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A Sustainable Household Survey Based Poverty Monitoring System

A Poverty Monitoring System Based upon Household Survey Estimation of Total Consumption.
A Preliminary Paper Asking for Cooperation

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A Poverty Monitoring System Based upon Household Survey Estimation of Total Consumption. A Preliminary Paper Asking for Cooperation

Abstract:
There is a clear and specific demand from policy makers for cost-efficient statistics on poverty (both measured by total consumption and by a multi-dimensional approach) with fast delivery and high reliability. But so far the global statistical community has not been able to deliver a common comprehensive approach. We find at least these 3 major challenges to overcome: 1) Designing one short questionnaire which would provide the information needed for monitoring of the Millennium Development Goals and the national Poverty Reduction Strategies allowing for a fast turn around and dissemination; 2) Developing a method for easy but still accurate measurement of money-metric poverty; and 3) Designing a statistical approach which would allow both for annual monitoring of the PRS indicators and the MDGs with a fast turn around and a rotating program of sector surveys which may be detailed and/or requiring special field work arrangements.

This paper aims at presenting, not the final approach responding to the three major challenges and hence satisfying policymakers, but an approach contributing towards such an approach and an outline for the road towards this objective. We present this approach in 8 elements. 1) Identification of indicators to monitor achievement of the goals of the national Poverty Reduction Strategy Papers (PRSP) and the Millennium Development Goals (MDG). 2) A Household Consumption & Expenditure Survey is needed to draw an initial poverty line. 3) Statistical modeling should be used to estimate the development of poverty in the years between two Household Consumption and Expenditure Surveys. 4) Annual surveys on different topics, all containing the same core of questions. 5) A 5-10 year household survey program containing different modules ensuring that central themes are focused on at a regular basis. 6) The survey system must contain the statistical tools necessary to produce consistent trend statistics of sufficient quality, including seasonal adjustment and small areas estimation. 7) It is important that the results of the surveys are fast and easily accessible, such as by regular Web-dissemination by the National Statistical Institute. 8) The statistical community should enter an active dialogue with the donor community to ensure that international agencies accept that "their" surveys are redesigned into a rotating survey program.

We are convinced that such a strategy will be an important step on the way to establishing a sustainable, cost-effective statistical system in development countries and invite for a further joint effort towards this objective.

Acknowledgement: We are grateful to our partners in our sister-organizations in Angola, Malawi, and Mozambique for having worked with us on a number of the elements presented in this report and to the Norwegian Development Agency, NORAD, for having funded the work summarizing our experience so far and hence enabled us to present a preliminary document inviting to further cooperation with these and other partners.

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1. Executive Summary

The need and demand for cost-efficient integrated and comprehensive statistics with a rapid turn around for poverty and social welfare statistics for policy decisions is nothing new[1], neither is the triangle Statistical information - Analysis - Policy decision. In fact the international initiative PARIS21 is devoted to the relationship between Statistical information and Policy decisions expressed as "Statistics are the eyes of the policy decision maker".

What is new is the strength of two elements:

- *Clear and specific demand from policy makers.* With the Millennium Development Goals and the Poverty Reduction Strategy Papers and their monitoring and master plans, the policy makers have entered the driver's seat and express a clear demand for a proper statistical information system.
- *Methodological and technological improvements.* The methods and technology of survey data collection, processing and dissemination has advanced enough for the statistical profession to supply what is demanded, on time and at a reasonable price.

But is this is the case why has the statistical community not been able to deliver n common comprehensive approach. There are at least these 3 major challenges to overcome:

- Designing one short questionnaire which would provide the information needed for monitoring of the Millennium Development Goals[2] and the national Poverty Reduction Strategies[3] allowing for a fast turn around and dissemination.
- Developing a method for easy but still accurate measurement of money-metric poverty.
- Designing a statistical approach which would allow both for annual monitoring of the PRS indicators and the MDGs with a fast turn around and a rotating program of sector surveys which may be detailed and/or requiring special field work arrangements.

This paper aims at presenting, not the final product which would respond to the three major challenges and satisfy the policymakers, but an approach contributing towards such as product and an outline for the road towards this objective. Such systems should be as transparent as possible to facilitate discussions about the approach chosen. Further, it is important that the methods used for monitoring poverty are agreed upon by all involved parties. We present this approach in 8 elements.

1. Identification of indicators to *monitor achievement of the goals* of the national Poverty Reduction Strategy Papers (PRSP) and the Millennium Development Goals (MDG).
2. A Household Consumption & Expenditure Survey is needed to *draw an initial poverty line*.
3. Statistical modeling should be used to *estimate the development of poverty* between the Household Consumption and Expenditure Surveys.
4. Annual surveys on different topics, all containing the same *core of questions*.
5. A 5-10 year *household survey program* containing different modules ensuring that central themes are focused on at a regular basis.
6. The survey system must contain the *statistical tools* necessary to produce consistent trend statistics of sufficient quality, including seasonal adjustment and small areas estimation.
7. It is important that *the results* of the surveys are fast and easily accessible, such as by regular Web-dissemination by the National Statistical Institute.
8. The statistical community should enter an *active dialogue* with the donor community to ensure that international agencies accept that "their" surveys are redesigned into a rotating survey program.

We are convinced that such a strategy will be an important step on the way to establish a sustainable, cost-effective statistical system in development countries.

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[1] Refer to the first footnote in the introductory chapter.

[2] The Millennium Development Goals (MDG) has been agreed upon unanimously by all the member states of the Unites Nations (UN).

[3] The Poverty Measurement Strategy Papers (PRSP) was initially a requirement for Heavily Indebted Poor Countries (HIPC) credit reduction by the World Bank and the International Monetary Found (IMF), and has gained an increasing political significance.

2. Introduction

The need and demand for cost-efficient integrated and comprehensive statistics with a rapid turn around for poverty and social welfare statistics for policy decisions is nothing new[4].

Millennium Development Goals[5] (MDGs) and the Poverty Reduction Strategy Papers[6] (PRSP) are now emerging as not only another wave of concepts and policy declaration but as an overall yardstick for long term development strategy for the 21st century towards 2015. The MDGs and the PRSPs are important for which issues are on the agenda on and how policies are made into reality. The goals not only focus on poverty, but also on the way out of it. In this sense "poverty" also means "richness", like the degree of literacy, school enrollment and child vaccination. The indicators associated with the MDGs and the different PRSPs are powerful tools to monitor and describe people's lives.

The Partnership in Statistics for Development in the 21st Century (PARIS21) are focusing on the implementation of National Strategies for the Development of Statistics (NSDS**)** in low-income countries. The system for poverty monitoring we are suggesting in this paper is in line with the goal of the formation of the NSDS, to create a holistic and strategic approach to poverty monitoring (Paris21.org, 2004). The aim is to develop a sustainable integrated approach to the evaluation requirements of PRSPs, MDGs and other national development plans.

It may still be a farfetched comparison, but just as the focus on economic growth in the OECD-countries in the aftermath of the second world war pushed the establishment of a national account system and economic forecasts, we in the International Statistical Community should read the focus on the MDGs and PRSPs as a chance to push for a comprehensive system for monitoring of poverty related issues.

Most developing countries have developed their own poverty reduction strategies, and have agreed upon goals, targets and indicators to measure whether the goals are met. Monitoring of living conditions as described in the PRSPs and national MDG monitoring has in our opinion not received the necessary attention. This includes both monitoring of the core elements of the plans and goals, and the possibility to measure the development of peoples living conditions.

Based upon co-operation with colleagues in several developing countries, i.e. Angola, Malawi, Mozambique, and Uganda and own further development of statistical methods, we in Statistics Norway would like to contribute towards such a comprehensive approach by presenting a comprehensive - but still sustainable - approach for a poverty monitoring system with the necessary quality, flexibility and adaptability, speed and costs to serve evidence based policy decisions and

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[4] Both UN and the World Bank promoted comprehensive programs from the end 80s and up to the last half of the 90s. UN with its National Household Survey Capability project in the decade around 1990 aimed at building the capacity for a comprehensive program of household surveys covering a rotating set of sectors. The World Bank introduced their Social Dimension of Adjustment survey program based upon an Integrated Household Survey such as every 5 years followed by annual simple Priority Surveys both including a Community Survey. And every National Statistical Institute with self-respect planned 5 or 10 year programs with a range of either sector survey or integrated surveys.

These survey program have been very useful for some purpose, for dedicated use such as for construction of a commodity basket for a consumer price index and for national accounts, for research and for provision of statistics of issues which do not change too fast. But they were facing challenges:

- serious professional limitations from a monitoring perspective; far too heavy and far too slow to process
- serious financial drawbacks; far too expensive and hence conducted far too irregularly
- serious coordination shortcomings; the survey programs were not coordinated and no efforts were made to agree upon a common program

While single surveys fed into long term policy directly or through micro analysis, the survey programs hardly managed to ensure a proper fact and evidence based information source for policy decisions in general and not at all for short term policy decisions, nor where the programs carried out in a cost efficient manner. Hence they never managed to ensure governmental support for a sustainable program.

[5] The MDGs were unanimously agreed by the 189 nations of UN in 2001 ?

[6] The PRSPs were initially made a requirement for HIPC credit reduction by the World Bank and IMF and later turned into a broader policy context by the original HIPC eligible and other countries.

poverty reduction activities. In our opinion, every contribution towards such a system would need to build upon existing structures by combining, modifying and adapting existing methods. This has been the guidelines for our contribution presented in this paper.

The MDG and PRSP poverty monitoring is now approaching a new stage. In a number of countries the second and even the third measurement of poverty headcounts and poverty gaps are being presented. In some countries the new measures indicate a poverty reduction, in others an increase. Both the magnitude and even the direction of change might surprise.

A money-metric poverty measurement may be the best measure of overall resource poverty but is still measuring a mixture of long term poverty trends and current fluctuations caused by external shocks and surprises, e.g. climatic conditions and fluctuations in world market prices of essential export or import commodities. A US invasion in Iraq, coffee-bushes freezing in Brasil, draughts or just dry-spells, or rather enough rain with ideal timing; they all might have a smaller or larger impact on poverty levels. But neither the governments nor a large donor like the World Bank seem to be ready to present up-front the possible impact of external factors when these are causing a positive surprise and hence they risk being trapped in the next round.

As one should be prepared for, these sometimes unexpected results are also used as an opportunity to return to or raise methodological issues both by groups advocating other policies than what the government does and groups advocating other poverty measures than the standard money-metric ones. In this case there are usually two sets of arguments. One is just opposite of the governments, lower than expected poverty headcounts are questioned while higher than expected poverty headcounts are taken as an indicator of the failing poverty reduction policy. The other and broader criticism is arguing the need to include measurement of other dimensions of poverty such as literacy, school enrollment, child vaccination, malnutrition and infant and child mortality or even to move one step further and include subjective poverty indicators such as participatory wealth ranking or public service satisfaction. Typically sector interests, non-economist social scientists and civil society organizations are all advocating along these lines, however with different main emphasis.

We will advocate a support for the latter broad criticism, not to replace money-metric poverty measurement as the central measure, but rather to retain this as the central measurement. The poverty headcount will then be an indicator of whether a household has enough individual resources and entitlements to participate in the daily life in a community and country. Other measures are needed to provide information on public and community resources for specific sectors, for perceptions and for dimensions of poverty.

3. The Main Challenges

In our opinion we are facing three main challenges to establish a sustainable poverty monitoring system:

First, there is a need to address the different poverty measures in a common context. Sector poverty measures such as infant and child mortality, illiteracy, and hunger are all important poverty indicators representing various dimensions but are not replacing a common indicator as money-metric poverty. Stock resources as land and other main assets are essential poverty resource indicators but as an average for a socio-economic group or a certain geographical area, a flow measure as total consumption is a better indicator. Subjective indicators are essential, especially on public services and access to infrastructure to guide public policy, but cannot replace an overall objective measure.

Second, there is a need to address fluctuations. While this is a new situation in poverty monitoring, it is a standard situation when establishing statistical systems in new areas. The task is to measure and monitor long term trends, but the measures and indicators are reporting a mixture of long and short-term trends. We should be able to separate the trends. A researcher, policymaker or donor with equally short term time horizons tend to go for analysis based upon models estimating effects of external causal factors. This will definitely improve the understanding of the underlying poverty trends, but there might be a temptation towards including only factors supporting the main hypothesis.

Third, while not commonly acknowledged, there is a need for a long term sustainable i.e. cost efficient, high quality and timely approach. We would advocate a long run solution of establishing a well-designed statistical system and over time build a model for seasonal or annual adjustments in a systematic fashion. A valid counterargument might be that such a system demands large resources and require long processing time. The policymakers may not find it worthwhile to support an expensive system presenting monitoring information even with a reasonable frequency if the time lag from field work to dissemination is too large. Monitoring information should provide annual information with a short time lag for a reasonable price.

We will present an outline of a theoretical framework that addresses these problems.

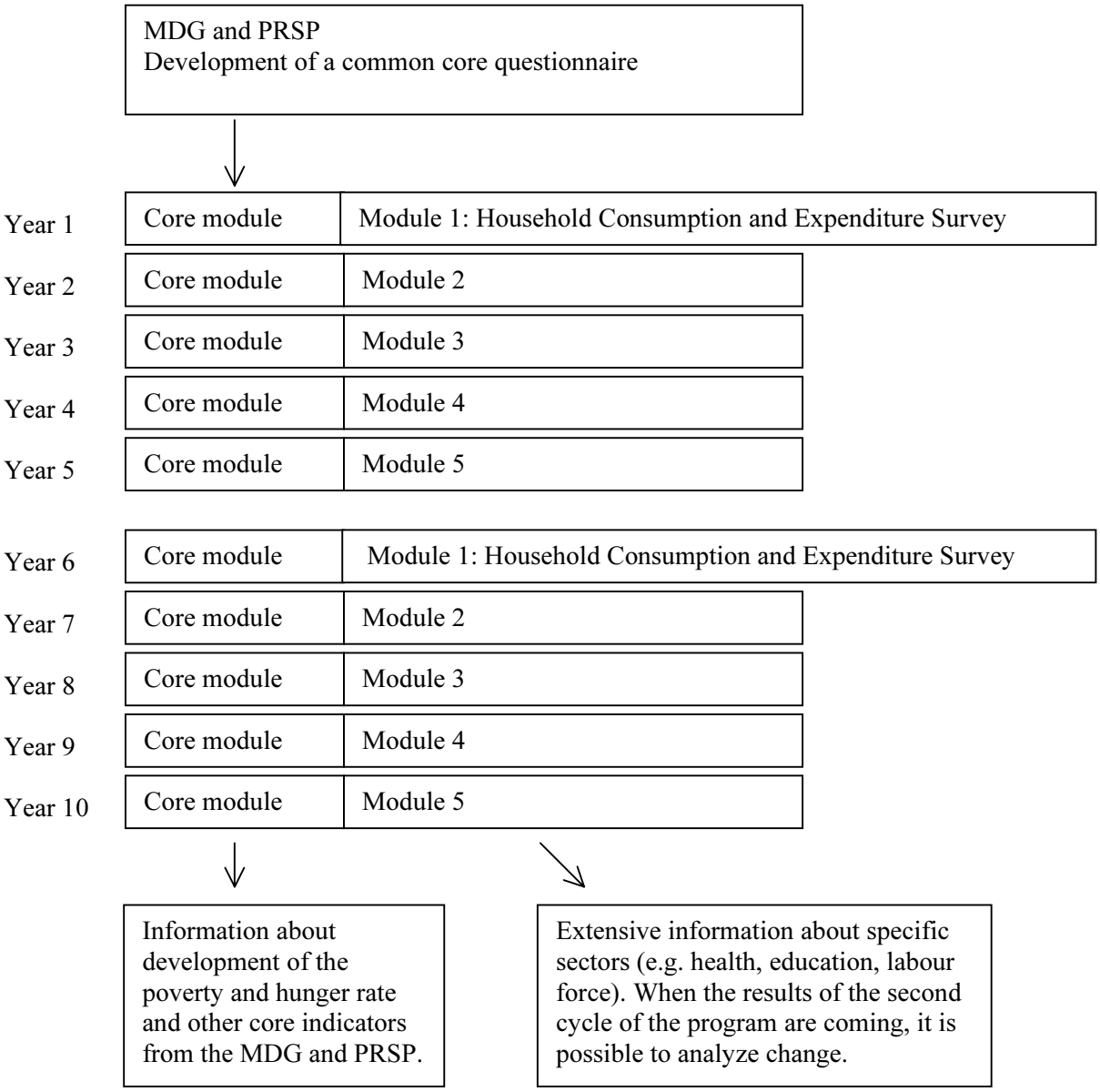
4. The model

Our basic idea can be described in the diagram below. It is based on an assumption that it is possible to find a common set of core indicators that can describe both the MDGs and the goals in the PRSP.

The core indicators will be measured by a set of indicators derived from what is considered to be the most important part of MDG and PRSP that it is fruitful to gather information about with a survey. To reach an agreement on this issue may be a difficult task, but is in our opinion necessary to make it possible to build a national statistical system. The indicators considered most important will build the core module of a rotating survey program. International agencies and donors must accept that the surveys they support are seen as a module - or part of a module - in this system.

The rotating survey program consists of a core that is repeated every year, in addition to a module on a specific subject that is repeated every 5^{th} or 10^{th} year. The modules should consist of topics of national interest, e.g. health, education, labour force. The first module ought to consist of a Household Consumption and Expenditure Survey, because of its significance for poverty monitoring.

Figure 1: An outline of The Household Survey Program



The Household Consumption and Expenditure Surveys will give us accurate measures on poverty. Related to the core module it also enables us to model the development of the poverty rate until the next Consumption and Expenditure survey.

It is important to ensure that the information is processed in a fast and reliable manner to make it available for users as soon as possible, thereby to increase the possibility that it can be used to create and adjust policy.

Some elaborations on the model are needed. Some elaborations on the use of methodology and the statistical tools needed will be given in the following pages.

5. Eight Elements for a Household Survey System for Annual Poverty Monitoring

In our opinion a sustainable poverty monitoring system needs to include the eight elements presented below. These elements should be well adapted to other statistical and policy related activities such as the overall system of social statistics and demography in the National Statistical Institute (NSI) and reflect policy decision processes and priorities made by the central and local government as well as by NGOs and the civil society at large.

Hence, the way the elements of the statistical system are put into reality will vary between different countries. Different contexts require different strategies. When choosing among several options on how to conduct a survey, the best way is to do it Fast, Easy and Robust (FAR). We should try to contribute to develop surveys that are not complicated to carry out, not too sensitive to impact of errors and that enables dissemination of results within a short time after the fieldwork. Please keep this goal in mind when you read about the eight elements we suggest in the text below.

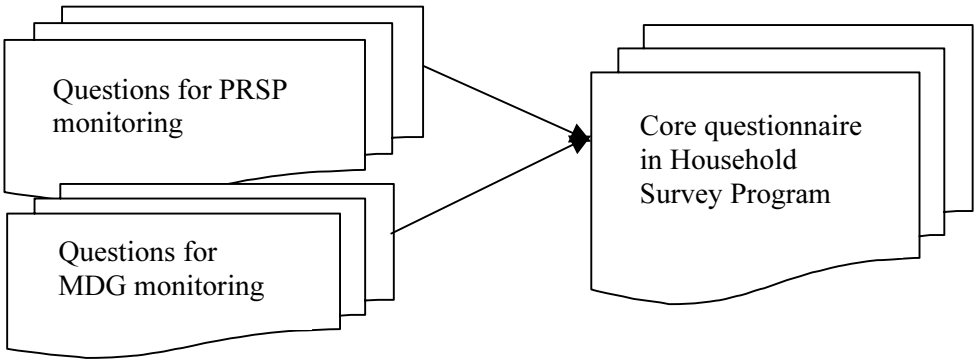
Element number 1: Identification of national Poverty Reduction Strategies and nationally adapted Millennium Development Goals.

Many developing countries have identified their own PRSPs and monitoring masterplans based upon government policy and NGO activities. These often overlap with the MDGs and hence the combination will serve for both national monitoring and international comparisons. Statistics Norway has co-operated with Instituto Nacional de Estatística in Angola and National Statistical Office in Malawi to document how monitoring needs for both the national PRSPs and the MDGs could be combined in a household survey system - as outlined in Annex 1 for Angola and Annex 2 for Malawi. The monitoring of poverty and hunger should be linked to these two elements, trusting they are able to capture its essence on both the national and the global level.

Usually PRSP and MDG focus on similar issues, but their goals may sometimes be defined differently. It is often possible to supply data for both PRSP and MDG trough the same survey question. This is for example the case in relation to illiteracy. The MDG illuminates illiteracy among young people, whereas PRSPs often focus on illiteracy in the adult population as well. In such cases the question is generally included in the survey, and there is no major additional costs associated by presenting both indicators. If there is overlap between the PRSPs and the MDGs that requires the use of questions that differ marginally, one should consider whether it is necessary to include both.

In this context, the primary interest of the National Statistical Institute should be the indicators from the MDGs and PRSPs that are suited to be measured by use of surveys. Other issues are more suited for illumination by the use of administrative records or by a census.

Figure 2: Combining the monitoring of the Millennium Development Goals (MDG) and the goals in the Poverty Reduction Strategy Papers (PRSP)



It is necessary to combine the monitoring of the MDGs and PRSPs for two reasons:

1. It will be cost-effective to combine the monitoring of closely related topics. This will avoid repeated collection of the same information.

2. If the results are presented jointly for the PRSP and the MDG, it may be possible to attract more public attention to the results, than if they were presented separately.

There are challenges related to this. Reaching an agreement on what are the core issues is never easy. The primary challenge is related to the focus of the survey, and what should be considered most important. UN is advocating that each country in principle have to make its own priorities about the focus of yearly MDG-reporting. This is an argument to adjust the focus of the monitoring of MDGs towards the core issues in the PRSP, instead of the other way around.

The National Statistical Institutes must have the final word in the issue on which topics to include, involving donors and international organizations in an active user dialogue. User requests have to be fulfilled to a sufficient degree. Booth and Lucas (2002) also advocate the need for involving stakeholders and strategic selection of indicators for PRSP monitoring. They however fail to see the obvious advantage to include the Millennium Development Goals in the same evaluation.

If it is out of reach to measure whether all of the goals are met, it will be fruitful to consider which themes are most important, either because they are particularly important for policy makers, or because they are crucial for focusing on the situation for marginalized groups, or because they are widely used.

Element number 2: A 12 month Household Consumption and Expenditure Survey

It is well documented that total consumption gives the best proxy measure of income and hence poverty. There is international consensus that a 12 months Consumption and Expenditure survey implemented either as a self-standing household budget survey or as an integrated survey is needed both to construct a poverty line and to measure poverty incidence and other poverty indicators.

A Consumption and Expenditure Survey is also needed to construct the commodity basket for the Consumer Price Index and to estimate consumption according to the System of National Accounts standard from 1993 and hence will be conducted every 5^{th} or 10^{th} year in every country. In order to monitor poverty on a more regular basis, a few countries such as Uganda has managed to attract donor

funding for more frequent household budget/integrated surveys, but this is very expensive and hardly sustainable.

There is a general agreement that measurement of total consumption serves well for poverty measurement. It can supply a reliable baseline for poverty monitoring. However, more work has to be done on identifying which indicators to include, with a special focus on which variables are suited to be included in a short one-visit core survey.

One major challenge in monitoring the *development* of poverty is how to follow the trend without doing annual surveys on household consumption and expenditure, which of course would be very costly. The approach is too demanding for poverty monitoring on an annual basis. We will advocate the use of the statistical model as presented below, for this purpose. The model we are proposing has modest data requirements and has produced relatively precise estimates, and has proved to be a cost-effective way of following the development of poverty.

Element number 3: A Statistical Model to estimate poverty and hunger related measures and error-terms

Given the need for frequent poverty monitoring and the excessive costs of annual household budget surveys, the challenge to predict poverty headcounts is not a new one. Several analyses have been carried out, aimed at giving frequent estimates of poverty. These studies have however focused more on the optimal selection of indicator than on the modeling approach. By further developing methods from Poverty Mapping we have aimed at estimating household consumption, the probability of being poor and the standard error of these estimators. Hence, we have succeeded in building models where the information from 10-15 indicators allow for a quite accurate estimation of measures of poverty. We are also planning to apply a similar approach to estimate the prevalence and trends of hunger in development countries.

The statistical models we are suggesting are based on an analysis of the co-variation between an indicator describing poverty or hunger developed on the basis of a Household Consumption and Expenditure Survey, and other variables describing peoples living conditions that more easily measured and on an annual basis as part of a Household Survey Program. The model is assuming that the relationship between the poverty indicator and related variables describing peoples living conditions remains stable, and estimates changes in the poverty indicators from the changes in the related variables. The method is described by Mathiassen (2004) and summarized in Annex 3.

We will advocate the use of statistical models to monitor the development of the poverty and hunger rates. The main advantage with this approach is that it enables us to present accurate estimates on poverty and hunger rates in a fast and inexpensive manner.

Element number 4: A core household survey based upon scanning and fast turn around technology

An annual core survey must include the information needed for the PRSP and MDG monitoring indicators, and among them indicators needed for statistical modeling of poverty. The core must include the indicators most important to measure, including the indicators needed for poverty monitoring and other central issues.

This core of the survey should be conducted with scanning techniques and predesigned reports, used in connection with the CWIQ survey supported by World Bank or other scanning solutions. The survey should be based upon a pilot survey to enhance quality. Our reason for advocating scanning techniques is that they have proven to be fast and reliable. In theory manual methods of data entry may work as well, but our experience is that data entry tends to be more time consuming. Whether one uses scanning techniques or data entry, it is important to test the system before the survey is in the field, and to start processing the questionnaires as soon as they are returned from the field. Further, it is important to make sure that the data processing can be done without undue delay. The systems to be

used must be tested in a pilot survey. It is crucial to process the core data fast, and if possible it is also an advantage to process the rotating modules relatively quickly. Probably, there will be a growing demand to reduce production time on data from the modules, as the core data are released within a short time span.

This annual core should be implemented during a fixed period, if possible during the lean agricultural season and disseminated within 3 months. Statistics Norway have been assisting the National Statistical Office in Malawi to implement a pilot survey according to these specifications, and jointly with Statistics Denmark and Statistics Sweden assisting Instituto Nacional de Estatística in Mozambique implementing two rounds of a CWIQ survey ('QUIBB' in portuguese).

Manual data editing and revision often turns out to be a time-consuming task. The international experience is that correcting values for individual respondents that are believed to be wrong often does not improve the quality of the results (Statistics Canada, 2003). The efforts made in this respect hence should be limited to a minimum, and target the presumably most serious errors, like extreme outliers.

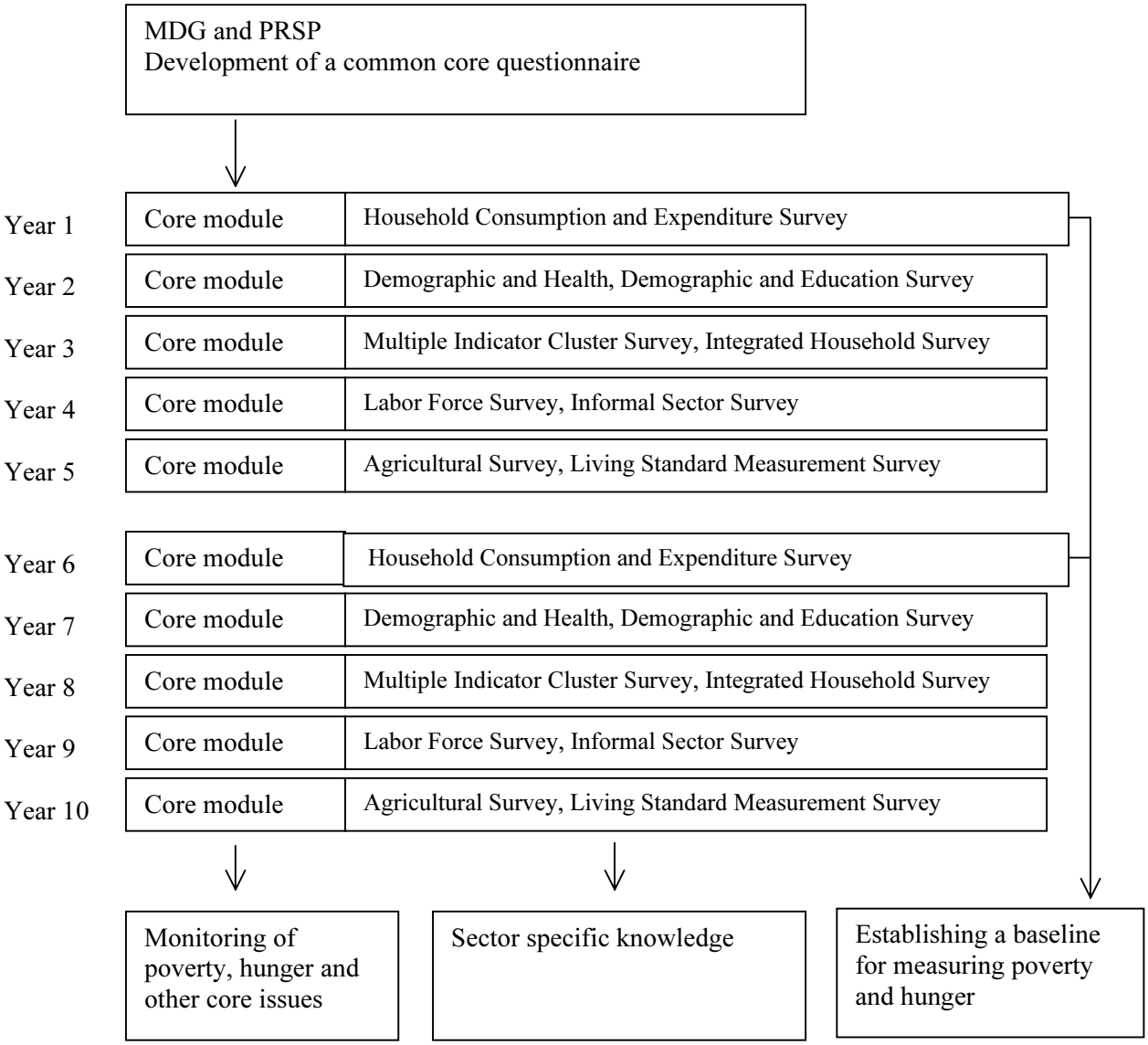
To reduce the time spent it is important to prepare the routines for what to be done with the data after the data collection as early as possible. In the ideal situation a requirement specification for the IT work is produced by the subject matter people, that specifies what they expect from the system, including, which quality checks should be done, how the file structure should be defined and the main a table specification. A table specification will include all indicators addressed in the core, related to all major background variables, e.g. gender, age and education. As much as possible should be tested in the pilot. The pilot will supply information on which items that ought to be checked. Such checks may be to validate the age of the household head and to ensure that the identification numbers are consistent between forms. The IT-staff produce a design specification on how to meet these requirements. The system is established and tested during the pilot phase. This approach was chosen in Mozambique, when preparing the Labour Force Survey, starting in October 2004.

Element number 5: A 5 or 10 year household survey program including the core survey

Most NSIs plan for a 10 year household survey program from one Census to the next. Such a program should be designed over 10 years with a core survey to be repeated annually in combination with rotating surveys or survey modules according to national priorities.

In addition to the consumption and expenditure survey, the following other modules would usually be considered: a Labor Force Survey supported by ILO, a Demographic and Health Survey (DHS) supported by USAIDS, a Multiple Indicator Cluster Survey supported by UNICEF, a Demographic and Education survey of DHS type, a Living Standard Measurement Study or an Integrated Household Survey supported by the World Bank, an Informal Sector Survey, or an Agricultural Survey for the small and medium scale farmers etc. The first module of the household survey program should be a Consumption and Expenditure Survey. The surveys selected for the survey program will differ from country to country.

Figure 3: The Household Survey System - a possible rotation scheme and survey output



Each year the core survey might serve as the introductory questionnaire and the main survey should be designed as a module attached to such a core. The core should contain the core poverty, hunger and welfare indicators form the PRSP and MDG. The core should be processed separately to ensure that it is possible to get the results quickly.

Element number 6: Statistical methodology for a 5-10 year household survey program including the core survey

Statistical modeling is sometimes necessary to use. Often statistical methods have to be applied after a complete data file from the survey is ready, and hence delay the publication of results. The ideal situation is usually to design a survey that does not require the use of statistical modeling before it is possible to analyze the data, however this is not always the case. E.g. the best strategy is usually to measure the same period every year, to avoid seasonal variation in the results from the core module. But if a theme specific module is to be conducted over a whole year, the best option is to include the core module in the whole survey, even if this will mean that we may have to adjust for seasonal variation when presenting time series data. We will briefly present some of the tools that may be applicable in this context.

Seasonal adjustment
When a survey module requires 12 months of data collection, as is often the case for a labour force survey or an informal sector survey, the core survey should be included in the whole file-work-period. In order to ensure consistent estimates, for the national figures only data for the standard 3 months will be presented. Data for the 12 months period will then be used to estimate a model of seasonal adjustment and adjust data for the other 9 months. So far this approach is only a theoretical construction. In the final version of this paper we hope to be able to report experience from using the method. All relevant contributions are welcome.

Small area estimates
Few countries can afford a large scale sample survey every year. Hence it is recommended to rotate the sample and cover only half the districts every year. With some overlap, all districts will be covered over a 3 year period. Initially based upon Census results and after the first 3-year cycle the surveys, small area estimation techniques might be applied to be able to present district level estimates every year.

Adjusting trend data
Trend data may be influenced by all kinds of errors, which may cause an annual fluctuation above or below the real trend change. Here we should be concerned with the errors that change our estimates results, i.e. the systematic errors. Various methods are available to adjust for these errors. Among these are different kinds of smoothing the trend data to modify the annual changes. Another approach is to reduce the statistical variation by rotating the sample, for example by keeping a percentage of the enumeration areas for two (or more) consecutive years and to include new enumeration areas in a systematic design.

The decision on what statistical methods should be used, have to consider their anticipated effect in relation to the time, personnel and money they require. To the extent statistical methods are to be applied, they should be fast to do, easy to apply and robust against errors.

Element number 7: Fast and policy relevant dissemination of trend data

It is important to release the information without delay and in a manner that makes it easily accessible for the users. To achieve this it is important to focus on time as a central aspect of quality. This means that if a task takes a lot of time, that alone is an argument to put less emphasis on it.

The Internet is a core element in fast dissemination. It is important to establish routines for a fast dissemination in a predetermined format at a Web-page of the NSI. Such a dissemination system should not be limited to survey data but combine data from administrative records and present data for inputs (e.g. government finance statistics), outputs (e.g. sector administrative records as school attendance), outcome (e.g. survey data on status and achievement such as literacy and school completion) and impact (e.g. survey data on poverty and hunger) (Wold et al. forthcoming).

Compact discs (CD-Rom) also provide a suitable medium for distribution of data. A CD-Rom is inexpensive to produce and may carry a large quantity of data, and can be used irrespective of the quality of the Internet connection. One example of fast and policy relevant dissemination of trend data trough a CD-Rom is called DevInfo, an initiative taken by UNICEF and UNDP in several countries in Africa, with pilots in Malawi and Tanzania. The project is followed by support to build national databases for socio-economic information and making data available through not only CD-Roms but also on-line on the Web in 2005.

The United Nations recommends that all nations give an annual assessment of the MDG status, through a short publication, focusing on topics of national interest. The UN suggests that it should be about twenty pages and should take no more than two or tree months to prepare. In line with the general idea of this paper, we would suggest to include reporting on PRSP and other central indicators

on poverty and living conditions in a publication of this format. To ensure that preparation of the publication does not take too long, it is important to produce the report in a standardized manner.

Element number 8: International agencies and donors to accept a system with National Core surveys and their "own" surveys as Modules

To develop an integrated survey system is quite a challenge, considering the needs of the different users and stakeholders. Developing countries have an additional challenge in the influence of donors and international organizations. These generally have relatively strong influence on how different surveys are conducted. At the same time, the National Statistical Institutes often does not have sufficient experience and traditions to set the agenda for how to design the survey system. This often makes the statistics fragmented and difficult to use in the building of a comprehensive description of the society.

We advocate a way out of this by establishing a survey program with an annual survey consisting of a core that is repeated each year and a module that addresses a different topic every time the survey is conducted, rotating on a regular basis. This will make it possible to monitor some indicators of poverty and living conditions on an annual basis, *and* get more extensive information on a given topic. To establish the program it is necessary for the different parties in the field to agree on the approach.

The statistical community should enter an active dialogue with the donor community to ensure that international agencies accept that "their" surveys are redesigned into the standard core survey and a sector module.

6. Aiming for a sustainable approach for measuring poverty

Uganda and Mozambique have recently found surprising results in poverty headcount. In Uganda the proportion of poor has increased after several measurements showing a decrease. In Mozambique, the second measurement of income poverty head count has been conducted and shows quite a large reduction since the first measurement in 1996/97. In both cases there is an inclination of government, opposition and NGOs to endorse methods giving results supporting own policy views and to question methods providing figures contradictory to own policy views.

By calculating poverty growth elasticities and applying these on figures of economic growth we have calculated predicted poverty headcounts, compared them with observed headcounts and interpreted the gaps in light of internal and external shocks. The main conclusion from this analysis is that when trend data are missing, there is an absolute need for proper analytical interpretation of poverty headcount measures.

Poverty lines and poverty headcounts have been measured the last hundred years. The poverty lines used in England at the beginning of the 20th century are not that different from the current standard approach. The use of measurement of total consumption to measure a money metric poverty head count has been used almost as long. However, it is only during the last few years that money-metric poverty has emerged as the main poverty measure and the main indicator for international poverty reduction.

Money-metric poverty is based upon measurement of total consumption and has required a 12-month Household Consumption and Expenditure Survey also called a Household Budget Survey. The demands for approved methods have been growing. The international Millennium Development Goals and targets for poverty reduction have focused on money-metric poverty as the one main objective, target and indicator. Hence, in Statistics Norway we have been looking for new methods in this area, new ways to produce robust figures in a cost-effective manner.

We have developed a method that seems to be providing sufficient accuracy to allow for poverty measurement by a small annual survey. In our opinion the strategy presented in this paper can lead the way to sustainable, cost-effective statistical systems in development countries.

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A survey approach for statistical indicators of poverty reduction as presented by "The interim poverty reduction strategy" of Angola and the global "Millennium Development Goals"

Introduction

In "Estratégia Interina de Redução da Pobreza" (EIRP), the Government of Angola has outlined objectives and areas of action for poverty reduction, identified main objectives including macro-economic objectives and reduction of poverty. The Government of Angola has also jointly with the other governments of countries being members of United Nations endorsed the Millennium Development Goals (MDGs).

An essential tool for fulfilling these goals is a monitoring and evaluation system for proper indicators for each of the goals and targets of both the Angola EIRP and the global MDGs.

In this document indicators for the EIRP and the MDGs addressing poverty are identified and a monitoring system designed accordingly. The monitoring system aims at being sustainable by balancing the need for regular, frequent and up-to-date monitoring information with reasonable costs. This is achieved by a survey system with an annual core survey(CWIQ), specialized modules and a population census each decade.

This presentation is followed by a brief outline of a system for initially paper-based dissemination soon to be followed by electronic distribution.

Angola EIRP

The main document for presentation of the poverty reduction strategy of the Government of Angola is "Estratégia Interina de Redução da Pobreza". This document outlines objectives and areas of action for poverty reduction, including macro-economic objectives and reduction of poverty. The strategy for poverty reduction is summarized in a matrix presenting both objectives and development programs and actions. Budget-lines and funding source for the latter are also presented. When developing monitoring indicators, this presentation should serve as the main base for Government priorities for poverty reduction. The strategy document has already summarized main poverty reduction target issues, composition of indicators, methods, target achievements, and periodicity. The remaining step is to design operational indicators and present a comprehensive monitoring strategy. This document aims at presenting such operational indicators and a monitoring strategy for the statistical indicators. As a first step, the following table presents these target issues and composition of indicators as listed and address methods, target achievements, periodicity, whether the indicators require statistical information, qualitative information or rather management information systems (MIS), and if statistical information is required whether this should be administrative records, censuses or surveys.

Issues and indicators	**EIRP: Monitoring, Targets and Periodicity/ Information required**
Social sectors: demography, education, health, employment, social security	**EIRP: Statistical information from census, surveys, model. Targets for max 5 year period. Monitoring semi-annually to bi-annually**
1. Population growth	Census + model
2. Life expectancy	Census or survey + model
3. Fertility rate	Census or survey + model
4. Gross school completion rate	Census + adm. records/ school census, or from survey
4. Net school completion rate	Survey
5. Gross and net enrollment rate	Survey
6. Teacher/ student ratio	Administrative records/ school census
7. Percentage of female students in primary and secondary schools	Census + administrative records/ school census, or from survey

8. Gender differences in school completion rates	Census + administrative records/ school census, or from survey
9. Literacy rate	Census or survey
10. Aids and HIV prevalence	Survey
11. Proportion of pregnant mothers with prenatal consultations	Survey + administrative records/ school census, or from survey
12. Infant mortality rate	Census or survey
13. Maternal mortality rate	Census or survey
14. Institutional delivery rate	Census or from survey
15. Vaccination coverage, tuberculosis	Census + model + administrative records or from survey
15. Vaccination coverage, polio	Census + model + administrative records or from survey
15. Vaccination coverage, measles	Census + model + administrative records or from survey
16. Proportion on children below 5 years being undernourished (wasting and stunting)	Census or survey
17. Use of contraception	Survey
18. Proportion of the population with access to safe water	Census or survey
19. Unemployment rates	Survey
20. Monetary poverty rates	Household budget survey or survey + model
21. Gini-index for income	Household budget survey or survey + model
Economics: Macro-economics external debt, agriculture and rural development	**EIRP: Requires conjuncture analysis on monthly basis. Should also be judged by impact on social indicators and public action**
22. Rate of GDP growth	National accounts, conjuncture analysis
23. Per capita GDP	National accounts, conjuncture analysis, Census
24. Inflation rate	CPI
25. Proportion of public expenditures allocated for social sectors	Government finance statistics
26. External debt as share of GNI	National accounts, balance of payment
27. Prices of stable food products	CPI
28. Proportion of staple food in consumption	Household budget survey
29. Yields per hectare for main agricultural products	Agricultural census + model + annual survey (agricultural or general as QUIBB)
30. Marketed production by artisanal fishermen	Traditional fishing survey + annual survey
Public activities: infrastructure, employment programs, social safety nets	**EIRP: Main monitoring is through Management information system (MIS). In addition information of beneficiaries and actual users**
31. Km of tarred roads rehabilitated or constructed	MIS + Statistical information on beneficiaries by survey or census + GIS
32. Km of gravel roads and feeder roads rehabilitated or constructed	MIS
33. Number of wells and bore holes rehabilitated or constructed	MIS + Statistical information on beneficiaries by survey or census + GIS
34. Number of employment positions created	MIS + Statistical information on beneficiaries by survey
35. No. of beneficiaries of social safety nets	MIS + Statistical information on beneficiaries by survey
36. Number of children assisted	MIS + Statistical information on beneficiaries by survey
37. Number of handicapped assisted	MIS + Statistical information on beneficiaries by survey
38. Number of old people assisted	MIS + Statistical information on beneficiaries by survey

Millennium Development Goals

The international agreements from the UN summits since 1990 are now summarized in a framework of 8 Millennium Development Goals (MDGs), 18 Targets and 48 (-66) Indicators for global development from 1990 to 2015, adopted by a consensus of experts from the United Nations Secretariat (UN Statistical Division), the International Monetary Fund, the Organization for Economic Co-operation and Development/ Development Assistance Committee, the World Bank and has been approved by the United Nations Economic and Social Council and the UN General Assembly.

While the MDG Goals, Targets and Indicators as well as the need for country level and global monitoring have been agreed upon, the MDG monitoring system is still a process in progress. Each country is to design their own monitoring system for the development towards the MDGs and most developing countries seem to combine this task with monitoring and evaluation of a poverty reduction action program.

It is also a general experience in the international statistical community that sustainable monitoring and evaluation systems are to be integrated and/ or linked to the overall statistical system in a country. This paper is then prepared in order to show how a national household survey system could be designed in order to yield annual information from a core household survey, information every 3-5 years through rotating household surveys and information every decade from a population and household census. Such a household survey system would be designed for mutual information exchange with administrative records and other statistics.

International and bilateral organizations have long introduced sector survey instruments and this paper is by no means aiming to review and definitely not replacing any of those. The focus will be on a survey instrument for annual data-collection, such as QUIBB, and different means to enhance the utilization of one or more other instruments including statistical models which would allow for annual modeling and presentation of indicator estimates which are to be revised when more accurate data-collections such as a census or a household income and consumption survey are conducted.

Millennium Development Goals	**Data collection**
MDG 1.a. Proportion of population below $1 (PPP) per day	Household budget survey or core survey + statistical model for poverty indicators
MDG 1.b. Proportion of population below national poverty line total, urban,rural	
MDG 2. Poverty gap ratio (incidence x depth of poverty)	
MDG series 29949: Poverty gap ratio: mean percentage distance below $1 (PPP) per day	
MDG 3. Share of poorest quintile in national consumption	Household budget survey or core survey + statistical model for total consumption/ poverty indicators
MDG series 29950: Poorest quintile's share in national income or consumption, per cent	
MDG 4.a. Prevalence of underweight (moderately) children under five years of age	Survey with anthropometric measurement of children below 5 years
MDG 4.b. Prevalence of underweight (severely) children under five years of age	
MDG 5. Proportion of population below minimum level of dietary energy consumption	Household budget survey or core survey + statistical model for total consumption + FAO calorie table
MDG 6. Net enrolment ratio in primary education, total, girls, boys	Survey
MDG 7. Proportion of pupils starting grade 1 who reach grade 5, total, girls, boys	Survey
MDG 8. Literacy rate of 15-24-year-olds, total, woman, men	Survey
MDG 9.a. Ratio of girls to boys in primary, secondary, and tertiary education	Survey/ census or administrative records
MDG 10. Ratio of literate women to men of 15- to 24-year-olds	Survey
MDG 11. Share of women in wage employment in the non-agricultural sector	Survey
MDG 12. Proportion of seats held by women in national parliament	Administrative records
MDG 13. Under-five mortality rate	Survey

MDG 14. Infant mortality rate	Survey
MDG 15. Proportion of 1-year-old children immunized against measles	Survey
MDG 16. Maternal mortality ratio	Census
MDG 17. Proportion of births attended by skilled health personnel	Survey
MDG 18. HIV prevalence among 15-to-24-year-old pregnant women	Administrative records
MDG series 30016: HIV prevalence among pregnant women,aged 15-24, all areas, in major urban areas, outside major urban areas	
MDG 19. Condom use rate of the contraceptive prevalence rate	Health survey
MDG series 30029: Condom use to overall contraceptive use among currently married women aged 15-49, per cent	
MDG series 30017: Condom use, women, men aged 15-24 at last high-risk sex, per cent	Health survey
MDG series 30028: HIV Knowledge, women & men aged 15-24 who know that a healthy-looking person can transmit HIV, per cent	Health survey
MDG series 30027: HIV knowledge, women aged 15-24 who know that a person can protect herself from HIV infection by consistent condom use, per cent	Health survey
MDG 20. Number of children orphaned by HIV/AIDS	Survey
MDG series 29987: AIDS orphans (one or both parents), currently living	
MDG series 30011: Orphans (both parents) aged 10-14 school attendance rate as % of non-orphans attendance rate (only in countries with HIV 1%+)	
MDG 21. Prevalence and death rates associated with malaria	Census or admin. records
MDG series 30001 a & b: Malaria death rate per 100,000, ages 0-4, all ages	Census or admin. records
MDG series 29996: Malaria prevalence, notified cases per 100,000 population	Administrative records
MDG 22. a. Proportion of population in malaria risk areas using effective malaria prevention measures	Health survey/ survey
MDG 22. b. Proportion of population in malaria risk areas using effective malaria treatment measures	Health survey/ survey
MDG series 29998: Malaria prevention, use of insecticide-treated bed nets in population <5, per cent	Health survey/ survey
MDG series 29997: Malaria treatment, percentage of population <5 with fever being treated with anti-malarial drugs	Health survey/ survey
MDG 23. Prevalence and death rates associated with tuberculosis	Administrative records / census
MDG series 30002: Tuberculosis death rate per 100,000	
MDG series 29982: Tuberculosis prevalence rate per 100,000 population	
MDG 24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course	Administrative records
MDG series 30026: Tuberculosis, DOTS detection rate, per cent	Administrative records + WHO estimates
MDG series 29983: Tuberculosis, DOTS treatment success, per cent	Administrative records
MDG 25. Proportion of land area covered by forest	Administrative records
MDG 26. Ratio of area protected to maintain biological diversity to surface area	Administrative records
MDG 27. Energy use (kg oil equivalent) per $1 GDP (PPP)	Environmental statistics
MDG 28.a. Carbon dioxide emissions (per capita)	Environmental statistics
MDG 28.b. Consumption of ozone-depleting CFCs	Environmental statistics
MDG 29. Proportion of population using solid fuels	Survey
MDG series 30020: Air pollution, per cent of population using biomass fuels	
MDG 30. Proportion of population with sustainable access to an improved water source, urban and rural	Survey or administrative records + census and GIS
MDG 31. Proportion of urban population with access to improved sanitation	Survey or administrative records + census and GIS
MDG 32. Proportion of households with access to secure tenure	Census
MDG series 30019: Slum population as percentage of urban (secure tenure index)	
Goal 8 Develop a global partnership for development	Other sources
Goal 8, targets 12-15 and indicators 33 - 48 are all addressing global partnership and not addressed here	

Survey system for EIRP and MDG indicators

As the reader now might be well aware of, the resemblance of the EIRP and MDG indicators are large. The main difference is that the EIRP indicators include a list of macro-economic indicators and a list of poverty reduction activity indicators. The latter indicators are rather management information system indicators and different from the other policy indicators. Some of the economic indicators are truly macro-economic, while others are rather focusing on resources for public policy such as the share of public resources allocated to social sectors.

Survey instruments for EIRP and MDG indicators

As presented in the previous table, information for the EIRP and MDG indicators could be collected through a set of survey and census instruments as follows:

- A core survey to be implemented once a year in both urban and rural areas, each year during the same 2 to 3 months period, such as the QUIBB.
- A household budget survey including a core module such as the QUIBB. It is recommended that half the sample is implemented in the usual QUIBB data collection period while the other half of the sample is spread out evenly over the other 9 months. 3 set of weights should be constructed for ordinary household budget data, for non-seasonal QUIBB data and for seasonal QUIBB data.
- A health survey such as the MICS, a Demographic and Health Survey or any health survey, all with the core survey such as the QUIBB
- A population and housing census
- Specialized surveys or survey modules such as an agricultural survey or sample census.

A core survey, the Angola QUIBB

All modules of this survey should be conducted in both urban and rural areas and implemented every year during the same 2-3 month period, such as in August and September. The sections and type of variables are presented in the following paragraphs.

Household roster

- Name, sex and age
- Relationship to household head and spouse
- Whether mother & father are alive and live in the household (below 20 years of age)

Education

- School enrollment and grade this year (for all or below 20 years of age)
- School enrollment and grade last year (for all or below 20 years of age)
- Final school achievement, grade
- Literacy. If final grade is 4 or less, ask respondent.

Health

- Any children born during last 12 months
- Proportion with skilled birth attendance.
- For children (below 5 years or between 1 and 2 years): Did they receive BCG, polio, measles inoculation before reaching one year of age.
- Malaria prevention, use of insecticide-treated bed nets in population below 5 years of age
- Malaria treatment. For children below 5 years of age whether they had fever.
    - If fever, whether they were treated with anti-malarial drugs.
- HIV/Aids knowledge yes/no (All 15 years and above or 15-24 years)
- For those with HIV/Aids knowledge:
- Do you know how a person can be infected by HIV ? Probe: Do you think that a healthy-looking person can transmit HIV ?
- Do you know how to protect yourself against HIV ? Probe: Do you think hat a person can protect herself from HIV infection by consistent condom use ?

Production and labor

- Standard labor force survey questions, but with probing for housewives
- Labor force questions during last 12 month, economic activity, economic status, industry, occupation
- Labor force questions during last 7 days
- Whether they tried to get more work during last 7 days

Others

- Energy source for cooking
- Access to improved drinking water sources.
- Access to improved sanitation
- A poverty indicator model and 6-15 indicators for total consumption and probability of being poor.
- A hunger indicator model and 6-15 indicators for total food calorie consumption and probability of starving.
- OR food security indicator questions: How many meals last day, any with meat or fish, any with oil, any with green leaves.
- A survey module with anthropometric measurement i.e. for each child below 5 years of age measuring day, month and year of birth and of surveying, measure height in 0,1 cm with measuring board and weight in 0,1 kg with digital scale (like UNICEF electronic scale). For underweight age is for screening, but still needed

MICS, DHS or another health sector survey, all with a core survey as QIBB

A health sector survey such as the MICS should be conducted every 3-5 years and include both a QUIBB core and health modules. The health module will include several other issues, but the special needs for EIRP and MDG indicators are listed below.

Issues to include

- All individuals who passed away during last year
- Condom use to overall contraceptive use among currently married women aged 15-49
- Condom use, women, men aged 15-24 at last high-risk sex

A household budget survey, IDR

A household budget survey such as the IDR should be conducted every 3-5 years and include both a QUIBB core and consumption, expenditure and income modules. A complete national household budget survey or module with consumption in value terms + food consumption also in volume terms are needed both for the EIRP and MDG indicators and for construction and up-dates of models for poverty and hunger.

Such a survey requires 12 months data collection in order to capture seasonal variation. In order to ensure consistency for the QUIBB core survey, the sample should be split in 1/6 for the 1st, 2nd, and 4th quarter and ½ for the third quarter. For data presentation three sets of weigths should be calculated. For the household budget information seasonal weigths should be 6/4, 6/4, 2/4, 6/4; for the non-seasonal QUIBB information new seasonal weights are required; for the seasonal QUIBB information weights should be 0, 0, 1, 0.

Issues to include

- A poverty indicator model and 6-15 indicators to be determined are needed.
- A hunger indicator model to identify 6-15 indicators for total food calorie consumption and probability of starving.
- AND / OR food security indicator questions: How many meals last day, any with meat or fish, any with oil, any with green leaves.

A Population and Housing Census

A Population and Household Census (PHC) should be conducted every 10 years. It is not expected to include a QUIBB module, but it is essential to ensure consistency across the two instruments.

Issues to include - Fertility history

- Any children born in this household during last 12 months by mothers who have moved away or have passed away
- All individuals who passed away during last year

Other Surveys

The QUIBB survey included information on employment, but is mission information on production for farmers, fishermen and self-employed people in the urban informal sector. Only dedicated agricultural and informal sector surveys can provide comprehensive information, but a QUIBB could provide annual estimates for the EIRP and MDG indicators even within this area. While only dedicated surveys could provide information on agricultural area productivity, a QUIBB could provide estimates of total production. If this is combined with a master sample of agricultural plots and holdings, even an estimate of agricultural productivity could be presented every year from a QUIBB.

Issues to include

- For a master-sample of agricultural areas; measure cultivated land using handheld GPSs
- Ask whether the household operates an agricultural holding, and if so:
- Number of cattle, goats and sheep
- Farmers own estimates of production of maize and millet last year, cassava last month
- Fishermen: Their own estimate of fish caught and sold last month.

A questionnaire list for statistical indicators for poverty reduction as presented in "Malawi Poverty Reduction Strategy Paper" and the global "Millennium Development Goals"

A Interview information

B Household roster

QBX (NAME) of household member - for reference
QB1 RECORD AND IF NEEDED ASK Is (NAME) male or female ? **A:** Male, female
QB2 Has (NAME) been away for during the last 12 months ? IF SO For how long has (NAME) been away ? **A:** Never, Less than 6 months, 6 months or more
QB3 Does (NAME) contribute to household income? **A:** Yes, No
FOR EACH CHILD UNDER 20 YEARS LISTED:
QB4 Is (NAME)'s father living in the household? **A:** No, Household member number
QB5 Is (NAME)'s mother living in the household? **A:** No, Household member number
QB6 Is (NAME)'s father of alive? **A:** Yes, No, Do not know
QB7 Is (NAME)'s mother still alive? **A:** Yes, No, Do not know

C Education module

FOR ALL PERSONS 5 AND ABOVE
QC1: Can (NAME) read and write ? (IN ANY LANGUAGE) ? **A:** Yes, No
QC2: Has (NAME) ever attended school? **A:** Yes, No
IF NO GO TO Q11
QC3: What is the highest level (NAME) completed? **A:** None,Pre-school,Primary 1st level (P1),P2,P3,P4,P5,P6,P7,P8,Secondary 1st level (S2),S2,S3,S4,S5,S6,University,Vocational,Teacher training, Technical
QC4: Did (NAME) attend school last school year? **A:** Yes, No
QC5: Did (NAME) enrol in school this year? **A:** Yes, No
QC6: Is (NAME) currently in school? **A:** Yes, No
IF NO GO TO Q9
QC7: What is the current level (NAME) is attending? **A:** as QC3
QC8: Who runs the school (NAME) is attending? **A:** Government, Religious, Private
QC9 Does (NAME) have any problems with the school? **A:** (multiple choice) No problems (satisfied), Lack of books/supplies, Poor teaching, Lack of teachers, Facilities in bad condition, Others, specify
IF CURRENTLY NOT ATTENDING SCHOOL
QC10: Why is (NAME) not currently attending school? **A:** (multiple choice) Too old/completed school, Too far away, Too expensive, Is working (home or job), Useless/uninteresting, Illness/pregnancy, Failed exam, Got married, Lack of food in household, Other, specify:

D Employment module

TO ALL PERSONS 10 AND ABOVE
QD1 Did (NAME) do any type of work in the last 7 days? **A:** Yes, No
IF NO GO TO Q2, IF YES GO TO Q6
QD2 Was (NAME) absent from work in the last 7 days? **A:** Yes, No
IF NO GO TO Q3, IF YES GO TO Q5
QD3 Has (NAME) been looking for work and ready for work in the last 4 weeks? **A:** Yes, No
QD4 What is the main reason (NAME) did not work the last 7 days? **A:** No work available, Seasonal activity, Student, Household/family duties, Too old/too young, Infirmity, Other (specify).
IF HOUSEHOLD/FAMILY DUTIES, PROBE

We now want to ask you some questions about your main job.
QD6 Did (NAME) have more than one job in the last 7 days? IF SO Two or more ? **A:** No - only one, Yes - two, Yes - more than two
QD7 Which sector does (NAME) work in his/her main job? **A:** Private business, Private individual, Parastatal, Public/government
QD8 What is the main activity at the place of (NAME's) main job? **A:** Agriculture, Mining/quarrying, Manufacturing/processing, Construction, Transport, Trade/selling, Services, Education/health, Administration, Other, specify
QD9 How was (NAME) paid in the main job? **A:** Mlimi - not paid, Wages, salary, payment in kind, Casual (hourly/daily), Family business worker, Self-employed
QD10 What was (NAME's) occupation in his/her main job? **A:** Write occupation
QD11 How much was (NAME) paid during last month in wage and salary? (Total cash payment)

E. HIV/AIDS knowledge

ALL PERSONS AGED 15 AND ABOVE
QE1 Is it possible for **A:** healthy looking person to have the AIDS virus? **A:** Yes, No, Do not know
QE2 Can people protect themselves from getting the AIDS virus by using condom every time they have sex? **A:** Yes, No, Do not know
QE3. Is it possible for someone in your community to get **A:** confidential test to find out if they are infected with HIV? **A:** Yes, No, Do not know
QE4 Have you had an HIV test the last 12 months? **A:** Yes, No
IF NO, GO TO Q6
QE5 Did you get counseling when having the test (before or after the test) ? **A:** Yes, No
QE6 Reasons for not having an HIV test. **A:** Not available, Not interested, Not at risk/no need, Scared of outcome, Results take too long, Test centre too far, No privacy, Other, specify
GO TO NEXT MODULE

F Child mortality and health module

F.1 Births

FOR ALL WOMEN 12 AND ABOVE.
QF1 Has (NAME) ever given birth? **A:** Yes, No
IF NO, GO TO MODULE G DIETARY AND ENERGY CONSUMPTION
QF2 When did (NAME) give birth last time?
IF THIS WAS LESS THAN 5 YEARS AGO, REGISTER INFORMATION BELOW, STARTING WITH THE MOST RECENTLY BORN BABY. THEN MOVE ON TO THE NEXT-TO LAST BIRTH AND SO ON, UNTIL ALL BIRTHS AFTER AUGUST 1999 HAVE BEEN RECORDED
QF3 Mother's household number
QFX What (NAME) was given to last baby? /the baby born before that? (NAME) of child for reference
QF4 When was (NAME) born? **A:** Day, Month, Year
QF5 Is (NAME) **A:** boy or **A:** girl? **A:** Boy, Girl
QF6 Is (NAME) still alive? **A:** Yes, No, Has moved away - we do not know
QF7 RECORD HOUSEHOLD NUMBER OF CHILD
QF8 When did (NAME) pass away? **A:** Day, Month, Year
IF ANY OF THE BIRTHS OCCURRED DURING THE LAST 12 MONTHS REGISTER INFORMATION OF THESE
QF9 REGISTER MOTHER'S HOUSEHOLD NUMBER
QF10 Who assisted with the delivery at this birth? **A:** Health professional, Doctor/clinical officer, Nurse/midwife, Ward attendant, Traditional birth attendant, Relative/friend, Other, specify
QF11 Where did you give birth to (NAME)? **A:** Home, Govt hospital, Govt health centre or other, Mission hospital, Mission health centre, Private hospital/clinic, Other private medical facility, Other, specify

F.2 Vaccination

FOR ALL CHILDREN BELOW AGE OF TWO
QF12: Do you have **A:** card where (NAME`S) vaccinations are written down?

IF YES, May I see it ? FILL IN VACCINATION DATES FOR ALL OF **F.2** IF NO CARD GO TO Q3 COPY VACCINATION DATE FOR EACH VACCINE FROM THE CARD.
QF13: Has (NAME) received any vaccinations that is not recorded on this card, including vaccinations received in **A:** national immunization day campaign? PROBE
Please tell me if (NAME) received any of the following vaccinations: PROBE
QF14: A BCG vaccination against tuberculosis, that is, an injection in the arm or shoulder that usually causes **A:** scar? **A:** Yes, No
IF YES
QF15 When did he/she receive this ? **A:** Day, Month, Year, Do not know
QF16 Polio vaccine, that is, drops in the mouth? **A:** Yes, No
IF YES
QF17 When was the first polio vaccine received, just at birth or later? **A:** At birth, later
QF18 How many times (including at birth) has he/she received **A:** polio vaccine ? **A:** 1,2,3,4,5 or more
QF19 When did he/she receive the last one ? **A:** Day, Month, Year, Do not know
QF20 DPT vaccination, that is, an injection given in the thigh or buttocks, sometimes at the same times as polio drops? **A:** Yes, No
IF YES
QF21 How many times has he/she received **A:** DPT vaccine ? **A:** 1,2,3,4 or more
QF22 When did he/she receive the last one ? **A:** Day, Month, Year, Do not know
QF23 An injection to prevent measles? **A:** Yes, No
IF YES
QF24 When did he/she receive this ? **A:** Day, Month, Year, Do not know

F.3 Malaria protection and treatment
TO ALL HOUSEHOLDS WITH CHILDREN BELOW 5 (0-59 months)
QF25: Does your household usually use protection against mosquito bites? **A:** Yes, No
IF YES, ASK FOR EACH CHILD BELOW 5 *(Up to 4 children)*
QF26: Did (NAME) sleep under **A:** bed net last night ? **A:** Yes, No
QF27A: Was this bed net bought during the last 12 month or before that ?
IF NOT BOUGHT DURING LAST 12 MONTHS:
QF27B: Has this bed net been treated with chemicals (soaked or dipped) during the last 12 months ? **A:** Yes bought last 12 months, Yes treated last 12 months, No neither bought nor treated last 12 months
QF28: Has (NAME) been sick with high fever during the last 12 months ? **A:** Yes, No
IF YES
QF29A: Did you give (NAME) any drugs in response to the last high fever/malaria? **A:** Yes, No
IF YES
QF29B: Which medicines were given to (NAME)? PROBE **A:** Child not sick, Child sick, no drugs, Child sick, anti malarial drugs (sp, fansidar, novidar, quinine, chloroquine, amodiaquine, halafan, unspecified malaria drugs), Child sick, painkillers (aspirin, panadol, unspecified painkillers), Child sick, other drugs

G Nutrition and Energy consumption module

Dependent upon season either Q1 and Q2 or Q3
QG1 How many meals did (NAME) eat yesterday? **A:** 0,1,2,3 or more
QG2 How many snacks did ( ) eat during yesterday ? **A:** 0,1,2,3 or more
ONLY FOR HOUSEHOLDS WITH AGRICULTURAL HOLDING
QG3A Do you still have food left from this year's harvest? **A:** Yes, No
IF YES
QG3B In which month do you think food will run out? **A:** List of months
QG4 Did anybody in the household participate in a nutrition program during the last 12 months? **A:** Yes, No
QG5 Did anybody in the household participate in a school feeding program during the last 12 months? **A:** Yes, No
QG6 What is the main source of fuel used for cooking? **A:** Firewood, Charcoal, Paraffin, Gas, Electricity, Straw/crop residue/saw dust, Animal waste, Solar energy, Other, specify

QG7 What is the main source of fuel used for lighting? **A:** Paraffin, Gas, Electricity, Solar, Grass, Candles, Firewood, Other, specify
QG8 What is the main source of drinking water? **A:** Piped into dwelling or compound, Communal standpipe or borehole, Protected well, Unprotected well, rain water, Spring, river, lake, pond, Vendor or truck
QG9 What kind of toilet facility does your household use? **A:** None, Pan/bucket, Uncovered pit latrine, Covered pit latrine, Ventilated improved pit latrine, Flush to sewer or septic tank, Other - specify

H. Income generation and consumption (poverty predictor)

QH1 Does the household operate an agricultural holding ? **A:** Yes, No
IF YES:
QH2 Do you do crop farming ? **A:** Yes, No
IF NO, GO TO PUBLIC WORKS PROGRAMS
IF YES:
QH3 How many acres did you cultivate this season? **A:** Number of acres
QH4 How many bags of the following types of crops did you produce this season? **A:** Number of bags
USE STANDARD BAGS SUCH AS 90KG BAG FOR MAIZE
IF ANY CULTIVATION
QH5 Did your households receive any of the following inputs during the last 12 months? Seeds **A:** Yes, No, Fertilizers **A:** Yes, No, Chemicals **A:** Yes, No,
IF YES ASK Q6-Q8
IF RECEIVED ANY SEEDS
QH6 How did you use the seeds? **A:** Used all of it ourselves, Gave something away, Sold some of it, Sold all
IF RECEIVED ANY FERTILIZER
QH7 How did you use the fertilizer? **A:** Used all of it ourselves, Gave something away, Sold some of it, Sold all
SHARE OF HOUSEHOLDS BENEFICIARY OF PUBLIC WORKS PROGRAMS
QH8 Did any of your household members take part in any of these work program during the last 12 months? **A:** For each: Yes, No - For MASAF, Food for work, Other, specify
QH9 Does the household own any of the following items ? **A:** For each: Yes, No
House, Bed, Table, Chair, Hoe, Axe, Sickles, Plough, Oxcart, Bicycle
QH10 Does the household own any of the following items ? **A:** For each: Yes, No
Refrigerator, Airconditioner/ fan, Stove/cooker, Car, Television, Grinding mill (or maize mill), Pounding motor, Motor cycle, Boat/ canoe, Fishing net

- **QH11** Did the household buy any firewood/charcoal last month? **A:** Yes, No
- **QH12** Did the household buy any cooking oil last month? **A:** Yes, No
- **QH13** Did the household buy any milk last month? **A:** Yes, No
- **QH14** Did the household buy any clothes last month ? IF SO: For how much ? **A:** No, Amount
- **QH15** Did the household buy any meat or fish last month ? IF SO: For how much ? **A:** No, Amount
- **QH16** Did the household eat some nsima from own production during last 3 days ? IF SO: How many of these days ? **A:** No, 1,2,3
- **QH17** How much would you have to pay if you were to bye maize for this nsima at the market? **A:** No, Amount

I. Anthropometric measures

IF BELOW AGE OF 5
QI1 COPY HOUSEHOLD MEMBER NUMBER FROM ROSTER.
QI2 COPY BIRTH DATE IN DAY, MONTH AND YEAR FROM SECTION ON BIRTHS.
QI3 MEASURE HEIGHT IN 0.5 CM WITH MEASURING BOARD
QI4 MEASURE WEIGHT IN 0.1 KG WITH DIGITAL SCALE (LIKE UNICEF ELECTR. SCALE).
QIX WAS ALL THE CHILDREN MEASURED?
LIST OF CHILDREN NOT BEING MEASURED, AND WHY?
QI5 WHY WAS (NAME) NOT MEASURED? **A:** Was measured, Too ill, Not home during survey period, Unwilling, Other - specify

Summary of A Statistical Poverty Survey Indicator Model[7]

Introduction

This paper addresses the possibility of estimating poverty based on a small set of indicators, rather than collecting comprehensive information about household consumption. The only widely recognized approach for measuring the share of individuals below a poverty line is through a full-fledged household consumption and expenditure survey/ household budget survey. However, not many countries can justify spending resources on an annual household consumption and expenditure survey and hence proper poverty measures are collected only every 5^{th} or 10^{th} year. Given the need to capture seasonal variation, the load of information and the traditional data entry, field work will last for 12 month and data processing another 12 months. Due to this state of affairs there is a need for methods, which could allow for annual information of poverty, with faster, cheaper and still reliable estimates.

Methodology

We develop a statistical procedure for estimating the share of a population with consumption below a given poverty line. The basic idea is to utilize the information in a classic comprehensive household survey to identify a small set of household variables that can be collected yearly between two household surveys. The selected indicators should be fast and easy to measure, and the reduced set of household variables may be compiled through so-called "light surveys". The information obtained from the light surveys is then used to predict poverty rates.

The challenge to predict poverty is not a new one and during the last years analyses to identify poverty indicators have been carried out in Uganda (Mc Kay (2001) and UBOS (2001)) Tanzania (Ward, P., Owens, T. and Kahyrara, G. (2002)) and Ghana (Fofack (2000)). These studies have, however, focused more on the procedure for optimal selection of the poverty indicators, and less focus has been given to the modeling approach.

The procedure applied in this paper is to estimate some simple models for household consumption, which are used to construct predictors for the headcount ratio. One such predictor is the probability of being poor as a function of the poverty indicators, for example size of household, indicator for dwelling etc. Ward et al. (2002) have estimated the probability of being poor, while Mc.Kay (2001) and Fofack (2000) predict poverty based on the number of individuals with predicted consumption below the poverty line. Comparing predicted consumption to the poverty level is not a suitable method to estimate the proportion of poor and evaluate the model, since it does not consider the stochastic component in consumption and therefore erroneously may characterize a poor as a non-poor household and vice versa. In this paper we also directly estimate the probability of being poor by applying the probit model, and we compare the two approaches.

An important extension in this paper is to derive an estimator for the standard error to the poverty predictor. The standard error is useful to discuss the level of precision of the method, and therefore whether the method is acceptable for predicting the poverty level.

Results

We apply the methodology on the National Household Survey for Uganda 2002-2003, and the results are used to exemplify and discuss the approaches. Below is a summary table showing some main results. Both standard error and error in predicting out of sample is based on an average over 50 different simulations. The simulations are based on 100 random draws.

[7] Summary Astrid Mathiassen, 2004 forthcoming, A Statistical Model for Simpler, Faster and Reliable Measurement of Poverty, Discussion Paper 2004/xx, Oslo: Statistics Norway

Summary of main results

	St. error* (based on whole sample) (Percentage points)	Error in prediction* (half sample used to predict for other half) (Percentage points)	R-square (model1) / LRI (model2) %
Rural (5582 obs)			
Model 1 (based on linear regression)	0,43	1,14	67,2
Model 2 (probit)	0,47	0,72	44,6
Urban (4018 obs)			
Model 1 (based on linear regression)	0,41	1,18	74,5
Model 2 (probit)	0,44	0,84	56,5

* average over 50 simulations

The model standard error can be interpreted as an additional error we get when estimating a model rather than collecting information. The difference in standard error between the two models is very small. Compare standard error for rural to average 0,43 for model 1 to 0,47 for model 2 for all rural household. For urban the standard error for the poverty predictor in model 1 is 0,41 and in the probit model it is 0,44[8]. The error in predicting crucially depends on the sampling size.

The error we make in predicting "out of sample" is smaller for the probit models than the models based on linear regression. It is on average 0,72 percentage points in model 2 for rural households and 1,14 for model 1. For urban households the error in prediction is about 0,84 percentage points for model 1 and 1,18 for model 1. Even though the standard error to the predictor is slightly higher for model 2, these models give better prediction. Model 1 is based on a more rigid relation between consumption and the poverty characteristics and it is plausible that there is a larger model specification problem here. The disadvantage with the probit model, however, is that it cannot be used to derive other types of predictions, for example the poverty gap (sum of the income gap ratios for the population below the poverty line, relative to the poverty line).

Conclusion

In the case of Uganda, the sampling standard errors for poverty headcounts are 1,2 and 1,4 in rural and urban areas. The model standard errors are considerable lower than the sampling errors. In our opinion this extra uncertainty would be acceptable for an annual proxy poverty headcount to serve as the base for policy decisions in a single year. The out of sample predictions based on the sample indicate that the problems of misspecifications of models are not large, on average the bias in predicting the actual poverty level in a sample is on its lowest at about 0,7 percentage points (model 2 rural households) and highest on 1,2 percentage points (model 1 urban households).

The proxy poverty headcount approach is designed for annual poverty indicators and the construction of time series. Such time series will then be able to monitor policy effects on a more frequent basis. In this perspective it is easy to argue that a combined approach with a full fledged consumption and expenditure survey every 5th year and annual proxy poverty indicators survey (self-standing or a module in a core survey) is by far superior to the current approach with just one full fledged consumption and expenditure survey every 5th year, and should be tested at country level and then applied if the test results are comparable to those here presented.

[8] Assuming that number of observations in a light survey is the same as in the household consumption & expenditure survey.

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