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INTERNATIONAL COOPERATION THROUGH OFFICIAL STATISTICS ON FOOD SECURITY, THE ENVIRONMENT, CLIMATE CHANGE AND POVERTY

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ABSTRACT

The ongoing debate about the causes and effects of food price volatility, especially on the number of people living in poverty, is occurring at the same time there is increased concern about the effect of agriculture on the environment and global warming. Practices to increase food production have consequences on the environment and global warming. From a statistical point of view, these are issues that transcend national boundaries. International cooperation will be essential to resolve these issues; it is dependent on official statistics.

This paper will describe statistical tools that could be used to describe the intertwined relationships between food price volatility, food security, poverty, the environment, and global warming. These statistical tools and outcomes need to be developed to provide results comparable across countries. The lessons learned from the well-known International Comparison Program will be applied to suggestions how to develop official statistics about the above issues to shape policy decisions across national boundaries.

The current world financial crisis that came on top of the food price crises is evidence enough about the globalization of the world economies with decisions made by one country that cause a rippling effect across the world. More than ever before, good statistics are needed to deal with these issues and the stakes are even higher to make sure that the information be comparable across national boundaries.

The best example of international cooperation through official statistics is the International Comparison Program (ICP) which is also the world's largest and most complex international statistical program. The next section provides a brief overview of the cooperative effort required. That is followed by a review of how this can impact other areas of official statistics. The paper concludes with recommendations on the way forward.

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The ICP Standard for International Cooperation

The ICP involves an international collection of prices for an agreed upon basket of goods and services. These prices must be for products representative of each country's consumption, but also comparable across countries. Agreed upon methodology is used to compute Purchasing Power Parities (PPPs) that are a form of an exchange rate used to convert national estimates of their Gross Domestic Product (GDP) and aggregates into a common currency. While there are many uses of these PPPs, a main one is to establish the international poverty lines. The cooperative nature of the ICP is described in Vogel (2009).

No country can produce PPP comparisons with other countries by itself. The ICP is a joint effort where countries work together to determine what will be priced and when. The data analysis and estimation methods require that data be pooled across countries. The very essence of the ICP is the comparability of results between countries, strict adherence to time schedules, and a common understanding of data sharing and confidentiality requirements. There is no other statistical program requiring so much cooperation between national, regional, and international organizations.

The Consumer Price Index (CPI) provides a useful example because it shares a common technical language and conceptual framework with the ICP and the output of national accounts. Each country determines the scope and coverage of its CPI from the content of the product basket, to the coverage of the country and all other aspects leading to the publication of the results. Each country has full responsibility for its final CPI estimates for which it is accountable to its public and other governmental entities. They are also accountable for ensuring its country's data confidentiality rules are followed.

The ICP takes the process to another level where decisions are shared with other countries, a regional coordinator, and the ICP Global Office. Purchasing Power Parities are estimated by price comparisons between countries; therefore, inter-country coordination is required. Each country must abide by standards accepted by other countries and follow the same data collection and national accounting procedures. An essential feature is that they are required to send their data to a regional coordinator where they are subject to review by other countries. Regional coordinators then send data on to the Global Office where the data review ensures consistent procedures are being used across regions. A sense of partnership and overall trust had to be established between countries and regions for assurance that other countries and regions were applying the same guidelines and standards. Countries had to follow similar methods and procedures in spite of the fact they differ widely in size, culture, and diversity of goods and services available to their people. They also have different levels of statistical capacity. Furthermore, not every country speaks the same language adding another dimension to the requirement for comparable methodology and procedures.

The distinguishing feature of the ICP is that each country sends its prices off to the regional and global coordinators and has to await their review before it knows its PPP levels. The process works because of the complete transparency of the methods and procedures used to compute the PPPs. Each country is allowed to review not only their data, but also the data for other countries to challenge inconsistencies. This provides trust in the system which is essential.

International Cooperation in Official Statistics—other candidates.

The wide use of PPPs points to other but related areas in national official statistics where the conceptual framework shifts from producing national statistics to measures at regional and global levels. Examples follow.

*The Consumer Price Index***.** The Consumer Price Index (CPI) is an index that measures the month to month or quarterly rate at which prices of consumption goods and services are changing. It provides a measure of price inflation also widely used as a proxy for a general index of inflation for the economy as a whole. It is a statistic for economic policy making, especially monetary policy. The CPI is widely used for index linking of social benefits such as pensions and other government payments, and also as escalators for measuring changes in GDP growth rates. Benchmark PPPs are extrapolated forward for non benchmark periods using these growth rates relative to the US growth rates. This has an impact at the international level. For example, international poverty lines are converted to the national level using benchmark PPPs, then national poverty rates for non benchmark years are a result of the extrapolation. These extrapolated PPPs are also widely used by health and education organizations and also those making cost of living assessments. Experience has shown that these growth rates are not consistent with structural changes taking place over time; therefore, there is a divergence in CPI price levels and PPPs that increases as the time between benchmarks increases. As a result a gap in the international data system is a set of CPIs' harmonized across countries. Ideally, countries within a region would determine a set of products and services in common between them which would be priced.

The theory and methods for the CPI are well developed and fully documented in the Consumer Price Index Manual (2004.) However, each country independently prices a set of nationally determined goods and services with different base periods making it nearly impossible to compare rates of inflation taking place over a group of countries. A recent paper by Biggeri and Laureti, (2011) presented the properties of the CPI and PPP estimators and concluded that a complete integration of the PPP and CPI data collections and estimations is essential to obtain increased coherence between PPP and CPI results. This would allow PPPs to be based on the more frequent CPI data collections and avoid the difficulties linked to the use of CPI's for temporal adjustments in PPPs.

Household Surveys. Household surveys such as the World Bank Living Standard Measurement Studies are the most effective way to obtain information related to well-being and poverty. Household surveys are used to determine the number of people living below the national and eventually the international poverty line. Household surveys provide the main input to the underlying weights used in the estimation of the Consumer Price Index across the major aggregates. These weights need to be established in a way to ensure more comparability of the CPI's across countries.

The household surveys are complex and expensive; in developing countries they are often donor driven, of an ad hoc nature with little coordination of the activities of different donors. The World Bank together with several other international organizations formed the International Household Survey Network (IHSN) to develop tools helping increase comparability of surveys, as well to contribute to better coordination between donor agencies and the receiving organization.

The scope, content, and coverage of household surveys needs to be made consistent and comparable across countries. A minimum set of core data needed should be identified, and a standard set of survey methodology identified.

Food Security. Food security involves a wide set of data and indicators ranging from calorie and nutrition intake to the cost of food. However, the single most important set of information required to make policy and marketing decisions affecting food security are timely estimates of current supplies and forecasts of production prior to harvest. Data on maize production that becomes available a year after harvest is of no use with a surplus crop rotting in storage because it is too late to seek export markets, or a crop disaster led to people either starving and/or staging food riots.

Remote sensing technology provides a powerful way to monitor crop conditions and obtain early warnings of disasters. Many of the weather satellites contain a monitor that provides a vegetative index which is a single number that quantifies plant biomass and vigor. While the main use is for early warning purposes, research is underway to use the indices for crop yield forecasting. (Panda, et. al. 2010).

While the methodology is complex preventing its use by many countries, groups of countries could combine resources whereby a regional remote sensing organization provided the satellite imagery and early warning materials that each country could use. Because the satellite imagery crosses national boundaries, countries with overlapping production areas and water sources would each be able to assess the full picture.

Monitoring the Environment and Climate change. These are complex issues which like food security involve a large array of indicators. However, one standard that is comparable across the world is land use and the capability to monitor it using satellite imagery. It can show changes in land cover and land use over time, analysis of population density, distribution, and growth. It provides analysis of watersheds, another example of the many uses.

Again, the complex methodology may prevent its use in many countries, but this is an area in which cooperative efforts across countries would enable their use of the technology.

Improved Statistical Methodology. The above technology will allow a total rethinking of statistical methodology used by national statistical systems. The imagery described above can be used to provide classifications of urban and rural areas into strata based on population density. This could be used as a master sample frame for most of the data collections made by a country. The use of periodic population censuses could be replaced by a continuous cycle of household sample surveys that provide current up to date data needed at the time in addition to the information about population provided by vital registration systems.

Data Collection Through Mobile Phones. The need of comparable cross – country and sub-regional data requires not only cooperation of statistical agencies but employment of new data collection methods and tools. One of these endeavors is a pilot study for Crowd-Sourced Data Collection through Mobile Phones.

Crowd-sourcing is the act of taking a job traditionally performed by a designated agent and outsourcing it to an undefined, generally large group of people in the form of an open call. Crowd-sourced data are collected and reported by the user community using commonly a mobile phone. At least two surveys within the World Bank can potentially benefit from this new method of data collection.

The first one is the International Comparison Program (ICP), which as described above is a worldwide statistical partnership to collect comparative price data to estimate purchasing power parities (PPPs) of the world's economies which are used to and compile detailed real expenditure values of countries' gross domestic products (GDP). The overall project is led and coordinated by the ICP global office at the World Bank and data are collected by the national statistics offices of individual countries and or regions. These data are currently collected around every 6 years. The prices needed must be the national annual average; this can require monthly price collections across the country for food products. The cost of the latest round is estimated at around $37 million. It is important to look for means to improve data quality and increase the frequency of data collection while lowering the overall program costs.

The second related survey is food price monitoring. Prices for food are measured systematically mainly from the producer side, for example, with the Commodity Markets Review. In the current economic environment of rising food prices, a need to measure food prices from the consumer side as well is becoming equally essential. Currently there is no access to reliable and frequently produced retail price data for food commodities.

The objective of the pilot is to study the feasibility of crowd-sourced data collection especially for the uses of the ICP and food price monitoring. The method involves usage of non-professional price collectors (NPCs) and mobile

phones as the means to collect price data for the food commodities within 9 pilot countries. The World Bank has contracted a private company, txteagle, to conduct the pilot study. The pilot countries are Brazil, Egypt, India, Indonesia, Jordan, Kenya, Nigeria, Uganda and Zambia. The survey framework for these countries is developed both by the World Bank and txteagle.

Using the crowd-sourcing method, prices are collected for 30 basic food commodities, such as rice, vegetables, and sugar. The World Bank has provided specifications for these products using the ICP product list as a base. Each product specification includes 7-15 price determining parameters.

Central to the activities carried out is the web micro-site, developed specifically for the pilot. Communication between the consultancy and the NPCs, for training and data submissions are channeled through the site. Additional means to recruit and communicate are email, Skype, and Twitter.

The results, i.e. price data, reports and gained experience, will provide insight to the potential use of alternative ways to sample and collect price data across the countries. Depending on the results of the pilot, the developed platform can potentially be used for a wide variety of applications in individual countries and the international statistical community.

The way forward

The Global Strategy to Improve Agricultural and Rural Statistics (2010) provides the framework to meet data demands for emerging data requirements. The Global Strategy contains several elements that relate to the initiatives presented above and also to the role of the international statistical system. The Global Strategy outlines methodology for the integration of sector statistical systems into the national statistical system through the development of a master sample frame and its use in an integrated survey framework. The Global Strategy calls for the linkage of economic and social indicators with the land use and environment. Technology will play a key role.

The current national and global statistical system is largely based on methodology that is decades old and does not consider the huge development of technology and how that can be used to more efficiently improve the quality of data. It is important that with the decreasing resources for statistical work and increasing demands more thought is given to increase efficiency of statistical operations (Belkindas, 2011)

The new initiative to improve statistical systems worldwide the Busan action plan on statistics (BAPS) is concentrating on six actions (Statistics .. 2011):

Action 1 - Strengthen and re-focus national and regional statistical strategies with a particular emphasis on improving statistical systems that support country-level development priorities. Strategies should be updated to reflect new challenges and opportunities. A key aim is to increase in-country capacity – including through training - to respond to emerging and unforeseen needs.

Action 2 - Ensure that outcomes of global summits and high-level forums specifically recognize the need for statistical capacity development, including technical assistance, training, and financial support. Implementing and monitoring global initiatives requires collaboration between national and international statistical organizations.

Action 3 - Implement standards for data preservation, documentation, and dissemination that permit full public access to official statistics.

Action 4 - Develop programs to increase the knowledge and skills needed to use statistics effectively for planning, analysis, monitoring, and evaluation, thus increasing transparency and accountability.

Action 5 -Improve accessibility of statistics and research produced by international organizations and bilateral development agencies.

Action 6 - Ensure financing for statistical information is robust and that funding instruments and approaches reflect the new modalities and actors in development finance.

The plan calls for improvement of statistical systems in developed and developing world, to refocus them to cater to the most important needs of the Governments and society and to increase financing for statistics. Such systems should be able to provide data comparable across the Globe.

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