"Assessing Poverty Measurement Practices and Statistical Capacity in Central America"*

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Executive Summary

It is important for countries to measure and track poverty as frequently and accurately as possible so they are able to identify the poor and keep them on the agenda, understand the evolution of poverty trends over the short and long term, assess the determinants of poverty, target policy interventions geared to poor people, and evaluate the effectiveness of policy actions. The need to frequently update and collect precise and inclusive poverty data is critical for countries in Central America, a sub-region that has proven vulnerable to various types of shocks in the past (including the recent fuel, food price, and financial crises from 2007-2008).

The purpose of this note is to take stock of current poverty measurement practices and the status of statistical capacity for effective poverty measurement in Central America. In terms of evaluating poverty measurement methodology in Central America, we compare and contrast country practice in components such as constructing and adjusting poverty lines, selecting and constructing the welfare aggregate, data inputs (household surveys, sample size), developing and using poverty maps and making poverty data publically available. All of these elements have important influences for the quality and depth of poverty estimates.

Generally, the Central American countries adhere to international best practice in poverty measurement, but there is room for improvement in several areas. For instance, some countries rely on a single national poverty line, ignoring large differences in consumption preferences and prices among areas within countries, especially at the urban and rural level. Likewise, consumption baskets and poverty lines are rarely re-calibrated to reflect changes others than inflation. For example, some consumption bundles were developed 15-20 years ago and have not been adjusted to account for significant changes in household preferences, consumption patterns, and changes in technology. There is also limited understanding of the consequences of updating poverty lines on poverty measurement, in particular whether changes in poverty lines make new poverty estimates incomparable with those from previous years. There also some issues related to poverty mapping practices, including not a wide application of this tool or current use of maps that were developed with old and not sufficiently disaggregated data. Implementing a poverty committee model like those applied in other countries in LAC could help countries in Central America address these issues based purely on technical considerations consistent with international best practice standards.

In terms of statistical capacity, this note shows that data used for poverty measurement and monitoring are not collected regularly by all countries in Central America. For instance, some countries conduct household surveys suitable for that purpose only every 4-5 years. Alternatives to track changes in welfare more timely include inferring consumption poverty based on income and other proxy variables from existing labor/income surveys, and using cellular phones to gather low-cost and close-to-real data on poverty, vulnerability to shocks and quality of public service delivery.

Finally, there is also the need to help build in-house technical skills at national statistical offices and other poverty focal points. Rich statistics and careful poverty measurement and analysis add statistical and analytical demands on agencies involved in the process of producing and updating poverty numbers. Some of these institutions in Central America experience high turnover rates and have difficulties retaining the statistical and analytical capacity necessary to properly collect data and produce the analytical inputs for poverty analysis. Furthermore, they seldom keep appropriate records of poverty measurement methodologies used in the past.

1. Introduction

It is important for countries to measure and track poverty as frequently and accurately as possible, particularly in Central America. That information allows identifying the poor and keeping them on the agenda, understanding the evolution of poverty trends over the short and long term, assessing the determinants of poverty, targeting policy interventions geared to poor people, and evaluating the effectiveness of policy actions. The need to frequently updating and collecting precise and inclusive poverty data is critical for countries in Central America, a sub-region that has proven vulnerable to various types of shocks in the past (including the recent fuel, food price, and financial crises from 2007-2008). Of particular importance for governments and donors is the issue of calculating poverty at high levels of geographic disaggregation to help them best target policy interventions for poor and vulnerable populations, while efficiently allocating resources.

Notwithstanding important advances in recent years, there are a variety of elements in current poverty measurement and mapping practices in Central America that are susceptible to further improvement. For instance, poverty lines are often adjusted fairly frequently to reflect changes in price inflation, but are rarely modified to capture changes in consumption patterns. Also, surveys that are suitable for poverty measurement are not collected frequently enough (every 4-6 years) and countries seldom set multiple poverty lines for different demographic and geographic areas to capture local variation in prices, consumption and welfare. There are also concerns that national statistical institutes and other local institutions involved in poverty measurement have uneven statistical and analytical capacity to updating national poverty lines, analyzing survey data, and developing poverty maps.

The purpose of this note is to take stock of current poverty measurement practices and the status of statistical capacity for effective poverty measurement in Central America. The first section reviews the main aspects that characterize poverty methodologies currently employed by each of the six countries in Central America, laying out similarities and differences and highlighting where there's room for improvement. The second section takes a closer look at national statistical capacity for poverty data collection and evaluation, with a special focus on periodicity. The final section lays out the key constraints to poverty measurement in Central America parsed out by the topics of poverty measurement methodology, poverty mapping, and statistical capacity.

2. Current Poverty Measurement Practices

In order to measure monetary-based poverty according to high quality standards, national statistical institutes must complete several key general steps. First of all, rich household survey information from representative sample of the population needs to be collected frequently. The type of welfare aggregate (income or consumption) is determined according to the type of household survey that each country collects. Another important step in the poverty measurement process is to construct a poverty line which reflects the monetary value of a minimum bundle of consumption goods that a person requires to satisfy their most basic needs. Related to the definition of the poverty line is the issue of making adjustments to the poverty line over time to correctly reflect any inflation in prices or changes in household consumption preferences. Establishing who is poor and who is not requires the construction of the welfare aggregate, which itself demands a careful definition of each component and its valuation. Finally, after the headcount ratio and other poverty

indicators have been estimated, poverty maps can be constructed if data sufficiently disaggregated by geographic groups exists.

An assessment of all these different elements reveals that many positive elements characterize current poverty measurement practices applied by countries in the Central American sub-region. Yet, as this note will highlight, there are also some key constraints that should be addressed in order to increase the accuracy of poverty estimates.

This section will highlight the similarities, differences, strengths and limitations with the way that Central American countries conduct poverty measurement in terms of: (1) defining and constructing official poverty lines, (2) choosing a household welfare indicator, (3) collecting data for poverty measurement, (4) making adjustments to poverty lines, and (5) creating and using poverty maps.

2.1. Defining and Constructing Official Poverty Lines

Poverty lines are central to poverty measurement because they represent the monetary threshold below which individuals are considered poor. Therefore, having a poverty line that accurately reflects this threshold is very important. All of the countries in Central America have established an official method for poverty measurement, including the definition of poverty lines, which is good practice.

In order to determine the monetary value of a poverty line, all six of the Central American countries use the standard "cost of basic needs" approach. Under this approach, a bundle of goods is identified which represents an individual's basic needs for survival, including daily caloric quotas, clothing, and housing. The value of the caloric requirement used to construct the consumption basket varies among countries in the sub-region, ranging from 2,160 calories per day in El Salvador to 2,297 calories per day in Panama. A majority of countries vary the value of the required daily caloric intake among demographic groups to better capture in the total value of the poverty line the realities facing sub-populations. Some of the countries (Costa Rica and Honduras) also allow for the Engel coefficient to vary across areas (e.g. urban and rural) to reflect differences in the food share that could exist across these subgroups. Both practices are considered good practice because they are intended to increase the quality and accuracy of the poverty estimates.

The monetary value of each country's official poverty line differs from country to country. This is to be expected, as the poverty line reflects that fact that people in different countries have distinct diets, needs, currencies, employment opportunities, preferences, and access to services such as health clinics, school, and roads, among others. Therefore, the value of the threshold defining poor from non-poor should be different.

There is room for improvement in a few of the countries in terms of allowing for heterogeneity of sub-groups and geographic areas into the poverty lines. All of the countries in Central America use at least two general official poverty lines, each of them intended to identify people under extreme and moderate poverty. However, there are some constraints to having national poverty lines without further disaggregation. There exist important and distinct geographic and demographic differences between food prices, household preferences, and poverty levels within a country that are masked with only one national poverty line. While setting many poverty lines for the same country may not be practical, it is advisable to at least define two poverty lines, one and one for urban and rural areas at the moderate and extreme level, to account for substantial heterogeneity in consumption preferences and prices between these areas. This can be achieved by

varying caloric requirements by demographic groups, along with allowing goods and prices in the consumption basket to vary spatially. Only half of the countries in Central America currently follow this practice (Costa Rica, El Salvador, and Honduras).

It is worth noting that aside from measuring poverty by monetary means, all countries in the sub-region also apply the "unsatisfied basic needs" method to measure wellbeing. Instead of using a monetary threshold to define poverty, a minimum standard of wellbeing is determined for several indicators such as levels of or access to housing, water and sanitation, education, and income. Households that fall below the determined standards are considered deprived or poor. A summary of the main aspects that represent poverty line methodology in Central America can be found in Table 1.

Table 1. Poverty line methodology, by country

Poverty lines	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
Official poverty line?	Y	Y	Y	Y	Y	Y
Poverty line type	Absolute	Absolute	Absolute	Absolute	Absolute	Absolute
Number of poverty lines [a]	3	2	1	2	1	1
Moderate & extreme levels?	Y	Y	Y	Y	Y	Y
Method	Cost of basic needs	Cost of basic needs	Cost of basic needs	Cost of basic needs	Cost of basic needs	Cost of basic needs
Calorie requirements vary by demographic characteristics?	Y	Y	N	-	Y	Y
Engel coefficient varied spatially?	Y	N	N	Y	N	-
Countries also use unsatisfied basic needs method?	Y	Y	Y	Y	Y	Y

[a] 1 poverty line = national level; 2 poverty lines = urban and rural; 3 poverty lines = rural, urban and national.

2.2. Welfare indicators: income and consumption

Another important element in poverty measurement is the household welfare indicator which is used to count who is poor and who is not. Half of the countries in the sub-region (Honduras, Costa Rica, and El Salvador) use *income* to gauge household welfare, while the other half (Guatemala, Panama, and Nicaragua) use consumption for the same purpose (Table 2). In general, the *income* aggregate reflects the sum of income received, added to the change in the net worth of a household over a certain period of time. In turn, the *consumption* aggregate reflects the total amount that a household spent on goods and services, along with the total amount of self-produced items consumed over a certain period of time.[1] The welfare indicator that is used is largely determined by the type of data collected by each country to measure poverty (i.e. type of household surveys) (see Section 2.3).

Table 2. Welfare indicator used, by country

	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
Welfare indicator	Income	Income	Consumption	Income	Consumption	Consumption

[1] Therefore, income measures wellbeing by inflows into the household, while consumption measures wellbeing by how much money flows out of the household.

There is an unsettled debate among poverty measurement specialists as to which measure of welfare is superior – income or consumption. Both approaches are legitimate and there are pros and cons to using either one. On one hand, those in favor of income argue that it is a reliable way to measure wellbeing – particularly in developed countries – because income and salaries tend to be stable, fixed annually, and come from a limited number of sources. However, in a developing country context, this is often not the case. Here there are more fluctuations in the timing and amount of income received because employment is more informal, inconsistent, and comes from multiple sources. This can lead to underreporting of income which can result in inflated poverty estimates.[2]

On the other hand, some argue consumption is a more accurate method to assess poverty. The reason for this that spending patterns do not change as much over time and people in poorer countries usually have an easier time remembering what they bought, rather than what they earned. In addition, given the ability of households to smooth their expenditures during positive and negative shocks, consumption fluctuates much less than income. However, consumption can also be understated and there are other concerns with using consumption as the welfare aggregate such as richer households do not always spend a lot of money and expenditures are not always regular and consistent over time.[3]

Overall in Central America, countries that use consumption to measure poverty rely on consumption-based household surveys. These surveys tend to be more comprehensive than income-based ones but they are also more time consuming and expensive to conduct. Given this, consumption surveys for poverty measurement are usually only conducted every 4-6 years in Central American countries, making it difficult to monitor changes in poverty in a more timely fashion. In contrast, countries that measure poverty using income collect income and labor force surveys annually, but they provide less rich data. These issues will be discussed in further detail in the following section.

2.3. Data for poverty measurement

The quality, depth and frequency of household surveys influence the accuracy and richness of poverty data, and the ability of countries to track poverty over time and understand the main factors that may explain it. Ideally, surveys should include a large and inclusive sample of households nationwide in order to more accurately reflect the heterogeneity of poverty. By collecting highly disaggregated data through household surveys, governments and other organizations can better understand the short and long term trends in poverty and policy makers can better design and target assistance programs for those in need.

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[2] In a number of poor countries, agriculture and animal husbandry tend to employ a large majority of workers and it is difficult to precisely determine income for farmers or those selling self-produced goods or animals in a market setting. Also, is also complicated to determine the change in a household's net worth over time for assets such as livestock. People could also understate their earnings in order to evade paying taxes or to hide income earned from illicit activities.

[3] Survey respondents might fail to report what they spend on luxury or illegal goods or services. Also, some expenditures are not always regular. For instance, one family might have saved for a year to buy a bicycle, so for that period in question, reflected expenditures were very high, but they are not an accurate reflection of normal spending patterns. People could also forget all of their purchases the exact prices depending on the length on the recall period. Another basic problem with consumption is the fact that just because a household is relatively rich in monetary terms does not always mean it spends a lot of money, so those households would be reflected as poorer than they really are based only on consumption habits.

The data used by all countries in Central America to estimate poverty are derived from national household surveys obtained directly from informants. However, there is substantial variation across countries in the sub-region in the type and quality of data available for poverty measurement. This section will take a look at some of the similarities and differences between income and consumption-based household surveys, discuss sample size and coverage, break down how countries construct income and consumption aggregates, and analyze data accessibility to the public. Table 3 represents a summary of some of the topics to be evaluated in this section, by country.

Table 3. Poverty measurement data, by country

Data	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
Survey type	Household survey	Integrated (non-LSMS)	LSMS	Integrated (non-LSMS)	LSMS	LSMS
Sample size (households)	11,603	20,361	13,686	7,043	6,515	7,045
Survey coverage & stratification:						
National	Y	Y	Y	Y	Y	Y
Regional	Y	Y	Y	Y	Y	Y
Urban	Y	Y	Y	Y	Y	Y
Rural	Y	Y	Y	Y	Y	Y
Lowest level of representation	6 regions	San Salvador (metro), Departments, 50 largest municipalities	Departments	Urban areas: Tegucigalpa, San Pedro Sula & others	Macro-regions: Managua, Pacific/Central/Atlantic urban/rural	Provinces

2.3.1. Living Standards Measurement Surveys (LSMS) versus Multi-Purpose Household Surveys (EHPM)

Half of the countries in Central America use income as the welfare aggregate to identify poor people. To a large extent, countries have decided which indicator – consumption or income – to use based off of the type of household survey they collect. As noted above, the number of countries in Central America using income or consumption as the welfare aggregate is split (Table 4 and Annex 1). On the one hand, Costa Rica, El Salvador, and Honduras measure poverty based on income from labor force data. These data are collected through the so-called "Multi-Purpose Household surveys" (EHPM). EHPMs gather relatively less information than other more comprehensive household surveys but are collected annually, which is a major advantage to monitoring poverty in a timely fashion. However, the disadvantage is that EHPMs can provide a more limited picture of household wellbeing and its determinants, especially if the income aggregate is narrowly defined (see Section 2.3.3).

Table 4. Household surveys used for poverty measurement in Central America

Country	Welfare Indicator	Survey	Year
Costa Rica	Income	Encuesta de Hogares de Propositos Multiples (ENPM)	1989-2009
		Encuesta Nacional de Hogares (ENAHO)	2010
El Salvador	Income	Encuesta de Hogares de Propositos Multiples (ENPM)	1991, 1995-96, 1998-10
Guatemala	Consumption	Encuesta Nacional sobre Condiciones de Vida (ENCOVI)	2000, 2006, 2011
Honduras	Income	Encuesta de Hogares de Propositos Multiples (ENPM)	1991-99, 2001, 2003-10
Nicaragua	Consumption	Encuesta Nacional de Hogares sobre Medicion de Nivel de Vida (EMNV)	1993, 1998, 2001, 2005, 2009
Panama	Consumption	Encuesta Nacional de Hogares sobre Medicion de Nivel de Vida (EMNV)	1997, 2003, 2008

In contrast, Nicaragua, Panama, and Guatemala measure poverty using consumption data from Living Standards Measurement Surveys (LSMS). LSMS questionnaires cover a wide range of variables, therefore LSMSs provide a more comprehensive set of data on household and contextual characteristics as compared to EHPM. By providing more comprehensive data, LSMSs are able to provide deeper insights into understanding the determinants and characteristics driving national poverty. Another advantage is that LSMS allows for the construction of both consumption and income aggregates. Section 2.3.3 will take a closer look at different country methods for constructing consumption aggregates.

Although there are many advantages to using LSMS, these comprehensive surveys are more expensive to conduct. Therefore, they are not carried out as frequently as the annual EHPM (every 4-5 years versus annually), so it is impossible to monitor regular (for instance, annual or bi-annual) changes in household consumption and poverty levels in the three Central American countries which use LSMS surveys for poverty measurement.

2.3.2. Sample size

One key element of household surveys is the sample size and coverage. Having a household survey that is widely inclusive of all relevant sub-populations greatly enhances the quality and richness of the poverty data. For instance, if a survey only covers urban households, it is impossible to get a clear picture of poverty nationwide, as we know the differences between poverty levels in urban and rural areas can be quite profound.

The Central American countries all do a good job of ensuring that survey sample size is both adequate and representative at various levels. All of the latest household surveys from each country collected information for over 6,000 households. Sample sizes range from 20,000 households in El Salvador to 13,000 Guatemala, 11,000 in Costa Rica, 7,000 households in Panama and Honduras, and 6,000 in Nicaragua. All of the latest few sets of surveys collected in each country over the last decade or so are representative at the national, urban, rural and sub-regional levels, allowing for inference that it is statistically sound at each of these levels. Some of the countries go even further with surveys that are representative at lower levels of disaggregation, for instance, departments and municipalities (e.g. El Salvador). Overall, the latest surveys in Central America used for poverty measurement purposes follow good practice by having a statistically sound sample size which allows for the inference of poverty at different levels.

2.3.3. Construction of income and consumption aggregates

There is wide variation in the information included in the construction of income aggregates. As mentioned above, three countries in Central America use income aggregates to measure poverty - Honduras, El Salvador, and Costa Rica. The latter two countries collect data on a large number of potential sources of household income. On top of the fairly standard components included for income[4], El Salvador and Costa Rica also collect data on remittances, in-kind income (housing, meals), benefits (per diems, housing or meal allowances), transfers, and self-employment income (Table 5). Costa Rica also includes data on self-produced goods that are consumed by the household. In contrast, Honduras's income aggregate only adds self-employment income to the standard components of total income (listed in Footnote 4). By limiting the sources of income included in the consumption aggregate, the household welfare measured used in Honduras is unable to capture potentially substantial inflows to households such as public transfers and remittances from family members working abroad.

Table 5. Poverty measurement data, by country

Data	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
Informant type	Direct	Direct	Direct	Direct	Direct	Direct
Items included in welfare aggregate	Labor and non-labor income (non-monetary is only binary); Other (capital income, public/private transfers)	Labor income; Non-labor income (monetary only); Other (pensions, capital income, public/private transfers, imputed rent)	Food; Transportation; Business costs; Self-production; Durable goods; Owner-occupied housing; Transfers; Ceremonies; Taxes; Education; Health expenses (outpatient/hospitalization)	Labor and non-labor income; Other (pensions, capital income, public/private transfers, imputed rent)	Food; Transportation; Business costs; Self-production; Durable goods; Owner-occupied housing; Transfers; Ceremonies; Taxes; Education; Health expenses (outpatient)	Food; Transportation; Business costs; Self-production; Durable goods; Owner-occupied housing; Transfers; Ceremonies; Taxes; Education; Health expenses (outpatient/hospitalization)
Prices allowed to vary spatially/seasonally?	N	N	Y (HH survey implicit prices)	Y (HH survey implicit prices)	N	Y (CPI)

For the remaining countries which use consumption to measure poverty - Panama, Guatemala, and Nicaragua – all rely on LSMS surveys and use a wide variety of expenditure items to construct the consumption aggregate. Aside from the basic aspects of consumption included in the aggregate such as food, transportation, business expenses, and personal and household items, these countries all include expenditure data on: self-produced goods consumed by the household, durable goods, owner-occupied housing, transfers, major ceremonies (weddings, funerals), taxes, education, and outpatient health expenses (Table 5). When conducting consumption surveys, the recall period for food purchases is 1-2 weeks, but varies between 1-12 months for non-food items (services, durable and non-durable goods). Panama is also the only country that makes any kind of spatial adjustments to the consumption aggregate from the CPI to account for variation in prices across the country.

Regardless of which welfare aggregate is used, countries should aim to gather data and include the types of income sources and expenditure categories that are more relevant for households when constructing the welfare aggregate. This helps ensure that poverty estimates will not be grossly overstated by missing out on important sources of income or expenditure. Other countries which measure poverty through the consumption aggregate could follow Panama's

[4] This includes labor and non-labor income sources. Examples of the labor sources include wages, salaries, tips, social security, and insurance, among others. For labor income, it is standard to have pensions, capital income, and inheritances included, among others.

example of making spatial adjustments to the consumption aggregate through the CPI which capture heterogeneity in prices, choices and affordability across areas. Countries using the consumption aggregate should also seek to make seasonal adjustments to the aggregate through the CPI to reflect seasonal price changes, as no countries currently follow this practice.

2.3.4. Data accessibility

It is important for national statistical institutes to make poverty data and results publically available and replicable. By sharing this information with the public, those outside the government (public media, academia, donor organizations, private sector and others) can access data and learn about the poverty profile of a certain country, do research, improve their understanding of the causes and symptoms of poverty, rationalize public investments and better manage projects.

A full assessment of poverty data accessibility requires evaluating a large variety of aspects. They range from IT infrastructure for open data platforms to legal and policy framework around public data to type and quality of data accessible to the availability of corresponding metadata and to the existence of public channels for data requests and engagement. Such an assessment is well out of the scope of this note. Instead, each national statistical institute's website was checked[5] to carry out a quick assessment to see what type of poverty information was readily available to the public in Central America (Table 6).

The websites for each country's national statistical institute all had some poverty information posted, but the depth of the information varied quite a bit among countries in Central America. As a baseline for comparison, all of the countries had at least some census information available on-line, like summary statistics and population projections, but not the primary micro census data. Aside from one country (Nicaragua), all of the other countries had data available for at least two household surveys, although this also varied in the amount of data shared. Some countries (El Salvador and Honduras) went as far as having the full micro datasets – including their corresponding metadata–- for download, and others just had textual documents to describe the survey results. A few of the countries (Costa Rica, Honduras, and Panama) also publish historical information on CPI values and the evolution of prices for the basic consumption bundles and poverty lines. Lastly, Nicaragua and Honduras had poverty maps available to the public, but they are both relatively old maps (2005 and 2001, respectively).

Table 6. Public information available on national statistical institutes' websites

Country	Institute	Census		HH surveys		Poverty line	CPI	Poverty map
		Results	Microdata	Results	Microdata			
Costa Rica	INEC	X		X		X	X	
El Salvador	DIGESTYC	X	X	X		X	X	
Guatemala	INE	X		X		X	X	
Honduras	INE	X		X	X	X		X
Nicaragua	INIDE	X						X
Panama	INEC	X		X			X	

Overall, with a few exceptions, there is not much poverty data accessible to the public –at least on-line. Moreover, the little data made available by the national statistical offices in Central

[5] The websites were accessed on April 24 and 25, 2012.

America is not often indexed and cataloged, and it is not easy to interpret (the corresponding meta-data is rarely available). It is important that countries in the sub-region investment in initiatives to make good quality poverty data and its associated meta-data publically available. This is expected to encourage evidence-based policy making, increase efficiency and transparency, improve delivery of public services, and create opportunities for further analytical work on poverty and related social areas. The World Bank is currently supporting Open Data initiatives in several countries (for instance, Colombia and Mexico) to assess the accessibility of government data systems to the public, develop strategies and interventions to address critical gaps, and undertake activities to raise awareness and understanding of statistics by users.

2.4. Adjustments to Poverty Lines

It is reasonable to expect that the many elements influencing the monetary value of the poverty threshold (i.e. household consumption patterns and preferences, prices, and/or new technologies) will change over time. Therefore, at minimum countries should make sure to include annual price adjustments due to inflation so that poverty lines better reflect the true cost of a basic bundle of consumption needs for households. Additionally, consumption baskets that have been set 15-20 years ago are unlikely to capture changes in household consumption patterns change over time. For instance, a consumption bundle established a long time ago does not include the use of cell phones and internet as some of the items of the basket, yet they are vastly consumed by all groups of the population in developing countries, including low-income people.

It is important that countries adjust poverty lines to account for price variability overtime. Ideally countries should annually and spatially adjust food and non-food prices for inflation along the lines of the food CPI and general CPI, respectively. By updating these prices, the nominal value of the poverty line changes (for example, an increase of $1.25/day up to $1.40/day), however, the *real* value of the poverty line does not change because you can 'deflate' the change in prices due to inflation and make the data comparable over time.

Within Central America, Costa Rica is the only country which uses the best practice of updating their food and non-food prices according to the food CPI and general CPI. Nicaragua and Panama both adjust their food and non-food prices, but they change both in terms of the general CPI. This is clearly better practice than not updating prices at all, but there can be distinct differences between changes in food and non-food prices (for instance, during the food price crisis) captured in the general CPI and food CPI. The remaining countries in Central America consistently update food prices according to a price index, but hold the value of the non-food prices constant over time. This practice does not allow for the consumption bundle to reflect the true purchasing power of household since changes in non-food prices are not updated over time (Table 7).

Table 7. Adjustments to poverty line, by country

Poverty line adjustment	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
Year of latest bundle update	2010	1992	2000	1999	1998	1997
Total poverty line updated using a price index?	Y (CPI & food CPI updated)	N (food line updated, non-food line held constant)	-	N (food line updated, non-food line held constant)	Y (CPI updated)	Y (CPI updated)

Excluding the price adjustments, the composition of the consumption bundles used for poverty measurement in Central America is rarely recalibrated to keep up with relevant changes over time. They include changes in consumption patterns, household preferences and socio-economic conditions. Among the six countries in Central America, there is wide disparity in the last time the consumption bundles were updated. Costa Rica recently updated their bundle in 2010. In contrast, El Salvador has not updated its consumption bundle since 1992 - 20 years ago. The other Central American countries range from 1997 to 2000. It is reasonable to assume that consumption bundles that have not been updated in 15-20 years cannot accurately reflect a modern household's basic requirements given the change in preferences and the introduction of new goods and services (for instance, mobile phones). Therefore, changes should also be made to the composition of the consumption bundle more frequently than every 15-20 years.

However, issues of comparability should be considered when consumption baskets are modified. Changing the composition of consumption bundle changes the *real* value of the poverty line, unlike applying changes due to price inflation. Although it is good practice to change the poverty line around every decade to reflect the true basic consumption needs and costs for households, not very much is known about the consequences of updating poverty lines when the composition of the consumption is modified. Specifically, there are some concerns with comparability of the poverty data over time after such changes are made.

2.5. Poverty Mapping

Poverty is a heterogeneous phenomenon with wide variations not only among countries, but also across regions within them. Due to large variations in access to infrastructure, markets, and endowments, socio-economic conditions, and geography, it is normal to find large disparities in the distribution of poverty, even within regions and municipalities of the same country. Obtaining accurate measurement of the spatial variation in poverty with disaggregation at various sub-national levels can be difficult. Poverty mapping seeks to overcome these issues by estimating poverty incidence (or other poverty indicators) for small and specific geographic areas.[6]

Poverty maps are a tremendous asset for national governments, donors, and non-governmental organizations, given their ability to identify the poor in spatial terms. The poverty maps help these entities design social, economic, and emergency response programs which are more accurately targeted to specific groups. Some countries in Central America have developed and applied poverty maps to understand the spatial dimensions of poverty and to target public investments and development assistance. Examples of these experiences include[7]: (1) *Nicaragua* - A poverty map developed in 2000 influenced investments in key sectors under the Strengthen Growth and Poverty Reduction Strategy and also helped select target municipalities to receive US$140 million under the Emergency Social Investment Fund; (2) *Guatemala* - A poverty map developed in 2001 helped allocate resources from national poverty reduction strategies and guided the placement

[6] Poverty maps are generally constructed in two main stages. First, the determinants of poverty (based on an empirical model of consumption) are estimated using household surveys, including only the relevant explanatory variables found both in the household survey and the census. For the second step, the parameter estimates of the consumption model are applied to census data to predict the probability that each household in the census is actually living in poverty. Finally, the predictions are combined to compute poverty aggregates for specific geographic areas.

[7] Except when noted, all the examples were taken from Snel and Henninger, 2002.

of US$100 million in road investments; (3) *Panama* – The government used poverty maps to target investments in schools, health centers, and roads as part of the Panama Social Investment Fund.

Even though there are a few success stories regarding poverty maps in Central America, there is much room for improvement in all countries of the sub-region. In the cases where maps exist, they are developed with outdated data or data that is not sufficiently disaggregated. For example, the most recent poverty map in Central America (El Salvador) was built with census data from 2007 using the *unsatisfied basic needs* method (Table 8). Given the time lapse, older data are unlikely to reflect the current socioeconomic conditions of the poor and vulnerable, especially since most countries have experienced substantial changes in poverty (positive and negative) over the past decade. Another problem is that poverty maps are being underutilized throughout the sub-region – except perhaps for one in Nicaragua based on 2005 data. Poverty maps should ideally be used to help analyze spatial trends and patterns in poverty, identify the poor and vulnerable areas for targeting purposes, and foster local participation in defining priorities and strategies.

The demands of developing poverty maps are also a challenge to many Central American national statistical institutes that have limited technical capacity to carry them out. There is a need to support the technical and analytical capacity of national statistical institutes given the wide range of analytical demands imposed by poverty-mapping methods. As with the demands of poverty measurement, staff in the national statistical institutes need to be trained in the latest techniques to create poverty maps and methodology should stay consistent over time to ensure comparability.

Table 8. Most recent poverty maps available in Central America, by country

Country	Census	Household data
Costa Rica	2001	Year to be confirmed
El Salvador	2007 [a]	2007
Guatemala	2002	2000
Honduras	2002	2001
Nicaragua	2005	2005 (LSMS)
Panama	2000	2003 (LSMS)

[a] This map is developed using the *unsatisfied basic needs* method based on census data.

3. Statistical capacity for poverty data collection and evaluation

This second and last section of the note seeks to evaluate the capacity of national statistical systems in Central America to collect data in a regular manner and process and evaluate it according to international standards. This section specifically focuses on the periodicity with which certain poverty surveys and indicators are updated and uses the World Bank's Statistical Capacity Indicator as a tool to help with this analysis.

3.1. Methodology

This note looks at components of the World Bank's "Statistical Capacity Indicator" (SCI) to assess the capacity of Central American national statistical institutes to frequently collect poverty data. The SCI is an initiative from DECDG, to shed light on some of the key aspects that

characterize national statistical institutes in the sub-region and determine their current approaches to measuring and monitoring poverty. The SCI is a diagnostic framework that uses metadata to monitor a country's annual performance in national statistical capacity development. The framework is comprised of three main categories: (1) *Statistical methodology* – evaluates to what extent a country follows internationally recommended standards for compiling and updating macrodata and reporting social data; (2) *Source data* – assesses the frequency of important surveys; and (3) *Periodicity and timeliness* – gauges how frequently human development indicators are updated. According to the SCI, every country assessed receives an annually updated score in each of the three categories listed right before.[8]

Since the focus of this note is on the statistical capacity of national statistical systems to measure poverty, the note examines a sub-set of the information within the *Source Data* and *Periodicity and Timeliness* indicators. In the particular case of the *Source Data* indicator[9], this assessment takes a closer look at only two specific elements of the aggregate score which are closer to that objective – periodicity of population census and periodicity of poverty-related surveys. In order to benchmark the performance of Central American countries over time, the results are compared against the performance of South America and the Caribbean sub-regions.

3.2. Findings from SCI

The following summarizes the findings emerging from the SCI on periodicity of population census, periodicity of surveys used to measure poverty, and capacity to update human welfare indicators for statistical systems in Central America:

- ***Satisfactory periodicity of population census***. Ensuring that a population census is carried out with the frequency laid out by international standards (at least every 10 years) can help ensure that the sample size and stratification of household surveys accurately reflect the different demographic groups comprising the country's population. All countries in Latin America and the Caribbean – including the six Central American countries – conduct a new census at least every 10 years. This is within the parameters of international best practice, so each country received a perfect score for the *periodicity of population census* component of the *Source data* indicator score.

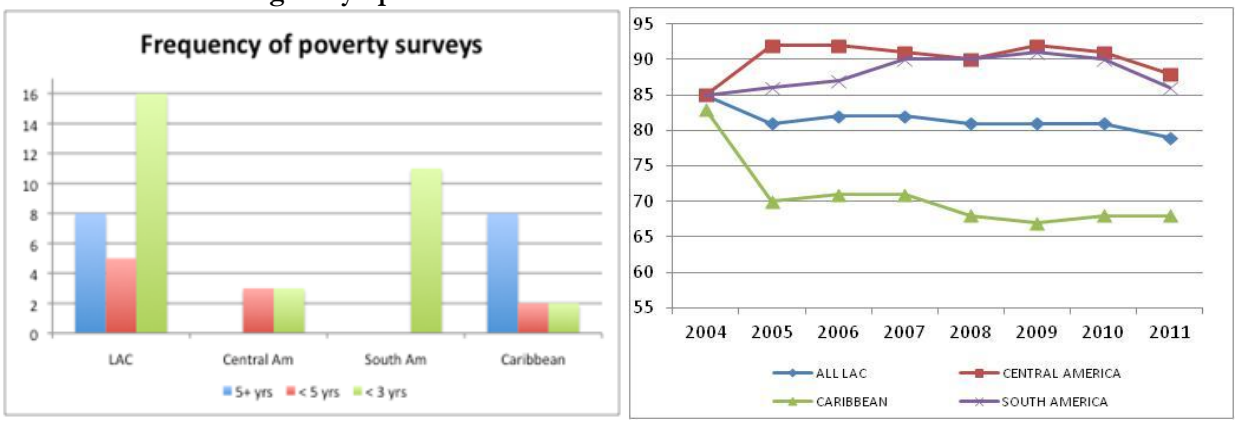
- ***Modest periodicity of surveys used to measure poverty***. As discussed in Section 2.3.1, the frequency with which household surveys are collected to determine poverty levels is important in order to maintain accurate poverty estimates. Poverty levels in the sub-region have been known to change rapidly due to shocks such as natural disasters and economic crises, and updated poverty information can help policy makers better understand the evolution of poverty. An analysis of the frequency with which poverty surveys are conducted in each sub-region of Latin America and the Caribbean shows that South America had the highest scores for 2011, with all countries carrying out surveys every 3 years or less. In Central America, half of the countries conduct poverty surveys every three years or less (countries that measure poverty annually by an income aggregate), and the other

[8] Each country receives a different score for the three categories on a scale of 0-100, where 0 signals that a country meets none of the criteria and 100 means that a country meets all of the criteria. The three scores are averaged to get an overall score. More information on the methodology and data of the World Bank's *Statistical Capacity Indicator* can be found on-line at: http://data.worldbank.org/data-catalog/bulletin-board-on-statistical-capacity.

[9] The *Source data* indicator is originally comprised of five criteria which are equally weighted to determine the aggregate score – (1) Periodicity of population census, (2) Periodicity of agricultural census, (3) Periodicity of poverty-related surveys (LSMS, etc.), (4) Periodicity of health-related surveys (DHS, etc.), and (5) Completeness of the vital registration system.

half conduct poverty measurement surveys every 4-5 years (countries using the consumption aggregate). The Caribbean countries do significantly worse, as the majority of surveys are carried out with the frequency of 5 years or more (Figure 1, panel a).[10]

Figure 1. Frequency of poverty surveys and score on capacity to regularly update human welfare indicators in Latin America



Source: World Bank's Statistical Capacity Indicator.

- ***Satisfactory capacity to regularly update human welfare indicators***. The SCI aggregate score also assesses the ability of national statistical systems to regularly measure and update ten indicators related to poverty and human development: (1) Child malnutrition (children under 5 years old), (2) Child mortality (children under 5 years old), (3) Child immunizations (children under 1 year old), (4) Prevalence of HIV (adults aged 15-49), (5) Births attended by skilled health staff, (6) Ratio of girls to boys in primary and secondary school, (7) Primary school completion rates, (8) Access to water, (9) GDP per capita growth, and (10) Proportion of the population below $1/day. Overall, Central America performs at the same level than South America and is above the regional average. However, both regions display a persistent and downward trend in scores since 2009 which indicates a decline in how often some of these indicators are being updated (Figure 1, panel b). Central American countries can work specifically on improving the frequency in data collection for indicators such as child malnutrition and the ratio of girls to boys in primary and secondary school.

The lower performance on the periodicity of data for poverty measurement in Central America – also identified in the first section – is something of note. For instance, Nicaragua, Guatemala and Panama collect rich but not very frequent data on consumption (every 5 years or so) in order to estimate poverty figures, limiting their ability to track changes in welfare in a more timely fashion. This limitation is all the more challenging in a region that is prone to natural disasters and economic shocks. An option is to infer consumption poverty using income and other proxy variables from existing labor/income surveys. Except for Guatemala, all countries in Central America conduct at least one of these surveys per year. Strong predictors of movements in consumption could be identified from LSMSs and added to the existing modules of these surveys to produce reliable estimates of changes in welfare, employing a methodology similar to the one used

[10] Although it would be ideal to have consumption surveys conducted more frequently, Section 2.3.1 discusses many of the benefits and constraints of using LSMS as opposed to income and labor force surveys. Countries using consumption as the welfare aggregate could potentially conduct poverty surveys with greater frequency, but perhaps with a smaller sample size if funding is a concern.

for poverty mapping. Another alternative to consider includes using cellular phones to develop and test low-cost instruments that gather close-to-real data on poverty, vulnerability to shocks and quality of public service delivery. An application of this approach is currently piloted in Honduras (Box 1).

Box 1. Honduras's pilot to collect frequent data through cellular phones

Listening to LAC (L2L) is a World Bank pilot project in Honduras and Peru to test an innovative approach for data collection – cellular telephones – in order to reduce the overall time and costs of data gathering, and to obtain continuous information on the impacts of shocks on households in LAC. The motivation of the project is to gather close-to-real-time data to enable faster diagnoses of poverty and vulnerability, and help policymakers, the World Bank, and other donors to detect warning signs so they can prepare for and respond to future crises more effectively.

The project, launched in January, 2012, began with a face-to-face interview of a nationally representative (random) sample of 1500 households who were willing to participate in the ongoing mobile phone survey. The project then sends messages during each round of the survey using three technologies: (1) SMS (text), (2) Interactive Voice Response (IVR; a recorded call in which the survey participant answers by pressing digits on the phone), and (3) Computer Assisted Telephone Interview (CATI; an operator-led session in which the survey participant answers the operator's questions orally). The survey questions (8-10 per round) belong to one of a set of themes associated with vulnerability and coping strategies: employment, food security, education, health, personal security, infrastructure and economic outlook.

The pilot is attempting to answer a number of key questions, such as: (1) Do different technologies (SMS, IVR, CATI) have different response rates? (2) Do response rates differ between countries (Peru and Honduras)? (3) Do response rates vary according to observable characteristics, such as age, gender, education level of the head of household? (4) Does offering an incentive make a difference in response rate and dropping out? (5) Are households that choose to participate nationally representative; in particular, are vulnerable populations as likely to participate as others?

Source: Taken from "Listening to LAC - Using an m-survey approach to collect periodic data on household vulnerabilities and shocks", World Bank, 2012

4. Conclusions

Overall, there are a number of positive trends in current poverty measurement practices and statistical systems for countries in Central America. However, important improvements can be made to strengthen existing poverty measurement methodologies, utilization of poverty data for policy purposes, and institutional capacity. The following list lays out the issues that need to be addressed to further improve the quality and accountability of poverty measurement and analysis in the sub-region.

Five key aspects to strengthen current <u>poverty measurement methodologies</u> include:

- *Using different poverty lines to capture regional heterogeneity in prices and consumption.* Consumption patterns and prices differ among areas within countries, especially at the urban and rural level. Sub-national poverty lines (two or three at most) that reflect these differences are therefore essential to capture the most accurate poverty data and design the most effectively targeted programs.

- *Re-calibrating consumption baskets and poverty lines to reflect changes others than inflation*. Poverty lines in Central America are regularly updated using the CPI but they are rarely adjusted to reflect relevant changes in consumption patterns and preferences over time. Some consumption bundles were developed 15-20 years ago and have not been adjusted to account for significant changes in household preferences, consumption patterns, and changes in technology.

- *Assessing the consequences of changes in poverty lines.* Informal discussions with poverty measurement counterparts in the sub-region have identified the problem that very little is known about the impact of updating poverty lines on poverty measurement which presents some challenges. A natural issue of concern relates to whether changes in poverty lines make new poverty estimates incomparable with those from previous years. In addition to the potential comparability issue, there may be a range of political economy influences that could compromise the legitimacy of the poverty re-calibration exercise.

- *Linking the choice of the welfare indicator with technical arguments.* Poverty methodology in Central America is typically based off of what was done previously. There have not been any strategic discussions held to evaluate which aggregate (income or consumption) is better to use based on country context. Therefore, national poverty focal points need to facilitate these internal discussions**.** Also, regardless of which welfare aggregate is selected, countries need to commit to undertaking surveys in the best, most frequent and comprehensive way.

- *Building technical institutions for enhancing the quality and accountability of poverty measurement.* Poverty measurement and policy discussions in Central American would largely benefit from implementing a poverty committee model like the one applied by other countries LAC (Colombia, Dominican Republic, Mexico, Paraguay and Peru). These committees have allowed countries to focus on technical issues (like the four listed above) and build inter-agency consensus on poverty measurement methodologies, center the debate on poverty trends and implications for policy rather than on the validity of poverty estimates, foster transparency, and facilitate knowledge transfer across agencies within and across countries.

Two key aspects to strengthen the strategic <u>production and use of poverty maps</u> include:

- *Develop new maps that rely on contemporaneous and sufficiently disaggregated data***.** The data used to construct some of the poverty maps currently in use in Central America are unlikely to reflect the present socio-economic conditions of poor and vulnerable populations and capture spatial heterogeneity in poverty. Both aspects are particularly important in Central America, a region not only prone to negative shocks that could change welfare substantially over time but also where there are large geographic differences in the levels of well-being.

- *Poverty maps should be more widely applied.* With few exceptions, most countries in Central America do not rely extensively on poverty maps to analyze poverty and guide policies. Poverty maps should be strategically produced in the sub-region to: (1) compare poverty against other indicators to identify spatial trends, clusters, or other patterns; (2) deepen the understanding of poverty determinants; (3) locate areas with specific development gaps and/or those experiencing adverse shocks in designing and targeting interventions that address key challenges; (4) carry out dynamic poverty analyses when more than one map exists; (5) inform fiscal transfers and decentralization processes, and (6) communicate information at the local level and foster local participation in the definition of priorities and strategies.

Two key aspects to strengthen <u>statistical capacity for effective poverty measurement</u> include:

- *Designing and testing instruments for more frequent data collection*. The data used for poverty measurement and monitoring are not collected regularly by all countries in Central America. For instance, some countries conduct household surveys suitable for that purpose only every 4-5 years. The need for more frequent poverty updates in the region is underpinned by its high vulnerability to food price shocks, economic crises, extreme weather variability, and natural disasters. Alternatives to track changes in welfare more timely include inferring consumption poverty based on income and other proxy variables from existing labor/income surveys, and using cellular phones to gather low-cost and close-to-real data on poverty, vulnerability to shocks and quality of public service delivery.

- *Developing in-house technical skills at national statistical offices and other poverty focal points***.** Rich statistics and careful poverty measurement add statistical and analytical demands on agencies involved in the process of producing and updating poverty numbers. Some of these institutions in Central America experience high turnover rates and do not often keep appropriate records of poverty measurement methodologies used in the past. Frequent and sustained technical support is often required to help staff develop and retain the statistical and analytical capacity necessary to properly collect data and produce the analytical inputs for computing poverty lines, numbers and maps.

Annex 1. More extensive list of surveys conducted in Central America

Country	Welfare Indicator	Survey	Year
Costa Rica	Income	Encuesta de Hogares de Propositos Multiples (ENPM)	1989-2009
		Encuesta Nacional de Hogares (ENAHO)	2010
	Consump.	Encuesta Nacional de Ingresos y Gastos	2004
El Salvador	Income	Encuesta de Hogares de Propositos Multiples (ENPM)	1991, 1995-96, 1998-10
	Consump.	Encuesta Nacional de Ingresos y Gastos de Los Hogares	2005-06
Guatemala	Consump.	Encuesta Nacional sobre Condiciones de Vida (ENCOVI)	2000, 2006, 2011
		Encuesta Nacional de Ingresos y Gastos	2009
	Income	Encuesta Nacional de Empleo e Ingresos (ENEI)	2002-04, 2010-11
Honduras	Income	Encuesta Permanente de Hogares de Propositos Multiples (EPHPM)	1991-99, 2001, 2003-10
	Consump.	Encuesta de Ingresos y Gastos	1998
		Encuesta Nacional sobre Condiciones de Vida (ENCOVI)	2004
Nicaragua	Consump.	Encuesta Nacional de Hogares sobre Medicion de Nivel de Vida (EMNV)	1993, 1998, 2001, 2005, 2009
	Income	Encuesta Continua de Empleo	2010
Panama	Consump.	Encuesta Nacional de Hogares sobre Medicion de Nivel de Vida (EMNV)	1997, 2003, 2008
		Encuesta de Ingresos y Gastos de los Hogares	2007-08
	Income	Encuesta de Hogares, Mano de Obra (EMO)	1991
		Encuesta de Hogares (EH)	1995, 1997-06, 2009-10

Annex 2. Poverty measurement methodology for the Central American countries

Poverty lines	**Costa Rica**	**El Salvador**	**Guatemala**	**Honduras**	**Nicaragua**	**Panama**
Official poverty line?	Y	Y	Y	Y	Y	Y
Poverty line type	Absolute	Absolute	Absolute	Absolute	Absolute	Absolute
Number of poverty lines [a]	3	2	1	2	1	1
Moderate & extreme levels?	Y	Y	Y	Y	Y	Y
Method	Cost of basic needs	Cost of basic needs	Cost of basic needs	Cost of basic needs	Cost of basic needs	Cost of basic needs
Calorie requirements vary by demographic characteristics?	Y	Y	N	-	Y	Y
Engel coefficient varied spatially?	Y	N	N	Y	N	-
Countries also use unsatisfied basic needs method?	Y	Y	Y	Y	Y	Y
[a] 1 poverty line = national level; 2 poverty lines = urban and rural; 3 poverty lines = rural, urban and national.						
Welfare indicator	**Costa Rica**	**El Salvador**	**Guatemala**	**Honduras**	**Nicaragua**	**Panama**
Welfare indicator	Income	Income	Consumption	Income	Consumption	Consumption
Data	**Costa Rica**	**El Salvador**	**Guatemala**	**Honduras**	**Nicaragua**	**Panama**
Survey type	Household survey	Integrated (non-LSMS)	LSMS	Integrated (non-LSMS)	LSMS	LSMS
Sample size (households)	11,603	20,361	13,686	7,043	6,515	7,045
Survey coverage & stratification:						
National	Y	Y	Y	Y	Y	Y
Regional	Y	Y	Y	Y	Y	Y
Urban	Y	Y	Y	Y	Y	Y
Rural	Y	Y	Y	Y	Y	Y
Lowest level of representation	6 regions	San Salvador (metro), Departments, 50 largest municipalities	Departments	Urban areas: Tegucigalpa, San Pedro Sula & others	Macro-regions: Managua, Pacific/Central/Atlantic urban/rural	Provinces
Informant type	Direct	Direct	Direct	Direct	Direct	Direct
Items included in welfare aggregate	Labor and non-labor income (non-monetary is only binary); Other (capital income, public/private transfers)	Labor income; Non-labor income (monetary only); Other (pensions, capital income, public/private transfers, imputed rent)	Food; Transportation; Business costs; Self-production; Durable goods; Owner-occupied housing; Transfers; Ceremonies; Taxes; Education; Health expenses (outpatient/ hospitalization)	Labor and non-labor income; Other (pensions, capital income, public/private transfers, imputed rent)	Food; Transportation; Business costs; Self-production; Durable goods; Owner-occupied housing; Transfers; Ceremonies; Taxes; Education; Health expenses (outpatient)	Food; Transportation; Business costs; Self-production; Durable goods; Owner-occupied housing; Transfers; Ceremonies; Taxes; Education; Health expenses (outpatient/ hospitalization)
Prices allowed to vary spatially/seasonally?	N	N	Y (HH survey implicit prices)	Y (HH survey implicit prices)	N	Y (CPI)
Poverty line adjustment	**Costa Rica**	**El Salvador**	**Guatemala**	**Honduras**	**Nicaragua**	**Panama**
Year of latest bundle update	2010	1992	2000	1999	1998	1997
Total poverty line updated using a price index?	Y (CPI & food CPI updated)	N (food line updated, non-food	-	N (food line updated, non-food	Y (CPI updated)	Y (CPI updated)