium
- Insurance indemnity: *dm3d*
  BS = increase in cash, increase in cumulative insurance indemnity
  IS = no change

VI. FINANCING & SAVINGS

What is largely classified as financing and savings consist of gifts and remittances (13M), savings (14M), borrowing (15M), lending (16M), and ROSCA (22M).

VI.1 Gifts

Since we do not ask whether the households receive/give gifts in cash or in kind, we assume that all of the transactions are in cash. We will correct for this later with the data from other modules. For example, we will adjust for the fact that household X received fertilizer from the government (i.e. in-kind gift received) as recorded in cultivation module when we consolidate the transactions in step 2.

Entries

- Gift paid: *gm1c, gm2c, gm3a3, gm3b3*
  BS = decrease in cash, decrease in cumulative saving from non-operation
  IS = outflow of gifts and transfers
- Gift received: *gm4c, gm5c, gm6a3, gm6b3*
  BS = increase in cash, increase in cumulative saving from non-operation
  IS = inflow of gifts and transfers

VI.2 Savings at Financial Institutions

This is "formal" lending to financial institutions in the form of deposits. This is recorded in module 14M as savings. The informal lending to other households is recorded separately in lending module 16M.

Entries

- Deposits: *sm3b*
  BS = decrease in cash, increase in deposit at financial institution
  IS = no change
- Withdrawal: *sm7b*
  BS = increase in cash, decrease in deposit at financial institution
  IS = no change
- (Redeposit of) Interest earned: *sm9b*
  BS = increase in deposit at fin inst, increase in cumulative savings from operation
  IS = interest revenue
- Fee: *sm10c*
  BS = decrease in deposit at fin inst, decrease in cumulative savings from operation
  IS = other expense
- Cost: *sm11c*
  BS = decrease in cash, decrease in cumulative savings from operation
  IS = other expense

VI.3 Lending

All the payments in cash reflect in change in cash holding; all the payments in kind reflect in change in inventory.

Existing Loans

I. *For loans that have non-missing values of lm6h and lm6i:*

We stopped asking the households to fill the loan form for all loans since month 25. Basically, the households had to fill in the loan form for all of the normal loans and up to two trade credits. Therefore, we have to compute the following repayment separately

1. Repayment on other loans except for trade credit (RL) = *lm6h* if lf3e is NOT equal to "D" or "E"
2. Repayment on trade credit (RT) = *lm6h* - RL

Entries

- Principal Repayment: RL
  - BS = decrease in other lending, increase in cash *if* the payment is done in cash (see *lm6c*)
  - BS = decrease in other lending, increase in inventory *if* the payment is in-kind (see *lm6c*)
  - IS = no change
- Principal Repayment: RT
  - BS = decrease in account receivables, increase in cash *if* the payment is done in cash (see *lm6c*)
  - BS = decrease in account receivables, increase in inventory *if* the payment is in-kind (see *lm6c*)
  - IS = no change
- Interest Payment: *lm6i*
  - BS = increase in cash *if* the payment is done in cash (see *lm6c*), increase in cumulative savings from operation
  - BS = increase in inventory *if* the payment is In-kind (see *lm6c*), increase in cumulative savings from operation
  - IS = interest revenue

II. *For loans without lm6h and lm6i, let's assume that lm6b is principal repayment*.

1. Repayment on other loans except for trade credit (RL)=*lm6b* if *lf3e* is NOT equal to "D" or "E"
2. Repayment on trade credit (RT) = *lm6b* - RL

Entries

- Principal Repayment: RL
  - BS = decrease in other lending, increase in cash IF the payment is done in cash (see *lm6c*)
  - BS = decrease in other lending, increase in inventory IF the payment is In-kind (see *lm6c*)
  - IS = no change
- Principal Repayment: RT
  - BS = decrease in account receivables, increase in cash IF the payment is done in cash (see *lm6c*)
  - BS = decrease in account receivables, increase in inventory IF the payment is In-kind (see *lm6c*)
  - IS = no change

III. *Check if lm1b (t-1) > lf3f (t-1), then some forms were omitted. Follow these steps:*

1. compute *lm1b* (*t*-1) - *lf3f* (*t*-1), call it residual trade credit at time *t*-1 (RTR)
2. Enter the transaction in month *t*

Entries

- Principal Repayment: RTR
  BS = decrease in account receivables, increase in cash
  IS = no change

IV. *Adjust for missing interest payment problem arising from step II, which will cause negative values of account receivables and other lending.*

A. *Account Receivables*:
Assume that the negative value for the first month that account receivables start to be negative is -NAR.

- Interest Payment: NAR
  BS = increase in account receivables (so that the new value is equal to zero), increase in cumulative savings from operation
  IS = interest revenue

B. *Other lending:*
Assume that the negative value for the first month that "other lending" starts to be negative is - NOL.

- Interest Payment: NOL
  BS = increase in other lending (so that the new value is equal to zero), increase in cumulative savings from operation
  IS = interest revenue

Repeat step IV until there is no negative value of account receivables and other lending.

New Loans

Entries

- Money loans: *lf3k* if *lf3e* is NOT equal to "D" and "E"
  BS = decrease in cash, increase in lending to other households
  IS = no change
- Goods loans: *lf3j* if *lf3e* is NOT equal to "D" and "E"
  BS = decrease in inventory, increase in other lending
  IS = no change
- Credit (advanced) purchases: *lf3k* if *lf3e* is equal to "D"
  BS = decrease in cash, increase in account receivables
  IS = no change
- Credit sales: *lf3j* if *lf3e* is equal to "E"
  BS = decrease in inventory, increase in account receivables
  IS = no change

VI.4 Borrowing

All the payments in cash reflect in change in cash holding; all the payments in kind reflect in change in inventory.

Existing Loans

Entries

- Principal Repayment: *bm6h* if *bf5f* of that loan is not equal to "D" and "E"
  BS = decrease in borrowing, decrease in cash *if bm6c* is equal to 3
  BS = decrease in borrowing, decrease in inventory *if* see *bm6c* is equal to 1
  IS = no change
- Principal Repayment: *bm6h* if *bf5f* of that loan is equal to "D" or "E"
  BS = decrease in account payables, decrease in cash *if bm6c* is equal to 3
  BS = decrease in account payables, decrease in inventory *if* see *bm6c* is equal to 1
  IS = no change
- Interest Payment: *bm6i*
  BS = decrease in cash *if bm6c* is equal to 3, decrease in cumulative savings from operation
  BS = decrease in inventory *if* see *bm6c* is equal to 1, decrease in cumulative savings from operation
  IS = interest expense

New Loans

Entries

- Money (cash) borrowed: *bf5l* if *bf5f* ~= "D" AND ~= "E"
  BS = increase in cash, increase in borrowing
  IS = no change
- Goods borrowed: *bf5k* if *bf5f* ~= "D" AND ~= "E"
  BS = increase in inventory, increase in borrowing
  IS = no change
- Credit purchase: *bf5k* if *bf5f* = "E"
  BS = increase in inventory, increase in account payable
  IS = no change
- Credit sale: *bf5l* if *bf5f* = "D"
  BS = increase in cash, increase in account payable
  IS = no change

Assets Taken Away as Debt Payment

These are the cases in which *am19, km19,* or *tm9c5* is equal to 19 or 25. In these cases, the assets were confiscated by the credit providers because the households could not make monthly payments in time. As a consequence, the transactions affect both the asset module and borrowing module. In addition, there are generally non-cash realized capital losses associated with this kind of transactions. The capital loss in each case depends on the value of the asset when taken away, the initial loan value, and how much the household repaid the loan. To find the value of each asset when taken away, we rely on the remaining value of the asset after depreciating its initial value rather than use *am24a, km24a,* or *tm9c11* because different households interpreted this variable differently: some reported the initial values of the assets; some reported the initial loan values; and some reported other numbers.

Intermediate Steps

1. Figure out the in-transaction month and the initial value of the asset. Since the questionnaire did not explicitly ask for this information, this step needs to be treated manually by looking at the descriptions of the assets, loan numbers, and histories of loan payments to identify the in-transaction and borrowing.

   Value of the asset when taken away (VO) = (initial value of asset)*$(1-\delta)^k$

   where δ is monthly depreciation rate = 1.5/(recovery period in years*12), as described in the asset module above, and the in-transaction month is *t-k*.

2. Figure out the initial loan reported in the borrowing form module (15F-BF) and the total loan repayment recorded in the borrowing monthly module (15M-BM). Total loan repayment equal to sum over all months of bm6h (or *bm6b* when *bm6h* is not available)

   Loan left (LL) = initial loan – total repayment

3. The household's realized capital loss from this transaction is VO – LL (or capital gain LL-VO if LL is greater than VO)

Entries[1]

Case 1: VO > LL (Household experienced capital loss)

- Asset taken away as debt payment: VO
  BS = decrease in assets, decrease in cumulative savings from operation
  IS = realized capital loss
- Change in borrowings: LL if am19=19 or 25
  BS = decrease in other borrowings, increase in cumulative savings from operation
  IS = - realized capital loss (minus)

Case 2: VO < LL (Household experienced capital gain)

- Asset taken away as debt payment: VO
  BS = decrease in assets, decrease in cumulative savings from operation
  IS = - realized capital gain (minus)
- Change in borrowings: LL if am19=19 or 25
  BS = decrease in other borrowings, increase in cumulative savings from operation
  IS = realized capital gain

Note: For capital gain/loss of household asset or land, we account in Capital Gain/Loss from Land or Household Asset under Other Operating Income. For capital gain/loss of business asset/agricultural asset, we account in Capital Gain/Loss from Production under Income from Production.

VI.5 ROSCA

Entries

[1] A convenient way is to think of this type of transactions as a combination of two transactions. Firstly, the household sold the confiscated asset of value VO at price LL. Secondly, the household paid back the outstanding loan value LL.

- Net ROSCA position: em3b – 3m3d
  BS = increase in net ROSCA position, decrease in cash
  IS = no change

Note: If, in any given month, the net ROSCA position is positive, we account it as ROSCA under Total Assets. If the net ROSCA position is negative, we account it as ROSCA under Total Liabilities.

STEP 2: COMPUTING MONTHLY AGGREGATE FLOWS

With the results from step 1, we sum all the transactions from different modules into the aggregate flows by category. For example, the aggregate change in cash holding of a household is a sum of the change (increase or decrease) of cash holding of this household from all cash-related transactions in all modules. Usually this step is straightforward and we do this for all items at this stage.

Since different modules give us different levels of details of transactions (or sub-items), we choose to combine some sub-items together and get the more broadly defined items. This is particular the case for inventories. See Tables 1 and 2 for details.

However, there are some transactions that we recorded twice in the questionnaires. Mostly, these transactions are related to in-kind financing (e.g. gifts, lending, and borrowing) and consumption of household production. To take care of this issue, we have to do some further adjustments.

Borrowing and Lending

Problem
The double counted transactions are trade credits. They were recorded twice as accounts payable and receivable—in activities modules and again in borrowing/lending module. For example, if a household purchased fertilizer on credit, this transaction was recorded in cultivation module and in borrowing module.

Remedy
We correct this problem by assuming that all credit transactions in activity module are cash transactions.

Gifts

Problem
When households receive gifts in kind, we usually recorded them in activity modules as in-kind gifts. For example, a household received fertilizer from the government. In principle, this transaction was recorded again in the gift and remittance module. However, we do not distinguish between in-kind and cash gifts in the gift and remittance module; so, we recorded the transaction as if it were in cash.

Remedy
We correct this problem as follow. First, we compute the total value and number of in- and out-transactions of in-kind gifts obtained from each activity module, excluding the gift and remittance module. Second, we determine the trivial cases that households did NOT double report in-kind gifts in the gift and remittance module. These are the cases in which value or number of in- or out-transactions of in-kind gifts in activity module exceeds those in the gift and remittance module. Third, we subtract the summed value of in-kind gifts, excluding the cases in the second step, from cumulative saving from non-operation because they were double counted in gift and remittance module. At the same time, we subtracted the same amount from cash holding because they were double counted and recorded incorrectly as if they were cash transactions.

Consumption of Household Production

Problem
Consumption of household production is recorded twice—once in the production activity modules and again in consumption/expenditure module.

Remedy
We correct this problem by recording all consumption computed from activity modules as increases in inventory, and by recording all consumption of household production in expenditure module as decreases in inventory. (see manual for more detailed).

Table 1: Aggregation of Items in Balance Sheet

Line	Item from Balance Sheet
BS1	Total Assets
BS1_01	Cash in Hand
BS1_02	Account Receivables
BS1_03	Deposits at Financial Institutions
BS1_04	ROSCA
BS1_05	Other Lending
BS1_06	Inventories
BS1_07	Livestock
BS1_08	Fixed Assets
BS1_08_01	Household Assets
BS1_08_02	Agricultural Assets
BS1_08_03	Business Assets
BS1_09	Land
BS1_10	Land Improvement
BS2	Total Liabilities and Household Net Wealth
BS3	Total Liabilities
BS3_01	Account Payables
BS3_02	Other Borrowing
BS3_03	ROSCA
BS4	Total Household Net Wealth
BS4_01	Contributed Capital
BS4_02	Cumulative Savings from Operation
BS4_03	Cumulative Savings from Non-operation
BS4_04	Cumulative Insurance Indemnity
BS4_05	Statistical Discrepancy

Table 2: Aggregation of Items in Income Statement

Line	Item from Income Statement
IS1	Saving from Operating Income (IS2 + IS5)
IS2	Net Operating Income (IS3 + IS4)
IS3	Income from Production
IS3_01	(+) Total Revenues from Production
IS3_01_01	Cultivation Revenue
IS3_01_02	Livestock Revenue
IS3_01_02_1	Livestock Capital Gain
IS3_01_02_2	Livestock Produce
IS3_01_03	Fish and Shrimp Revenue
IS3_01_04	Business Revenue
IS3_01_05	Labor Revenue
IS3_01_06	Revenue from Other Production Activities
IS3_02	(-) Total Cost of Production
IS3_02_01	(-) Cultivation Cost
IS3_02_02	(-) Livestock Cost
IS3_02_02_1	(-) Livestock Expense
IS3_02_02_2	(-) Livestock Capital Loss
IS3_02_02_3	(-) Livestock Depreciation
IS3_02_03	(-) Fish and Shrimp Cost
IS3_02_04	(-) Business Cost
IS3_02_05	(-) Labor Cost
IS3_02_06	(-) Cost of Other Production Activities
IS3_03	(+) Capital Gain fom Production
IS3_04	(-) Capital Loss fom Production
IS3_05	(-) Depreciation of Assets for Production
IS3_05_01	(-) Depreciation of Agricultural Asset
IS3_05_02	(-) Depreciation of Business Asset
IS4	Other Operating Income
IS4_01	(+) Capital Gain fom Land or Household Asset
IS4_02	(-) Capital Loss fom Land or Household Asset
IS4_03	(+) Capital Gain fom Financial Asset
IS4_04	(-) Capital Loss fom Financial Asset
IS4_05	(+) Interest Revenue
IS4_06	(-) Interest Expense
IS4_07	(-) Property Tax
IS4_08	(-) Income Tax
IS5	(-) Consumption
IS5_01	(-) Depreciation of Household Asset & Land Improvement
IS5_02	(-) Consumption of Household Production
IS5_03	(-) Consumption Expenditure
IS5_03_01	(-) Food
IS5_03_02	(-) Non-Food
IS5_04	(-) Insurance Premium
IS6	Saving from Non-operating Income
IS7	(+) Inflow of Gifts and Transfers
IS8	(-) Outflow of Gifts and Transfers

STEP 3: COMPUTING STOCK FROM CUMULATIVE FLOWS

Finally, we compute the stock items in the balance sheet from the aggregate flows obtained in step 2. This step does not apply to the income statement as it presents the flow, not stock, variables.

We start by computing the initial values (month 0) from the data in the baseline survey. Then we update the initial values of each item by the corresponding aggregate flows of month 1 in order to get the values of month-1 stock variables. Next, we keep update month-1 stock variables with month-2 aggregate flows, and so on.

Entries

- Initial household asset: $kb4*(1-12*\delta)^{kb8}$
  BS = household assets, contributed capital
- Initial cultivation asset: $ab4*(1-12*\delta)^{ab8}$
  BS = agricultural assets, contributed capital
- Initial livestock inventory: *ib7*
  BS = livestock inventory, contributed capital
- Initial fish activity asset: *fb2h* + *fb4h*
  BS = agricultural assets, contributed capital
- Initial fish/shrimp inventory: *fb18f*
  BS = fish inventory, contributed capital
- Initial land holding: *rf7i* + *rf7k* if *rf9* = 1
  BS = land, contributed capital
- Initial business asset: *tf20h*
  BS = business assets, contributed capital
- Initial deposit at financial institution: *sb2g*
  BS = Deposit at financial institution, contributed capital
- Initial ROSCA position: *eb3c* – *eb3e*
  BS = net ROSCA position, contributed capital
- Initial account receivables: *lb3b*
  BS = account receivables, contributed capital
- Initial stock of other lending: *lb6a*
  BS = other lending, contributed capital
- Initial account payables: *bf5g* if *bf5f* = "D" or "E"
  BS = account payable, - contributed capital (minus)
- Initial stock of other borrowing: *bf5k* + *bf5l* or *bf5m* if *bf5f* ~= "D" and "E"
  BS = other borrowing, - contributed capital (minus)

Initial crop inventory is more complicated as we did not ask the value of crop inventory in the baseline survey. Instead, we ask the quantity in crop inventory baseline module. Therefore, we compute initial value of crop inventory (VCI) product-by-product = *mb2b**P, where P = price of crop in month 1. (See section IV, cultivation and crop inventory.) Note that we do this for only rice, i.e. items 1-4, because we do not have price data for the rest of the crop.

- Initial crop inventory: VCI
  BS = cultivation finished-good inventory, contributed capital

Finally, see also section III.5, *Remaining Income II: Sales of Assets*. The section deals with initial assets that were not recorded in the baseline survey, but were later recorded in monthly updates.

STEP 4: CONSTRUCTING THE STATEMENT OF CASH FLOWS

Table 3 shows the method of computing each item in the statements of cash flows from the information we have in the balance sheets and income statements.

Table 3: Constructing the Statement of Cash Flows

Line	Item from Statement of Cash Flows	Derivation
CF1	Change in Cash Holding	
CF2	Cash Flow from Production	
CF2_01	(+) Income from Production	IS3
CF2_02	(+) Depreciation of Assets for Production	-IS3_05 - IS3_02_02_3
CF2_03	(+) Change in Account Payable	BS3_01(t) - BS3_01(t-1)
CF2_04	(-) Change in Account Receivable	-[BS1_02(t) - BS1_02(t-1)]
CF2_05	(-) Change in Inventory	-[BS1_06(t) - BS1_06(t-1)]
CF2_06	(-) Consumption of Household Production	IS5_02
CF2_07	(-) Net Capital Gains from Production	-[IS3_03 + IS3_04 + IS3_01_02_1 + IS3_02_02_2]
CF3	Cash Flow from Financing, Investment, & Consumption	
CF3_01	(+) Net Capital Gains from Financial Assets	IS4_03 + IS4_04
CF3_02	(-) Capital Expenditure on Fixed Assets & Land	-[BS1_08(t) - BS1_08(t-1)] -[BS1_09(t) - BS1_09(t-1)] -[BS1_10(t) - BS1_10(t-1)] + IS3_05 + IS5_01 + IS4_01+ IS4_02 + IS3_03 + IS3_04
CF3_03	(+) Net Interest Income	IS4_05 + IS4_06
CF3_04	(-) Tax Expenditure	IS4_07 + IS4_08
CF3_05	(-) Consumption Expenditure	IS5_03
CF3_06	(-) Insurance Premium	IS5_04
CF3_07	(-) Capital Expenditure on Livestock	-[BS1_07(t) - BS1_07(t-1)] + IS3_02_02_3 + IS3_01_02_1 + IS3_02_02_2
CF3_08	(-) Change in Deposit at Financial Institution	-[BS1_03(t) - BS1_03(t-1)]
CF3_09	(-) Change in ROSCA Position	-[BS1_04(t) - BS1_04(t-1)] + [BS3_03(t) - BS3_03(t-1)]
CF3_10	(-) Lending	-[BS1_05(t) - BS1_05(t-1)]
CF3_11	(+) Borrowing	BS3_02(t) - BS3_02(t-1)
CF3_12	(+) Net Gifts and Transfer	IS6
CF3_13	(+) Change in Contributed Capital	BS4_01(t) - BS4_01(t-1)
CF3_14	(+) Insurance Indemnity	BS4_04(t) - BS4_04(t-1)
CF4	Statistical Discrepancy	BS4_05(t) - BS4_05(t-1)
CF5	Change in Cash Holding from Balance Sheet	BS1_01(t) - BS1_01(t-1)

STEP 5: FINAL ACCOUNTING CHECKS

We finally check whether our financial statements are balanced by looking at the following four accounting identities:

1. Total assets = Total liabilities + Household's net wealth
    - BS1 – BS2 = 0

2. Change in cash computed from the statement of cash flows = Change in cash computed from the balance sheet
    - CF1 – CF5 = 0

3. Household's savings from operating income computed from the income statement = Change of cumulative savings from operation computed from the balance sheet
    - IS1 = BS4_02(t) – BS4_02(t-1)

4. Household's savings from non-operating income computed from the income statement = Change of cumulative savings from non-operation computed from the balance sheet
    - IS6 = BS4_03(t) – BS4_03(t-1)