Why differences in household expenditure estimates matter

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Government estimates on average household spending can be obtained from two sources: sample surveys, such as the *Family Income and Expenditure Survey* (FIES), and national accounts data. The typical estimate is the household final consumption expenditure (HFCE) estimate from national accounts which is more timely, as it is released quarterly, than survey estimates, which are triennial.

Estimates between sample surveys and national accounts have wide discrepancies across time, with their divergence generally growing. However, this scenario is not unique to the Philippines (Karshenas 2003). In India, the Committee on Private Final Consumption Expenditure of the Central Statistics Office (2015) revealed that the discrepancy in Indian estimates had increased from 5 percent in 1972–1973 to 45 percent in 2011–2012

(also see Minhas 1988; Sundaram and Tendulkar 2003; and Deaton and Kozel 2005). Often, survey-based estimates are lower (Ravallion 2003; Deaton 2005).

Such discrepancies have consequences to policy. For instance, poverty can be overestimated if survey-based estimates are biased downward. As a result, resources for poverty reduction will go to those who do not need them. Meanwhile, underreporting from wealthy households in surveys also underestimate income inequality. This *Policy Note* describes this issue in detail, looking at how estimates are derived and other related issues.

Poverty estimates in the Philippines

While the country's gross domestic product (GDP) had grown at 6.3 percent per annum

Table 1. Poverty elasticity estimates for 2006–2009, 2009–2012, and 2012–2015

	2006	2009	2012	2015
Official poverty headcount	26.56	26.27	25.23	21.6
Per capita GDP (constant PHP)	53,982	57,650	65,266	74,767
Total percent change		2006–2009	2009–2012	2012–2015
Poverty headcount		-1.1	-4.0	-14.4
Per capita GDP		6.8	13.2	14.6
Growth elasticity of poverty		-0.16	-0.30	-0.99

Source: Authors' calculations based on national accounts and official poverty estimates

from 2010 to 2014, poverty rates had remained constant at about a fourth of the population from 2006 to 2012. This can be puzzling to most analysts who would expect poverty reduction when growth results. Last October 2016, the Philippine Statistics Authority (PSA) reported that one in every five Filipinos (21.6%) was poor in 2015, lower than the estimates between 2006 and 2012 (PSA 2016). The growth elasticity of poverty (GEP)[1] had been 0.3 percent or less between 2006 and 2012 but had grown to 1 percent from 2012 to 2015 (Table 1). Nonetheless, it remains lower than the global average performance of 2.5 percent (Ravallion 2013).

The rather low GEP in the Philippines between 2006 and 2015 means that despite the country's remarkable economic growth during this period, poverty has not been considerably reduced. The following reasons can possibly account for this:

[1] Refers to the percentage reduction in poverty rates associated with a percentage change in mean (per capita) income
[2] Measured by finding the values (in USD) of a basket of items that are present in each country in a particular year. If that basket costs USD 100 in the United States and USD 125 in the Philippines for the year 2011, then the purchasing power parity exchange rate is 1.25 in 2011 prices.

1. Income inequality has made growth largely beneficial to high-income classes (Albert et al. 2015).
2. Updating of official poverty lines has overstated the cost of living.
3. National accounts-based and survey-based estimates of growth in income and expenditure have diverged.

The second reason is not a major explanation because trends in official poverty that the PSA releases do not differ from overall trends in World Bank's estimates of (consumption) poverty that involve international poverty lines of USD 1.9 per person per day (in 2011 purchasing power parity[2] prices). Meanwhile, the first and third reasons are not mutually exclusive. Wealthy households are likely to be undercovered in FIES, and for those who participated, their reported expenditures and incomes were likely underestimated.

In 1991, per capita expenditure in FIES was 68.8 percent that of HFCE (Table 2). By 2012, it shrunk to half (50.2%) of the latter. On the average, per capita income in the FIES is larger by about 20 percent than expenditure

Table 2. Monetary welfare indicators in the Philippines (in current PHP), 1991–2012

Indicator	Data Source	1991	1994	1997	2000	2003	2006	2009	2012
Annual per capita income	FIES	12,364	15,730	24,073	28,356	30,706	35,836	43,538	49,585
Annual per capita expenditure	FIES	9,862	12,798	19,455	23,220	25,682	30,535	37,070	40,661
Per capita GDP	National Accounts	19,522	24,586	32,899	46,090	55,233	71,783	87,357	109,199
Per capita GNI	National Accounts	19,623	25,217	34,276	54,021	67,654	90,234	115,942	130,324
Per capita HFCE	National Accounts	14,334	18,280	23,888	33,277	41,067	53,547	65,233	81,013

Source: Authors' calculations from FIES microdata and national accounts data obtained from the PSA

but always nearly less than HFCE per capita, and much less than GDP per capita. FIES income is about 78 percent that of HFCE and about three fifths (58%) of GDP.

Conceptual and methodological differences of estimates

This discrepancy in estimates is partly conceptual. Household expenditures in FIES refer to food and nonfood expenses incurred by households purely for personal consumption during the reference year (Ericta and Fabian 2009). These exclude expenses in relation to farm or business operations, investments ventures, purchase of real property, among others. The value of gifts, support, assistance, or relief goods and services from friends and relatives are also part of household expenditures. Value consumed from net share of crops, fruits, and vegetables produced or livestock raised by other households from family sustenance activities and from entrepreneurial activities are likewise household expenditures. Taxes paid are also part of household expenditures in FIES.

The System of National Accounts (EC et al. 2009) defines household expenditures as those incurred purely for personal consumption, but HFCE only includes those acquired through direct purchase as well as imputed expenditure through barter transactions, payment, or income in kind, produced on own account, and those received as other current transfers in kind. Taxes, gifts, and donations to others are not considered final expenditures.

National accountants in the PSA utilize results of FIES not to estimate the levels but to validate the structure of expenditure categories of HFCE for years when FIES is conducted. For 1998–2015, price data used are the monthly consumer price index by region. For the 2000 benchmark year, the HFCE adopted as initial estimate the 2000 input-output (I-O) estimates of HFCE, with each HFCE I-O code/description group based on the classification of individual consumption by purpose. The estimates were then adjusted to reconcile data with other sectors through iteration of the supply and use table. For nonbenchmark years (1998–1999, 2001–2015), the 2000 benchmark estimate of

Table 3. Household expenditure estimates for the Philippines in the HFCE and adjusted FIES (AFIES), by expenditure group, 2009 and 2012

	HFCE		AFIES	
	2009	**2012**	**2009**	**2012**
Household expenditure	5,993,427	7,837,881	3,088,713	3,973,424
1. Food and nonalcoholic beverages	2,543,994	3,343,427	1,380,329	1,767,620
2. Alcoholic beverages and tobacco	83,773	100,930	48,772	61,297
3. Clothing and footwear	89,495	108,492	71,481	99,604
4. Housing, water, electricity, gas, and other fuels	712,292	965,753	735,749	852,806
5. Furnishings, household equipment, and routine household maintenance	257,752	310,249	92,739	114,091
6. Health	141,114	199,821	92,471	150,733
7. Transport	663,622	837,569	181,638	309,687
8. Communication	216,702	247,946	68,149	111,963
9. Recreation and culture	112,962	142,851	13,093	56,583
10. Education	239,144	302,772	137,753	169,022
11. Restaurants and hotels	219,280	291,460	2,062	7,614
12. Miscellaneous goods and services	713,296	986,611	264,475	272,403

Source: Authors' computations on FIES microdata and HFCE data released by the PSA

HFCE by subcomponent was extrapolated using production data to serve as a trend indicator of the gross output of the related industry sector.

In terms of coverage, FIES only includes individual households while HFCE also covers

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[3] These consist of a group of unrelated persons who live in an institution and take their meals from a common kitchen, e.g., orphanages, boarding schools, barracks, prisons, etc.
[4] This adjustment involves the following: (1) removal of expenditure items (such as taxes, gifts, and donations to others and other expenditures) that are not considered as final expenditures using concepts of the 2008 System of National Accounts; (2) reclassification of nonalcoholic beverage from 'Food' to 'Beverages'; and (3) regrouping of specific items to be comparable to the major HFCE items.

institutional households.[3] Results of the 2000 Census of Population and Housing (CPH) revealed that individual households comprised 99.7 percent of the total household population, with only 0.3 percent representing institutional households. As of 2009, Virola et al. (2010) estimated that nonprofit institutions serving households had contributed 0.6 percent to the GDP, rising by about 10 percent per year from 2000 to 2009.

In undertaking a comparative examination of estimates of HFCE and the survey-based estimate of expenditures, we considered 12 expenditure groups adjusted[4] at current prices for selected years 2009 and 2012 (Table 3). In 2009 and 2012, total family expenditure in the FIES was 54.0 percent and 52.6 percent of HFCE, respectively. When FIES expenditure was adjusted to remove items that were not considered as final consumption expenditure, the adjusted FIES (AFIES) expenditure was 51.5 percent of HFCE in 2009 and 50.7 percent in 2012.

The levels for 12 expenditure items of HFCE varied significantly for 2009 and 2012 with the corresponding estimates from AFIES. Reported FIES expenditures on alcoholic beverages and tobacco was about three-fifths the estimated expenditure in the national accounts, while expenditures on restaurants and hotels only represented less than 3 percent of HFCE. In 2012, the least discrepancy for AFIES estimates appeared to be for clothing and footwear, as well as for housing, water, electricity, gas, and other

fuels at about 90 percent level of estimates in the national accounts.

Thus, while there are differences in the concepts and methodologies for estimation in FIES and the national accounts, they do not fully account for discrepancies in estimates as well as the growing discrepancies across time. It is important to consider other reasons for discrepancies.

The missing wealthy in estimates

The lack of cooperation of wealthy households in surveys pushed survey estimates downward, especially given the rising opportunity costs of answering FIES, which takes five hours to accomplish. Pacificador (2009) noted that the 2003 FIES estimates of total households (16,557,682) were 4.2 percent lower than an alternative estimate (17,246,846), which reveals undercoverage of individual households. Undercoverage of households in FIES is likely among wealthy households whose opportunity costs in survey participation are high. Their incomes and expenditures have also likely grown faster than those of the average household.

Table 4 profiles barangays of households that refused to participate in the FIES. The profile is based on select indicators in the barangay schedule of the 2010 CPH. Here, we found clear evidence that refusals in FIES came from households residing in rich barangays, whose population is less dependent on agriculture and has better access to various amenities and services than sample households that participated fully in the FIES.

Table 4. Profile of barangays of FIES sample households and refusals, 2009 and 2012

| | Proportion of Barangays | | | | |
| | 2010 CPH | 2009 FIES | | 2012 FIES | |
Barangay Characteristics	All Barangays (N=42,010)	Barangays of Sampled Households (N=3,038)	Barangays of Refusals N=285)	Barangays of Sampled Households (N=3,114)	Barangays of Refusals (N=204)
Part of the town/ city proper	28.3	37.4	49.5	37.5	56.4
With street pattern	52.8	69.1	85.3	69.8	86.8
With market place	17.6	33.8	43.2	33.4	51
With elementary school	76.5	84.8	84.2	85.9	82.4
With high school	22.7	41.5	57.9	43.3	60.8
With college/ university	5.2	14.2	28.4	14.1	31.4
With hospital	4.8	12.2	18.6	12	23
With puericulture center or barangay health center/station	67.9	81.2	84.9	82.3	88.2
With landline telephone system or calling station	24.1	43.9	80	43.2	80.4
With cellular phone signal	90.2	93	96.8	93.7	96.6
With post office or postal service	11.9	20.5	40.4	20.6	45.1
With community water-works system	62	73.4	83.9	72.8	83.8
With fire station or public fire-protection service	5.1	14.5	28.1	14.3	30.4
With public street sweeper	27.4	42.1	64.2	42	71.6
With more half of the population aged 10 and over constituting farmers, farm laborers, fisher-men, loggers, and forest product gatherers	62.1	50.8	21.4	51.2	21.6

Notes: (a) There were 204 barangays with sampled households who refused at least once during the two visits for the 2012 FIES; (b) there are barangays with sampled households in 2012 FIES that do not have recorded barangay characteristics during 2010 CPH (as they were not yet formed in 2012).
Source: Authors' calculations from Form 5 of 2010 CPH, list of barangays of FIES respondents and list of barangays of FIES refusals

Table 5. Average per capita income and average per capita expenditure of Filipinos (in current PHP) as reported in FIES, 2003–2012

Per Capita Income Decile	Average Per Capita Income*				Average Per Capita Expenditure*			
	2003	2006	2009	2012	2003	2006	2009	2012
First decile	6,045	7,400	9,375	11,033	6,605	8,118	10,241	11,707
Second decile	9,507	11,284	13,921	16,676	9,641	11,479	14,188	16,449
Third decile	12,443	14,615	17,562	21,322	12,248	14,461	17,337	20,185
Fourth decile	15,675	18,261	21,597	26,567	14,947	17,633	20,811	24,745
Fifth decile	19,558	22,796	26,411	32,908	18,159	21,571	24,968	29,707
Sixth decile	24,513	28,521	32,659	40,714	22,136	26,340	30,213	35,830
Seventh decile	31,283	36,562	41,408	51,351	27,605	32,767	37,325	44,021
Eighth decile	40,996	48,260	54,571	67,593	35,051	42,068	47,362	55,913
Ninth decile	58,127	69,475	78,984	97,148	47,971	57,512	65,876	76,841
Tenth decile	132,604	151,510	176,922	209,616	93,721	110,528	130,105	146,887
Total	30,706	35,836	43,538	49,585	25,682	30,535	37,070	40,661
Note:								
GDP per capita*	55,233	71,783	87,357	109,199				
HFCE per capita*					41,067	53,547	65,233	81,013

* Current PHP
Source: Authors' computations based on FIES microdata

Even among the wealthy that responded to the FIES, there was an evidence of greater underreporting of incomes and spending. While both GDP per capita and HFCE per capita had doubled in the Philippines from 2003 to 2012, FIES showed the poorest population had increased per capita incomes and expenditures by 79 percent and 83 percent, respectively, while the richest population reported increases by 61 percent and 58 percent, respectively (Table 5). If national accounts are to be believed, and

in a country where income inequality has persisted, a bigger share of benefits of economic growth goes to the wealthy.

Aside from coverage biases, other measurement errors contribute to inaccuracies of FIES-based expenditure. For instance, the survey instrument and survey design have remained unchanged for over a decade despite the likely changes in the population structure. Moreover, the extent of provision of accurate information by households, especially in urban areas, may be less than rural households that have less opportunity costs for responding.

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HFCE involves items like rental value of owner-occupier homes and expenditures

in hotels and restaurants, which are often not consumed by lower income households. Therefore, national accounts capture larger transactions than smaller ones, which is the reverse of what is captured in FIES, where those with large transactions are least likely to participate. Income and expenditure distributions are truncated, with growth in very wealthy households not fully accounted for in FIES.

Moreover, HFCE is a major component of GDP on the expenditure side that national accountants use to control the statistical discrepancy, such as the residual of the GDP estimates between the production and the expenditure approaches. In the Philippines, statistical discrepancies have been maintained at zero for the annual revised national accounts starting 1998 onwards. For quarterly GDP, the statistical discrepancy is maintained at 1 percent or less. As a result, FIES is adjusted using the commodity flow method, and even further adjusted (to control statistical discrepancy), yielding more discrepancies between overall household expenditures estimates of FIES and national accounts.

Ways forward

Though estimates from surveys and national accounts differ, ultimately, they each have their respective uses. The major reason for divergence of estimates is inability of surveys to capture expenditures of wealthy households, such as when disbursements in specific items are understated or as a result of undercoverage of the wealthy in

The challenge is the provision of an acceptable protocol for triangulating information from both estimates of national accounts and survey. The PSA should recognize other data collection protocols, including special surveys for tracking and monitoring income and expenditure patterns of the missing wealthy.

surveys. Omission of expenditures of wealthy households in surveys yields a different consumption pattern of goods and services, distorting the ability of surveys to represent actual economic conditions. As a result, the incidence of poverty is very likely to be overestimated, while inequality is likely to be underestimated. This has consequence not only to poverty targeting but also to revenue targeting (especially given the current government's moves for taxation reform). However, national accounts are not themselves necessarily more accurate as they are limited by availability of basic data.

The challenge is the provision of an acceptable protocol for triangulating information from both estimates of national accounts and survey. The PSA should recognize other data collection protocols, including special surveys for tracking and monitoring income and expenditure patterns of the missing wealthy. In the end, data inaccuracies may lead to overestimation of poverty and underestimation of inequality, which have adverse consequences to evidenced-based policy formulation.

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