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Comparisons of LSMS-ISA data collection and dissemination efforts in Central America

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This article aims the comparison of LSMS survey in Central American countries to increase current knowledge of survey methodologies and ensure the most efficient dissemination and utilization of the results. It will improve the availability, quality and relevance of agricultural data for policy and research in Central America. The criterion for this comparison consists of household survey data production, methodological validation/research, capacity building and dissemination. The integrated approach considers multi-topic questionnaire as agriculture plus non-farm, nutrition, interalia, consumption – based welfare measure, global strategy to improve Ag statistics. The methodological validation/research is an extension of LSMS IV for improvement of following measures: crop yields (plot size, quantities, measurement tool, diaries/crop cards, crop cutting), module development/sourcebooks (income source, fishery, livestock, and community governance/empowerment. The results would have the following priorities and principles: a)support and build longitudinal data systems that improve policy decision making, resource allocation, and priority setting, b) ensure free public access to all data as soon as possible, c) lower the costs of using data trough data access platforms, harmonization of methodologies, and through outreach and capacity building, d) capitalize on synergies from integrating different types of data (example, broad representative surveys as LSMS, more intensive surveys/sentinel sites, censuses, geospatial data, etc.).

Key words: Panel data, living standards measurement study (LSMS), LSMS-ISA, MECOVI (Regional program for improvement of surveys of living conditions in Latin America and the Caribbean).

INTRODUCTION

The issue of data collection and dissemination efforts is important for policymakers in their contribution to rural development in Central America countries. The territorial concept referred to spatial differences in problems and perspectives, opportunities and options is used into rural development (OECD, 1995). The multisectoral concept also used in it referred to wide range of demographic, economic, social and environmental issues. Rural development in Central America is also referred to dynamic concept as medium to long term changes and adjustments in technology and ecology, economy and society (UNECE, 2007).However, one important deficiency that has been identified in the area of survey methodology and research related to Statistic in Central

America is a dedicated forum for the publication and dissemination of results. Dissemination of data and results, and improving information flows are decisive if we consider having an impact on the quality of data collected in Central Americans statistical institutions, and policy inputs where the CSUCA[1] universities must participate. However, the national statistical offices (NSOs) of each Central American country have generated a substantial amount of information in this issue. Nevertheless, this information is scattered, found only in the supposed ¨fugitive¨ literature or not written up in any form at all (World Bank, 2006). In parallel with these activities research is needed on how best to enhance the ability of household surveys to measure and quantify critical concepts.

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[1] CSUCA is a Spanish acronym for: Consejo Superior universitariocentroamericano

These works proposal will focus on the documentation and dissemination of data and results, and the promotion of partnership activities to increase the capacity of national statistical offices (NSOs) to develop instruments and test new data collection techniques in Central America, and assessments of the technical possibility of LSMS data for making impact measurement to social and economic programs.

The LSMS team has been an important effort of the World Bank Development Research Group (DECRG) for more than 20 year. LSMS staff has helped design and implement courses for both data producers and data users on household surveys and social policy analysis under the MECOVI project in Central America. The NSOs have received the technical support through the MECOVI program. It has assisted Central American countries in upgrading their capacity to plan and implement household surveys.

This article is divided as follows. Subsequently a review of literature LSMS and the MECOVI program was done, in which some activities that World Bank has made for supporting the National Statistical Offices of each of the Central American Countries were presented. This was followed by a presentation of the Central American comparisons of the data collected. The comparisons referred to the methodology, household count, sample size, questionnaire, etc. Finally, dissemination effort into each Central American Country was presented.

REVIEW OF LITERATURE

The Living Standards Measurement Study (LSMS) is a research project that was initiated in 1980. It was established by the World Bank to explore ways of improving the type and quality of household data collected by national statistical offices in developing countries. Chander et al. (1980) analyze the original statement of purpose and work program.The objectives of the LSMS were to develop new methods for monitoring progress in raising the standard of living, to identify the consequences for households of current and proposed government policies, and to improve communications between survey statisticians, analysts, and policymakers (Grosh et al., 1996).

To achieve the program objectives, LSMS actions have covered a range of task concerned with the design, implementation and analysis of household surveys in Central American developing countries. LSMS Phase I (1980 to1985) work centered on evaluating survey experience prior to the 1980s identifying what information could be made feasible (Grosh et al., 1996). LSMS Phase II (1985 to 1990) work concentrated heavily on the implementation of LSMS surveys. In Phase II LSMS surveys became increasingly customized to fit specific country circumstances, including policy issues, social and economic characteristics, and local household survey traditions. They also reflected the interest of the individuals planning the surveys. The ongoing LSMS Phase III (1990) has continued with greater emphasis in the project on building analytic capacity as well as data collection capacity. LSMS Phase IV (2006 to 2010) will extend the research that has been done on survey methodologies.It will focus on how to continuously improve the collection of quality household micro data, and how to make the process as efficient as possible. It will also create new tools and update the existing ones to expand the dissemination of literature, knowledge and results in the area of survey methodology in developing countries. The Living Standards Measurement Study-Integrated Surveys on Agriculture LSMS-ISA (2008 to 2015) project is a new initiative funded by Bill and Melinda Gates Foundation (BMGF) and led by the LSMS Team in the Development Research Group (DECRG) of the World Bank. The project will support governments in 7 Sub-Saharan African countries (Tanzania, Uganda, Malawi, Ethiopia, Nigeria, and Niger) to generate nationally representative, household panel data with a strong focus on agriculture and rural development. The objective of this program is to improve the understanding of development in Africa, particularly agriculture and linkage between farm and non-farm activities.

In 1980 the on-line LSMS Working Paper Series was started to provide researchers with a venue to publish working papers on data collection methods and improved methodologies. The early publications focused on specific survey, questionnaire and data processing designs and methods, while later papers demonstrated the breadth of policy analysis that can be carried out using LSMS data.

In the mid-1980s, the LSMS surveys were one of the first to take advantage of portable computers to carry out concurrent data sets allowing for the in-household correction of inconsistent data and the production of cleaned data sets almost immediately upon completion of the field work.

In 1996 the LSMS web site was created as a tool to efficiently and broadly distribute documents and data. It was one of the first web sites created under the World Bank site and its purpose is to distribute information about multi-topic household surveys in the most efficient manner.

To accomplish the LSMS objectives in Central America Countries MECOVI program has generated adequate and high quality information about the living conditions of people in the region, in terms of scope, coverage, reliability, timeliness and policy relevance. The program has two main components:

(a) Country-specific activities;
(b) Region-wide activities.

It is executed by the World Bank, Inter-American Development Bank and the United Nations Economic Commission for Latin America and the Caribbean as well as specialized institutions or agencies in countries

Table 1. Data source: Agricultural censuses and surveys.

Country	Years	Censuses	Years	Surveys
Guatemala	2003	CENAGRO	2000	ENCOVI
			2006	ENCOVI
El Salvador	2007	IV National farming census	1998	EHPM
			1999	EHPM
			2000	EHPM
			2001	EHPM
			2002	EHPM
			2003	EHPM
			2004	EHPM
			2005	EHPM
			2006	EHPM
			2007	EHPM
			2008	EHPM
Honduras	2002, 2003, 2004 to 2005 and 2007	Agricultural survey non census	2001	ENCOVI
			2002	ENCOVI
			2004	ENCOVI
Nicaragua	2005	III CENAGRO	1993	ENMV
			1998	ENMV
			2001	ENMV
			2005	ENMV
Costa Rica	2004 and 2006	Coffee farmer census	1966-1971	HCAS
			1976-1986	NHEDS
			1985-1987	HMPS
			1998	HMPS
			1999	HMPS
			2000	HMPS
			2001	HMPS
			2002	HMPS
Panamá	2000	VI farming National Census	1997	LSS
			2003	LSS
			2008	LSS

Source: National Statistical Offices (NSOs) / http://web.worldbank.org/.

participating in the program (www.worldbank.org).

Data collection

Central America depends directly or indirectly on agriculture for their livelihood. In order to assess the impact of Central America policy programs on the living standards rural households have to design a new survey. Census and surveys on the agriculture sector are major sources of data on the agricultural production units which are essentially household based (Table 1). Similar to population and housing census, agricultural censuses are comprehensive investigations providing structural information on the agricultural sector for small geographical units. They have the same limitations as the population censuses, mainly the length of time separating two censuses (10 years as recommended by the FAO) and the lack of coverage of expenditures, consumption and income patterns. In our case, Honduras is the exception in collect data for an agricultural census. During the interval separating two censuses, more frequent agricultural surveys (using the census data as the benchmark and sampling frame) are usually conducted to update census results (UNECE, 2007). The effort to collect agricultural information is focused in surveys. Nicaragua, Guatemala, and Panama have used the LSMS survey which consider agricultural module. The length of the time separating two LSMS survey is five years. On the other hand, El Salvador, Honduras and Costa Rica applied non LSMS surveys each year (Tables 2, 3 and 4). We consider that rural development approach is shaping land use,

Table 2. MECOVI and NSO by countries.

Country	National statistical Office (NSO)	Begin MECOVI activities	Surveys applied	Questionnaire	Data base available in web site
Guatemala	National Statistical Institute (NSI)	1999	National life conditions Survey (NLICOS) (2000)	Households, Community, Rural prices	Yes
El Salvador	General Direction of Census and Statistic (GDCS)	1997	Household Multiple Purpose Survey (HMPS) 1975,1997,1998,1999,2000,20012002,2003,2004,2005,2006,2007, 2008		Yes
Honduras	National Statistical Institute (NSI)	Notice expression to participate (2001)	Household Multiple Purpose Survey (HMPS) (2002)		Yes
Nicaragua	National Institute for Development Information (NIDI)	1998	Measurement Living Standards Survey (MLSS) (1993, 1998, 2001, 2005)	Households Community Rural prices Anthropometry	Yes
Costa Rica	National Statistical Institute (NSI)	Notice expression to participate (2001)	Household Multiple Purpose Survey (HMPS) (1966- 1971, 1976- 1986),		Yes, since 1998
Panamá	General controlling of Panama Republic/ Ministry of Economy and Finance	Notice expression to participate (2001)	Living Standards Survey (1997, 2003, 2008	Households Community Rural prices Anthropometry	Yes

Source: National Statistical Office (NSO) / http://web.worldbank.org/.

employment opportunities (OECD, 2003); role of agricultural as the supply of labor for industrialized sectors (Lewis, 1954), but by emphasizing this as the only important contribution, other significant functions of the agricultural sector tended to be overlooked. Improvements in agricultural labour productivity have been quite remarkable in Central America Countries; as such, several different and emerging forces affect agriculture. Like globalization, which refers to the competitive structure of agriculture, it is affected by rules of trade, domestic policies, infrastructure development and new technologies

(Vogel, 2002), environmental consequences and social implication.

We only consider that Guatemala, El Salvador and Nicaragua are participating through its National Statistical Offices in the MECOVI Program. Honduras, Costa Rica and Panamá are in process of incorporating. Nevertheless, these countries have received support to strengthen their respective NSO (Robles, 2003).

The LSMS surveys collect data on many aspects of living standards, on the choices that households make, and on the economic and social environment in which

household members live for achieving the objective of measurement and study of the determinants of living standards in Central America, especially the living standards of the poor (UNECE, 2007).

Central America is including the agricultural module as a process of integration to LSMS (Table 2). The LSMS surveys usually employ three different kinds of questionnaires to collect data on many dimensions of household well-being, including consumption, income, savings, employment, health, education, fertility, nutrition, housing and migration (UNECE, 2007).

Table 3. Comparisons of questionnaires kinds to collect data conducting LSMS – ISA.

Questionnaires kind	Guatemala		El Salvador		Honduras	Nicaragua		Costa -Rica	Panama	
	00	06				93 98	01 05		97 03	08
Household modules										
Characteristics of housing	X	X				X	XXX		X	XX
Migration	X	X				X	XXX		X	XX
Demographic data	X	X				X	XXX		X	XX
Education	X	X				X	XXX		X	XX
Health	X	X				X	XXX		X	XX
Employment	X	X				X	XXX		X	XX
Time use	X	X				X	XXX		X	XX
Agricultural activities	X	X				X	XXX		X	XX
Non agricultural household enterprise	X	X				X	XXX		X	XX
Expenditure on food	X	X				X	XXX		X	XX
Expenditure on non-food	X	X				X	XXX		X	XX
Fertility	X	X				X	XXX		X	XX
Other income	X	X				X	XXX		X	XX
Saving and borrowing	X	X				X	XXX		X	XX
Anthropometric	X	X				X	XXX		X	XX
Bequest and preferences about children	X	X				X	XXX		X	XX
Technology and environment	X	X				X	XXX		X	XX
Intra-household decisions	X	X				X	XXX		X	XX
Intra-household transfers	X	X				X	XXX		X	XX
Community modules										
Demographic information	X	X	X	XX		X	XXX		X	XX
Economy and infrastructure	X	X	X	XX		X	XXX		X	XX
Health	X	X	X	XX		X	XXX		X	XX
Agriculture	X	X	X	XX		X	XXX		X	XX
Price module	X	X	X	XX		X	XXX		X	XX
Services	X	X	X	XX		X	XXX			

Source: National Statistical Offices (NSO) / http://web.worldbank.org/.

The questionnaires information obtained from Nicaragua, Guatemala and Panama LSMS surveys have been modified along with time. We can outline the first of these questionnaires "likehousehold questionnaires". These collect detailed information on the household members. Because economic welfare is traditionally deduced from consumption data, the measurement of consumption is usually strongly emphasized. A wide range of income information, such as wages or in kind compensation from principal as well as secondary jobs, is also collected. In addition, agriculture and small enterprise modules are designed to yield estimates of net household income from these activities. Data on other sources of miscellaneous income, such as private or public transfers, are also collected.

In order to limit the length of the household questionnaire a second questionnaire, the "community questionnaire", is used to obtain information on local conditions that are common to all households in the area. Community questionnaires are normally used only in rural areas, where local communities are easier to define than in urban areas. Key community leaders and groups are asked to give information on the location and quality of health facilities and schools, the condition of local infrastructure such as roads, sources of fuel and water, availability of electricity, means of communication and agricultural conditions and practices (UNECE, 2007).

In Central American countries where the prices vary considerably, so a "price questionnaire" is used to gather information on the prices that households are faced with in practice.

A fourth type of questionnaire, the "special facility questionnaires" on schools or health facilities, is sometimes used as well.

Tables 1, 2, 3 and 4 demonstrate what kind of information is provided by the surveys of each Central America country that are presently available and how each of them contribute in overall to represent the socioeconomic dimension of rural space.

For Central America countries the problems is that just as the NSOs of Panama, Nicaragua and Guatemala have LSMS surveys with an agricultural module integrated, Nicaragua have panel data sets and the date applied of each surveys is different along the time. This situation carries out difficult work paper on the academic community for analyzing rural development policy and impact of agricultural programs.

Table 4. Questionnaires and objectives conducting LSMS surveys.

Country	Year	Sample size	Web site	Modification in questionnaire module	Available for free download
Guatemala LSMS	2000 2006	7,940	http://www.ine.gob.gt	Households Community Rural prices	Yes
El Salvador Non LSMS	1975 1997 1998 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008	17,784	http://www.ine.gob.sv		Yes
Honduras Non LSMS	2004		http://www.ine-hn.org		Yes
Nicaragua LSMS	1993 1998 2001 2005	4,200 4,209 4,659 6,594	http://www.inede.gob.ni/	93 Household, community, anthropometry, 98 Price Post-Mitch Household, 01 - 05 Household community, anthropometry price	Yes
Costa Rica Non LSMS	1966 1971 1976 1986 1998 1999 2002	10,890 17,648 13,175	http://www.inec.go.cr/		Yes
Panamá LSMS	1997 2003 2008	4,945 8,000 7,045	http://www.contraloria.gob.pa/	97 Household, community, anthropometry, rural price 03-08Rural and indigenous price	Yes

Source:http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:21370542~menuPK:4196952~pagePK:64168445~piPK:64168309~theSitePK:3358997~isCURL:Y~isCURL:Y~isCURL:Y~isCURL:Y,00.html.

Dissemination effort

The National Statistical Offices of each Central American country have developing activities to increase the capacity for improving the documentation and dissemi-nation of data and result.The NSOs have an access policy of free for download data survey. The MECOVI program (LSMS staff) with the World Bank has helped them design and implement courses for both data producers and data users on household surveys and social policy. The dissemination effort to distribute information about multi-topic household surveys has contributed in providing input for policymakers in designing poverty reduction   strategy,   social   and

economic policy in their respective country. This kind of information is needed for the design, monitoring and evaluation of polices, programs and projects, aimed at reducing poverty and the promotion of greater social equality.

In this direction the Program MECOVI has developed 14 workshops in Argentina, Mexico and Peru where the Central America countries have participated in the strength of the NSOs capacity (Table 5).

Guatemala has structured users committee, technical team formed by INE, SEGEPLAN and Rafael Landivar University (NSI, 2000).

In El Salvador, the dissemination effort was focused on the capacity of technical personnel, the structure of an international committee, and technical support. The institutions that participate in research are Professional College for Economic Sciences, Salvadorian Foundation for Health and development human, Foundation for Salvadorian Integral Education, Enterprise Foundation for educative development (GDEC, 2000).

Honduras and Panamá have expressed attention to participate in the MECOVI program, but Panamá have three LSMS survey applied.

Since the year 1998, Costa Rica have made available the main results of household survey on the web site www.inec.go.cr and the Costa Rica University www.ccp.ucr.ac.cr where users can find household surveys data base, but the LSMS survey is not used (NSI, 2000).

Nicaragua has applied four LSMS surveys during 93, 98, 2001 and 2005. These surveys are considered as panel data sets that emerge the multiple years of data. However, for these surveys, there is no data file that provides the cross-walk for households between surveys. That is, information on how to link households between individual years of the surveys may be described in the basic information document, but have not been formally prepared for distribution. Therefore, to use these surveys as panels, users will need to match the households between the various surveys to construct a panel data set. Some work papers have been presented with these issues as organic fertilizer in small farms of Nicaragua, wages and employment in non-farm agricultural activities, Stochastic Frontier on Nicaragua forest farms, Malmquist index (Zuniga, 2009, 2010). Other issues such as non-traditional crops, traditional constraints.....adoption Guatemalan smallholders and adoption and diffusion of export crops among Guatemalan smallholders are referred to Guatemala used work bank data base (Carletto et al, 2007, 2009).

There are 622 publications and reports registered that use the Work Bank and NSOs data base. These publications refer to issues about survey methodology, development, implementation and monitoring of poverty reduction strategies (Table 6). Also, there are other authors who wrote papers without using the LSMS data surveys, such as Bravo-Ureta (2010) and Trejos (2008).

However, the Central American researchers and academics from CSUCA universities or private universities not participate in work paper and discussion forum on survey methodology fostered trough Work Bank web site. There are outstanding issues to be resolved in the area of poverty measurement like income, consumption, subjective welfare as well as news topics that have been identified by researcher as key to understanding poverty alleviation but for which tested methods of data collection do not exist.

On the other hand, the data base ISI Knowledge reports 211 paper indexed during 2000 to 2009. This data confirm the results in Table 6 for the Nicaragua case where these papers do not used LSMS data (Trejos et al., 2009).

Conclusions

The LSMS surveys comparisons between Central American countries about collecting and dissemination effort evidence that the World Bank and the MECOVI program have been supporting the National Statistical Offices. The World Bank emphasizes building capacity for planning, designing and executing the surveys, improving the survey instruments. The LSMS questionnaires along the time have suffering modification which it includes the agricultural module which is like a process of an agricultural integration system. The training offered through workshops and courses was essential to enhancing the technical capacity, as well as for creation of a network of cooperation. The Central American countries have received a practical horizontal, economical, technical cooperation and mutually beneficial mechanism for enhancement to NSO capacities. This has made close coordination between sponsoring helps to establish priorities and to conduct program activities in an integrated manner (Work Bank: web site).

These World Bank activities have permitted the National Statistical Offices (NSO) with a wide dissemination and democratization of statistical information which is essential for engendering trust and confidence in the statistical system that generates it. The problem is that the LSMS survey available for researching agricultural policy designed to solve identified problem is not enough.

Conversely, the Central American universities with NSOs are committed to production of high quality statistical information and creating of a virtuous circle with better information, more credibility, more utilization of data, more demand, more resources, improved capacity, better information, etc. Furthermore, there is need to produce papers on issues of rural development using the LSMS surveys.

The universities have the key role and responsibility in their social projection for improving many works in two directions:

Table 5. Central America in regional workshop.

Issue	Workshop topic	Date and place	Participants countries
1	Plan and development household surveys for living standards measurement	Aguascalientes, Mexico, 1 to 3 April 1998	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
2	Income measurement of household surveys	Buenos Aires, Argentina, 10 to 13 November 1998	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
3	Expenditure measurement of household surveys	Aguascalientes Mexico 24 to 28 May, 1999	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
4	Poverty measurement: Poverty lines method	Buenos Aires Argentina, 16 to 19 November |1999	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
5	Poverty measurement: Methods and Applies (ongoing)	Buenos Aires Argentina, 17 to 19 November, 2004	Costa Rica, El Salvador, Guatemala, Honduras, Panamá
6	Indicators for social development	Buenos Aires Argentina, 15 to 17 November, 2000	Costa Rica, El Salvador, Guatemala, Nicaragua, Panamá
7	Design and implementation of a integrated system of household surveys	Aguascalientes Mexico, 30 may to 1 June, 2001	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua
8	Past, present and future MECOVI program	Bueno Aires Argentina 28 to 30 November, 2001	El Salvador, Guatemala, Honduras, Nicaragua
9	Design and assembly of the sampling framework for household surveys	Lima Peru 17 to 19 June 2002	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
10	The sample practice for design household surveys	Buenos Aires Argentina 27 to 29 November 2002	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
11	Regional workshop about planning and development household surveys for living standards measurement	Aguascalientes Mexico Argentina, 3 to 5 November	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
12	Measurement and characteristic Employ of the household surveys	Buenos Aires Argentina, 3 to 5 November, 2003	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá
13	The building line poverty in Latin America: Practices and Methodology	Lima Peru, 7 to 9 July, 2004	Costa Rica, El Salvador, Guatemala, Honduras
14	Data attribution in the household surveys: The methodological procedure and implications	Buenos Aires Argentina, 17 to 19 November, 2004	Costa Rica, El Salvador, Guatemala, Panamá

Source: http://www.eclac.cl/deype/mecovi/index.htm.

(a) Ensuring the quality and relevance of the data produced;
(b) Researching to resolve the issues of poverty measurement and impact development of social programs merging into rural development.Although, as will become evident, statistics of LSMS surveys in Central America for agricultural households are not fully

Table 6. Central America publications and reports.

Country	Publications and reports Counts	Period
Guatemala	123	2009-1951
El Salvador	102	2009-1969
Honduras	128	2010-1989
Nicaragua	115	2009-1993
Costa Rica	111	2009-1982
Panamá	43	2009-1981
Central America	622	2010-1951

Source: http://web.worldbank.org/.

developed, sufficient evidence exists to demonstrate the great policy relevance of this information (UNECE, 2007).

In conclusion, there is need to harmonize LSMS surveys and the agricultural module so that academic researchers may work on papers that talk on agricultural policy and improvement of the rural development policy in each Central America country.

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