CHAPTER 9

PRESENTATION OF THE APPROACH AND DISCUSSIONS

In this study, an attempt has been made to develop a simple but comprehensive practical approach for determining whether communities can and will finance the control of onchocerciasis with ivermectin. The approach also went further by modelling how a community financing scheme can be designed and executed. The recognition of the need for a simple, practical operational tool guided the development of the approach.

The research was not intended to develop an alternative theory of choice. Rather it was concerned with designing several types of factors which must be incorporated into any valuation technique for measuring the ability and willingness of people to finance the control of endemic disease. The techniques of the willingness to pay (WTP) approach were fully incorporated to form part of this approach.

The specific objectives of the study which were; to model the possible factors that affect households' ability and willingness to finance the control of onchocerciasis with ivermectin, to design a criteria for assessing the results from the factors generated, and to design how the interpretation of the results could be translated into a community financing scheme were met.

The various designs that were developed to meet the stated objectives will be presented below.

It is accepted that such a study will have its strengths and weaknesses. The relative weights to be attached to each of these two attributes may depend on whether one is a theorist or a practitioner.

One's guess is that the theorist may point out the inexhaustive variables in the models, argue about the scales of measurement, and maybe the sub-optimal modelling techniques and statistical tools adopted.

On the other hand, another guess is that the practitioner will recognize the practical uses of the approach as a simple operational tool, and its possibilities of offering reasonable but practical though not necessarily optimum but theoretical results.

One however feels that the strengths of this approach outweigh the weaknesses whatever they may be. This is because they it was developed from accepted economic principles. Also, the primary aim was to design a practical approach that could be used effectively by both local people and non-experts, and this was met.

In this connection, according to Culyer (1985), the process of theorizing can never tell the whole truth about human choice. The question is does it tell enough relative to alternative possible formulations to be useful? Moreover, does it accord sufficiently well

with intuitions, and the observable consequences of choices, for one to be ready to rely upon it in making explanations and predictions about things one sees. Finally, he noted that the necessity to invent unobservable entity to account for phenomena we can observe is very common in science.

Such two entities called WTF and ATF have been invented in this study. Though they performed satisfactorily with simulation, only real field testing will confirm whether they are good measures of consumer choice and budgetary constraints respectively.

In developing this approach, prominence was given in using the observable behavioral factors that determine consumer choice in designing the models and the criteria for interpreting them. This is supported by the fact that knowledge and beliefs about sickness, good health habits, living conditions, and medical practitioners are central determinants of the demand for health care services. (Akin and others, 1985).

The models were derived from the four theories of choice namely: Marshall's Cardinal utility theory; Samuelson's Revealed preference theory; Hick's Indifference curve theory; and the Expected utility theory.

The concepts may not therefore be consistent with some of the postulates or axioms of these theories. However, attempt was made to streamline all the points derived from these different theories so as to produce a consistent and logical basis for the modelling.

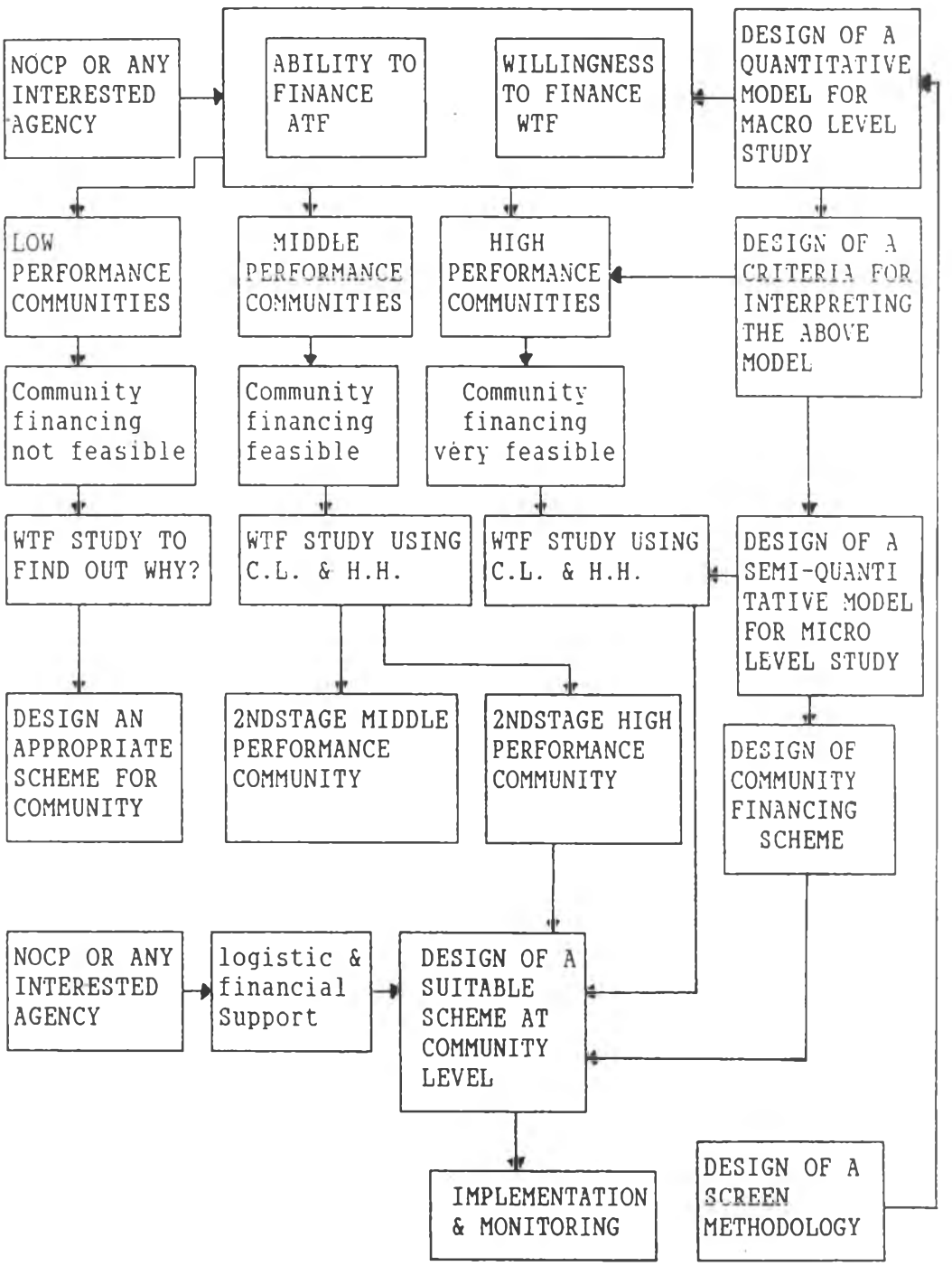
All the arguments were made explicit so that users may find ATF and WTF acceptable tools to use in measuring consumer choice in the area of endemic disease control.

The same style of drawing points from many different and sometimes inconsistent concepts was also adopted by Murray (1994) in discussing the technical basis for disability adjusted life years (DALY).

The summary of the approach will first be presented and discussed in an orderly step-wise manner, so that all the conceptual issues will be clear and concise.

Figure 9.1 below illustrates the broad design of the approach. The detailed components of each step are not shown, because it will make the diagram to be more complex. Rather, the intent is briefly show what has been done. Then, to go further and point out what can be done with the approach, how it can be done, and the possible fall-outs.

FIGURE 9.1 Illustration of the summary of the approach



NOTE: H.H. = HOUSEHOLD HEADS. C.L = COMMUNITY LEADERS.

9.1 The Quantitative static model

It comprises of ATF and WTF functions. They are estimated separately since by really establishing the ATF of a community in third world countries is the key to having any successful programme. If submerged into WTF, many factors are lost and one may not be able to say whether the communities have the ability or not. The mean of the variables should be used to estimate ATF and WTF.

Some important components of the model are:

1. Ability to finance (ATF)

$$ATFh = A\,(Yh + Eh + Ef + Op + Ts) + u$$
$$\Sigma ATFh = ATFc$$
$$\%ATFc = ATFc/maxATF * 100$$

Where;
Yh = HOUSEHOLD INCOME PER MONTH
Eh = HOUSEHOLD EXPENDITURE ON HEALTH CARE PER MONTH
Ef = HOUSEHOLD EXPENDITURE ON FOOD PER MONTH
Op = OWNERSHIP OF PROPERTY BY THE HOUSEHOLD
Ts = TYPE OF SAVING SCHEME ADOPTED BY THE HOUSEHOLD
ATFh = ATF OF A HOUSEHOLD
ATFc = ATF OF THE COMMUNITY
maxATF = maximum ATF that a community can attain

Ability to finance was derived from the budgetary constraints of the utility function. It is seen that the factors causing it are multi-dimensional. It is important to adopt this style of measuring ATF in Third world countries since issues regarding ability as stated earlier are not related to income alone.

2. Willingness to finance (WTF)

$$WTFh = W\,(Lk + Pr + Pc + Rc + Aw) + u$$
$$\Sigma WTFh = WTFc$$
$$\%WTFc = WTFc / max\ WTF * 100$$

Where;
Lk = LEVEL OF KNOWLEDGE
Pr = PRIORITY RANKING
Pc = PRESENCE OF CLINICAL ONCHOCERCIASIS
Rc = RISK OF CONTRACTING ONCHOCERCIASIS
Aw = AMOUNT WILLING TO FINANCE
WTFh = WTF OF HOUSEHOLD
WTFc = WTF OF THE COMMUNITY
maxWTF = maximum WTF that a community can attain

The WTF function was derived from the utility function. WTF like ATF is also multi-dimensional. This is because it is known that people do not actually reveal their true preferences for health care services, through the amounts they quote that they are prepared to pay.

It therefore becomes imperative to adopt this type of multi-dimensional approach in order to get a near accurate measurement of the consumers' choice by combining many attributes of their health state situation that they reveal.

3. OLS-multiple regression analysis:

1. Between WTF and ATF with their independent variables
2. Between WTF and ATF with socio-economic and demographic factors.
3. Between Aw with socio-economic and demographic factors, together with fellow WTF causal variables.
4. Between income with socio-economic and demographic factors, together with fellow ATF causal variables.

4. Calculation of mean and or median Aw

These would be used as the basis for setting the amount each household should contribute per eligible person.

9.2 The Quantitative dynamic model

It also comprises of separate functions of ATF and WTF. However, factors that come to play in dynamic conditions are added, while those not necessary were removed. Logit function is used to estimate both ATF and WTF in the dynamic state.

1. ATF

$$ATFh' = a_0 + a_1 Yh + a_2 ATF_{t-1} + u$$
$$\Sigma ATFh' = ATFc'$$

In dynamic conditions especially with the passage of time, it is assumed that ATF will depend only on income This is because income is completely spent on Eh, Ep, Op, Ts, and X.

X = a composite of other goods like education, leisure etc.

Therefore by projecting the Y under dynamic conditions, one will know the possible level of ATF.

2. WTF

$$WTFh' = a_0 + a_1 Aw + a_2 Sr + a_3 Le + a_4 WTF_{t-1} + u$$
$$\Sigma WTFh' = WTFc'$$

where:
Sr = success rate of the scheme

It is recognized that dynamic WTF status will definitely depend on SR. LE will continue to play a role and so also will Aw.

9.3 The Semi-Quantitative model

This is the second level of the study and it should be used only in studying a particular community. The use is for confirming the earlier values of ATF and WTF deduced from the quantitative model. This model is structured in a way that the factors which interplay in a community are elucidated. The survey in this case goes deeper than in the quantitative model, in that reasons for making any preference is asked in order to get a complete view of the situation. Its appropriately divided into different studies for household heads and community leaders respectively.

The interviews with the questionnaires will be used to confirm ATF and WTF status of the community. The information from in-depth interviews and focus group discussions will be used to elucidate further the reasons behind the ATF and WTF, clarify some difficult issues, and have an idea of the type of community financing scheme that the community will prefer.

1. Household heads

ATF and WTF functions are the same as in the quantitative model. The aim is to re-study the people that were surveyed initially to see whether their stated preferences have changed. This will serve as a measure of reliability of this approach. Additionally, open-ended questions to elucidate the reasons behind the preferences or choice will be asked.

The open-ended questions' analysis will serve as a policy guideline in implementing the programme. Equally, the reasons given by household heads that made sub-optimum choices should be studied, and measures to modify them developed and implemented. This will make those households to thereafter be happy to participate in the programme.

Nevertheless, it is known that issues regarding ATF are difficult to modify, but one can offer some advice. WTF conversely is behavioral and factors causing negative or sub-optimum WTF can always be modified assuming ATF is optimum.

Focus group discussions

A smaller sample of household heads will be taken and discussions held with them. Separate discussions should be held with women and men. Issues relating to equity, beliefs and practices relating to the programme will be discussed.

2. Community leaders (CL)

Since the aim is to get the community profile from them, only variables that focus on the general community profile are considered.

1. ATF

ATFc = A(Yc + Opc + Epc + Efc) + u
%ATFc = ATFc/max ATF * 100

WHERE;
Yc = INCOME LEVEL OF THE COMMUNITY MEMBERS (CM)
Opc = OWNERSHIP OF PROPERTY BY CM
Epc = LEVEL OF EXPENDITURE ON FOOD BY CM
Efc = LEVEL OF EXPENDITURE ON HEALTH CARE BY CM

2. WTF

WTFc = W(Lk + Pr + Aw) + u
%WTFc = WTFc/maxWTF * 100

WHERE;
Lk = LEVEL OF KNOWLEDGE OF CM
Pr = PRIORITY RANKING OF THE DISEASE BY CM
Aw = AMOUNT WILLING TO FINANCE BY CM

It should be noted that these measures involve value judgements of the community leaders about their community. Community leaders who lack knowledge themselves about the disease will be eliminated from the analysis, since they are incapable of judging their community. However, since the opinion of many C.Ls. would be sought, the mean of the scores of only the knowledgeable ones would be taken as being representative.

Supporting approaches:

In-depth interviews

A sample of key C.Ls. would be taken, and in-depth interviews conducted with them. This would reveal the exact community profile like customs, beliefs, knowledge, attitude and practice, willingness and ability. The information so received would help in starting and managing the financing scheme, and also in mass mobilization of the people.

This interview may either reinforce or contradict the values of ATF and WTF elucidated in the previous stage from the C.Ls. One however hopes that they would be the same.

Focus group discussions

This is supposed to serve the same purpose as the in-depth interview. However, the additional benefit is that one can observe how people jointly discuss these issues. Misinformation gathered during the private in-depth interviews should be clarified here since the moderator would raise all thorny points that surfaced during the in-

depth interviews.

Therefore, it should clarify points from the in-depth interviews since people speak the truth when in the presence of other equally knowledgeable people.

9.4 Multi-dimensional criteria

As stated earlier, a definite criteria for arriving at definite conclusions that a community has the ways and the means, and is prepared to undertake the financing of health care services has been lacking in previous methodologies developed. This void it is hoped, this criteria will cover.

Literally, it is bi-dimensional since it combines values of ATF and WTF to arrive at conclusions. However, when it is recalled that ATF and WTF contain so many variables, and that all these eventually are reflected by the output from the criteria, then it becomes appropriate to call it a multi-dimensional criteria.

9.4.1 Criteria for the quantitative model

The output from the quantitative model is to inform the policy makers on communities where community financing is feasible. This leads into the next stage where the output from the semi-quantitative model is used to confirm the findings from the quantitative model. Thereafter, one can then design and implement an appropriate community financing scheme for communities where the criteria confirms that it will be feasible.

9.4.2 Criteria for the semi-quantitative model

1. Criteria for arriving at a decision for household heads

In this case, only a majority decision signalling high ATF and WTF will be taken as been confirmatory. The elaborate design and combinations of the quantitative multi-dimensional criteria will not be used. This is because this model is to confirm and reassure oneself that the community is ready to finance the programme.

2. Criteria for arriving at a decision for community leaders

The values would be expressed as either positive or negative. Only positive values are confirmatory. ATFc and WTFc positive values must be more than 50% of the maximum ATF or WTF respectively.

3. Criteria for evaluating the overall semi-quantitative model

A criteria that is needed to finally come to conclusions about a community's level of ATF and WTF was designed. This was by combining the different values of ATF and WTF elucidated from both household heads and community leaders using semi-structured questionnaires. A

high performance community as judged by this criteria is ripe for implementing a community financing scheme.

9.5 The study tools

The study tools needed were fully detailed and the reasons for framing the questions the way they were explained. The coding method adopted and interpretation of the codes were explained too. The study tool can be subsequently easily developed using the guidelines given in the section on the design of the study tools.

9.6 A community financing scheme model

Community financing is the ultimate aim of this approach, and it represents the end point. A descriptive model that should be successful was designed, and the rational given for the approach adopted.

9.7 Testing the approach

Finally the quantitative model was tested through the use of simulation modelling of three hypothetical communities with varying levels of ATF and WTF. The results were quite acceptable, and strengthened the belief that the approach will have practical uses.

The model specification as a multiple linear function was also confirmed to be correct. This conformed to the general norm that in reality, the choice of a model is almost always made after some preliminary data analysis. For instance, in the case of a regression model, we start with a specification that seems most reasonable a priori. But after examining the coefficients, their standard errors and the residuals, we change the specification of the model. (Maddala, 1989). In this case, there was no need to change the specification of the model.

9.8 General discussions

This research has been an exercise to develop a novel simple operational approach for studying the capability and preparedness of communities to finance the control of onchocerciasis using ivermectin. The approach especially the WTF aspect should give a better valuation of consumer choice for endemic disease control services than the regular WTP technique, since there are multi-dimensional factors being considered.

However, since the WTP technique is a part of this approach, a comparative analysis of both methods should always be done. This is so that one could tell which approach is better with prospective evaluation of the stated willingness to pay/contribute.

This idea of exploring community financing by using ATF and WTF valuation technique runs against the general notion, that endemic disease control is not a good area for attracting user charges. This is because they are seen as public goods, and with externalities.

However, this view-point should be banished because by sticking to it, endemic diseases that could easily have been controlled are wrecking havoc and ravaging many communities. This is because everyone is waiting for the government to do something, while it is a known fact that budgetary constraints of the government limits its activities especially in health care. Added to this is the fact that most governments only pay lip service to preventive care and the control of endemic diseases, and rather pump in a lot of funds to the more glamorous curative care services.

Communities with endemic diseases consequently have been receiving a rough deal, because not only are they neglected by the government, but also nobody has come to help them to take care of their health. They might possess the ability and willingness to take control of their destiny, but invariably they need both logistic and technical support to actualize their aspirations. When this support is lacking, the result is a vicious cycle of disease, morbidity and mortality in their communities.

Sadly, many policy makers lack the necessary vision and tools to prime the communities into doing something for themselves. They discuss communities as academic entities, and conjure up all kinds of problems about dealing with communities. They easily slip down the slippery slope, and find refuge and succor in the much touted notion of endemic disease control being public goods and that the communities may already be spending too much money on health care and so should not be bothered to spend more on controlling their endemic disease.

Some out of lack of knowledge about community financing shy away from the subject, or try to hide their ignorance in un-intelligent objections to the scheme. While some blatantly say that endemic disease control should be left to the government.

However, it is worthy of note that the NOCP of Nigeria recognized community involvement as the key to a successful fight against onchocerciasis. The NOCP has set modalities on how to implement it, but sadly everything is still on paper and has not made any move yet to the communities. Though community involvement was touted, community financing which is the key was not mentioned.

This approach so designed will enable policy makers to jump to the field and help the communities to help themselves. This is why the design has been done in stages so that it will be easy and practical, to use and interpret.

Though a general orderly manner of carrying out the studies have been suggested, it is nonetheless rigid. Users can jump some steps or modify them to suit their objectives.

For example, in carrying out a study, users could jump the macro level study, and hence use the quantitative model at the community level. This is at the same time with the semi-quantitative model. That is, if they are interested in a particular community and want to implement a community financing scheme there. An example of where this could be done is if a community states that it has the ability and willingness to support the scheme, and policy makers or any initiating agency wants to confirm this claim.

In such a case, the quantitative model could be modified and used to survey all adults in the community, while the semi-quantitative model would then be specifically applied to household heads and community leaders.

In effect the approach is not rigid and can always be modified to suit any particular purpose of potential users.

The test of the quantitative model by sensitivity analysis and through OLS-multiple regression analysis by simulation, presents very good supportive backbone to the approach. The statistical tests were quite significant and were in accordance with the statistical hypotheses set.

Finally, a system of using a screen methodology for the quantitative model was designed. This was in recognition that this particular model is the pacemaker of the approach, and that every other step was either directly or indirectly derived from it.

As stated in the section on research, it can be used independent of the quantitative model and vice versa. However, when both are used at the same time and the results are complementary, one is very sure that he/she is on the right track.

It is recognized that this approach designed is still in the infantile stage. However, continued efforts will be made to refine it and develop better approaches as experience from the field bring in new ideas. It should be viewed as one more step in a long development process exactly the same way that Murray (1994) said that DALY should be seen.

Expected benefits/applications of the approach

1. To be used in helping policy makers who are looking for additional resources to meet the necessary health care needs of people, in careful planning on how to channel household expenditures more efficiently in the health care system.

For instance, when there is normative felt need by policy makers, they can use this methodology to confirm the communities' ability and willingness to support such government initiated health care programmes.

2. To involve communities more in taking care of their health, especially communities with little or no government help. This is because it could be used to sensitize the people about their health problems, and also signal to them that they can take control of their destinies with little monetary or non-monetary sacrifice.

3. It is hoped that the results can be applied to so many other endemic disease control programmes all over the world whose sustainability is now a major problem due to diminishing foreign support, coupled with poor economic situations and subsequent diminishing government spending on disease control activities. In this case, the variables and study tools should be modified, to reflect the peculiar nature of the endemic disease programme.

4. This design research can be used as a rapid assessment technique for Governmental or non-governmental bodies that are interested in exploring and supporting community financing, in deciding on which communities to select and what model to adopt.

5. The adaptation of this technique in evaluating people's ability and willingness to pay for government health care services if user fees are to be introduced.

In conclusion, this approach though designed with ivermectin as the focus could also be used in many other endemic disease control strategies. This is especially in situations where drugs for individual consumption or personalized diagnostic tests are being used. This is because in those cases, there is private excludable consumption with private benefits. Therefore, the willingness to finance will be high in these cases, assuming the ability is present. This is unlike in vector control where there is no private excludable consumption, and where the willingness to finance may be low.

The approach was also made logically clear because it is recognized that, one general principle in the application of scientific methods to management is that only methods that are understood get used over time by decision makers.