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The national accounts and economic development: more questions than answers

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1. The National Statistics Coordination Board (NSCB) is being less than candid when it claims that it is just a compiler of the national accounts and that it has avoided economic theories in doing so. ("As in the earlier clarificatory note, we would not wish to comment on the economic theories and expectations or speculations as to how the economy and its components should be performing; this article is written purely from the point of view of the *NSCB as the compiler of the national accounts* of the Philippines." [Emphasis supplied.])

   The NSCB is much more than a data compiler. There are huge data gaps in the compilation of the national income accounts, and the NSCB fills in some of the major gaps by making imputations and assumptions, which are in turn based on some unverified theories about relationships between economic variables. The most important question that we raised and which we hoped NSCB would try to answer was the extent to which these imputations and assumptions, together with the introduction of new data sources, had unwittingly introduced systematic biases (upward, in our opinion) in the estimates of the Philippines' long-term average economic growth after the Asian financial crisis. In this connection, it is regrettable that NSCB's reply to our article failed to mention the study done by Ross Harvey, an expert in national accounts (apparently with full support and cooperation of the NSCB). If we had read Harvey's article before we had written our paper, we would have had a better explanation why, compared to the nine years before the Asian financial crisis, the estimated average GDP growth rate after the crisis had an upward bias. Below are some important quotes from the Harvey study:

> "The general approach to compiling estimates for the unorganized sector is to derive an estimate of employment not covered in the establishment collections and to assume that value added per employee in the unorganized sector is the same as that for small establishments operated by a sole proprietor."
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> "Very old benchmarks derived from the 1988 Census of Establishments and the 1980 Census of Agriculture and Fisheries are still being used in the compilation of current price GDP using the production approach."
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> "There are breaks in the time series for both the current price and constant price estimates of GDP (between 1999 and 2000; and between 2002 and 2003) which have arisen because of the use of new data sources for more recent years without making revisions to the earlier periods. The existence of such breaks in national accounts series would not be tolerated in most countries. Breaks in national accounts series are a significant problem for economists trying to interpret economic developments and for economic analysts constructing econometric models of the economy."

The Harvey study discussed many problems with the way NSCB compiles the national accounts, but we cite only the above paragraphs because we think they could be the biggest source of the bias in the measurement of changes in long-term average growth rates or on the comparability not just in the levels but in the growth rates after the breaks in the time series. The bias would not be very serious if the objective is to measure changes in the growth rate of GDP from one year to the next. But it could be a serious one if, as in our case, the objective is to compare changes in long-term average growth rates over nearly two decades. There is no reason to believe that the ratio between the value added per worker in the small organized sector and the unorganized sector will remain constant over two decades. Similarly, there is no reason to believe that the ratio of value added to gross output or sales would be stable over a decade or longer. Thus, while NSCB professes that it does not want to get involved in the discussion of economic theories, it is actually using theoretical constructs that are indefensible if the objective is to track changes in long-term growth rates (which is our paper's main objective). Suppose, for instance—which is not unlikely—that technological progress in the unorganized sector is

much slower than in the organized sector. Or suppose that economic reforms and deregulation have caused many inefficient firms in the organized sector to shut down, then the value added per worker in the unorganized sector would fall relative to the organized sector. In this case, assuming that value added per self-employed worker is the same as the value added per worker in the smallest firms in the organized sector, it would result in overestimation of the growth rate of value added in the unorganized sector. Worse, the overestimation might become more serious the longer the time periods being compared, especially after the breaks in the national income accounts times series. Moreover, to the extent that the unorganized sector uses less imported inputs than the organized sector, these may partially explain why the growth rates of GDP and imports went in opposite directions after the Asian financial crisis.

2. NSCB took issue with the statements in our paper that it was rather puzzling that the growth rate of GDP rose as the growth rates of domestic absorption (C + I + G) and imports fell and that the fall in the growth rate of imports accounts for a multiple of the rise in the growth rate of GDP after the Asian financial crisis. NSCB's reply to the puzzle that we presented missed the point completely.

> But the NSCB annual estimates of the national accounts from 1989 to 2007 do not show growth in domestic production (GDP) when there is a fall in demand due to the decline in both domestic absorption ("C + I + G") and exports (Table 2). However, on a quarterly basis, there were three out of 68 quarters (excluding the breaks)—the third and fourth quarters of 2001 and the first quarter of 2002—when GDP grew but both "C + I + G" and exports declined (Table 3).
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> Also, as shown in Table 3, immediately after the start of the Asian financial crisis, imports declined only in Q2 1998 to Q1 1999. In this four-quarter period, imports declined faster than exports only in Q1 1999 and all this time PCE grew! (Exclamation point in the original.)

It is quite odd that in reading our paper the NSCB confuses levels of macroeconomic variables with their growth rates. We never mentioned declines or increases in the levels of the variables. It is very obvious from both our tables and text that what we found puzzling was the rise in the *growth rate* of GDP, which was accompanied by a fall in the *growth*

rates, not the levels, of absorption (C + I + G) and exports, which was more than fully offset by an even bigger fall in the growth rate, not the level, of imports. Moreover, we were looking at the long-term average over 36 quarters before and after the Asian financial crisis, not at any particular quarter. We never said that imports fell. What we said was that the growth rate of imports fell. We also said that the long-term average growth rate of absorption, exports, and imports were higher before the Asian financial crisis while the growth rate of GDP was higher after the crisis. One gets exactly the same results using the data from Table 3 of NSCB's reply to our paper. From their Table 3, the average growth rate of C + I + G fell from 4.8 percent before the crisis to 3.4 percent after the crisis and the average growth of exports fell from 10.3 percent to 4.8 percent, but the average growth rate of GDP rose from 3.5 percent to 4.5 percent because the average growth rate of imports fell from 11.8 percent to 2.7 percent. In short, NSCB claims that their Table 3 was contrary to what we said when it, in fact, confirmed exactly what we said. In addition, we also pointed out that among nine Asian countries, the Philippines was the only country where the growth rate of GDP rose as the growth rate of C + I + G rose. How NSCB can brush aside all of these just because "imports declined only in Q2 1998 to Q1 1999 … [and] imports declined faster than exports only in Q1 1999 and all this time PCE grew" is hopefully not reflective of its competence as a compiler cum completer of our national income accounts.

3. We stand corrected that personal consumption expenditure (PCE) estimates are not directly derived from the production accounts. We should have been more careful in our choice of words and said instead that the estimation of PCE and GDP share databases (e.g., Quarterly Survey of Philippine Business and Industry). For instance, using data from Table 4 of NSCB's reply to our paper, the regression between PCE and GDP yields an R^2 of 98.7 percent. Given how noisy the relationship is between consumption and income, a correlation this high would suggest that the databases used to estimate the two variables are not truly independent. This, however, is not our main point. Our main point is that there was a large discrepancy in the growth trends in family expenditures as captured by the Family Income and Expenditure Survey (FIES) and in the PCE in the national income accounts after the Asian financial crisis, and that the discrepancy is so large it is not possible that the two datasets are describing the same economy. The initial reaction

of NSCB to this was to deny that there was a discrepancy, by citing the fact that there was no obvious discrepancy between the growth trends of the two variables if nominal values were used. We pointed out that it is wrong to use nominal values and that there was a large discrepancy when the effects of inflation were netted out. Does NSCB now agree with us that there was indeed a large and puzzling discrepancy between the FIES family expenditure and PCE trends? And if so, what does that imply about the estimation of the growth rate of GDP? Unfortunately, NSCB is absolutely silent on this issue in its reply to our article. Instead it uses irrelevant arguments. It points out that upward and downward revisions in PCE and GDP are uncorrelated, which is irrelevant. As pointed out in our discussion of Tables 2 and 3 of our paper, the decomposition of GDP growth among its components (which includes PCE) hardly changed when we shifted from the data from the earliest (May) releases to the latest releases. In contrast, the change in the relationship between the growth rates of PCE and FIES family expenditures is huge, with the annual compounded growth rate of PCE exceeding that of FIES by as much as four percentage points over a six-year period. With such a huge discrepancy and the fact that consumption is much larger than investment, the required underestimation of the growth of capital formation that is necessary to offset the overestimation of consumption growth would have to be large (and NSCB offers no explanation why capital formation would be significantly underestimated).

4. In our paper, we found a statistical break in the relationship between MISSI VOPI and real manufacturing value added for the periods 1996-2001 and 2002-2007. NSCB made light of this statistical break by saying that (a) it did "not know what economic theories form the basis of the relationship between these two variables" and that (b) our "interpretation of the meaning of R-squared is not correct". Unfortunately, nothing is said about why NCSB thinks our interpretation of the R-squared is not correct. In contrast, we said that a Chow test rejected the hypothesis that the coefficients of the regression had not changed. Moreover, we have a reason to look for changes in the statistical relationship between the two variables since the NSCB itself said that it changed its database for estimating manufacturing value added. Our statistical tests indeed revealed that the use of additional inputs from other data sources other than the MISSI in fact reduced the weight of the MISSI in the estimation of real manufacturing value added.

5. This brings us to our final point, which has to do with how to deal with the breaks in the national income accounts time series. As cited in the first part of this reply, Harvey said that "the existence of such breaks in national accounts series would not be tolerated in most countries" since such breaks create problems in the analysis of economic developments. But we understand as well why NSCB does not like the other option, which is to wait until the overall revision can be done for the entire time series before they can be introduced, especially since it may take forever before resources become available for eliminating the time series breaks. Given, however, that NSCB has chosen to live with the breaks in the time series for quite some time, it should be more circumspect in interpreting GDP growth data in its press releases, especially as they are used to compare growth rates over long time intervals way beyond the years when there were time series breaks. Unfortunately, NSCB could not resist the temptation to be a cheerleader every time there is good news about GDP growth. For instance, in its most recent press release (and many times before), it made statements like "despite the El Niño and the diminished government spending during the second semester, the domestic economy sizzled to its highest annual GDP growth in the post-Marcos era of 7.3 percent in 2010". As our paper would imply, NSCB should have warned the reader that the time series breaks make it hazardous to compare the 2010 GDP growth rate with growth rates under the terms of Presidents Corazon Aquino and Fidel Ramos.