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Working Paper

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UPSE Discussion Paper, No. 2008,02

Provided in Cooperation with:
University of the Philippines School of Economics (UPSE)

Suggested Citation: Medalla, Felipe M.; Jandoc, Karl Robert L. (2008) : Philippine GDP growth after the Asian financial crisis: Resilient economy or weak statistical system?, UPSE Discussion Paper, No. 2008,02, University of the Philippines, School of Economics (UPSE), Quezon City

This Version is available at:
https://hdl.handle.net/10419/46623

UP School of Economics
Discussion Papers

Discussion Paper No. 0802 May 2008

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by

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Abstract

Official statistics from the National Income Accounts (NIA) in the Philippines depicts an economy that has grown faster after the Asian Financial Crisis (AFC). Although the higher growth of output after the AFC was accompanied by higher real growth rates of personal consumption and the service sector, NIA statistics also identifies import growth compression as the dominant factor in the expenditure side of the NIA that accounts for the rise in the growth rate of the economy after the AFC. In this respect, the Philippine experience is quite different from much of Asia where the growth rates of domestic absorption (C+I+G), exports and imports rose or fell in tandem with the growth of GDP. This paper takes the view that the uniqueness of the Philippines maybe more a reflection of the weakness of its national income accounting system than the resiliency of its economy. In the first place, many trends within the NIA itself and data from FIES raise doubts regarding the supposed rise in the growth rate of personal consumption expenditures. There is also reason to believe that Agriculture may not be as robust, and that the growth of value added in palay and agriculture may have been overestimated. Data from the Monthly Integrated Survey of Selected Industries (MISSI) and Labor Force Surveys contradict the NIA's estimate of manufacturing growth. In the Services Sector, where growth is inherently hard to measure and imputations of value added are made, Personal Services and Wholesale and Retail Trade account for two thirds of the increase in the sector's contribution to the increase in GDP growth after the AFC. Given the weaknesses of the NIA and the fact that the trends in many other economic indicators outside the NIA seem to contradict it, it is very likely that GDP growth after the AFC (and after 2000 in particular) has been over-stated.

Philippine GDP Growth After the Asian Financial Crisis: Resilient Economy or Weak Statistical System?*

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1. Introduction

The measurement of economic growth is very important to policy makers. The linkages between economic growth and other changes in the economy such as poverty reduction, productivity growth, demand for energy and tax revenue are often key inputs in the formulation of economic plans and policies. For instance, policy makers have good reason to be alarmed if high economic growth does not result in a reduction in the incidence of poverty. Conversely, high economic growth that does result in high inflation would generally be seen as an indicator of a strong economy that is not hamstrung by production bottlenecks and labor supply and structural problems.

Recent information from the National Income Accounts (NIA) shows that the economy is growing fastest in 31 years at a time when both interest and inflation rates are very low. Most will attribute this to fiscal reforms, strong remittances, rising consumption, and a booming services sector. On the other hand, the rise in poverty incidence has raised questions about the quality of the economic growth (e.g., that what was experienced was "jobless growth") and of our institutions and the bureaucracy (e.g., tax collections and quality of public spending).

In this paper, we take a different view. We ask why is it that if economic growth is being correctly measured, many indicators and data sets are at odds with the supposedly high economic growth. Moreover, we find that Philippine growth patterns—shrinking growth of domestic absorption, exports, and imports accompanying rising output growth—do not fit the pattern in other Asian economies.

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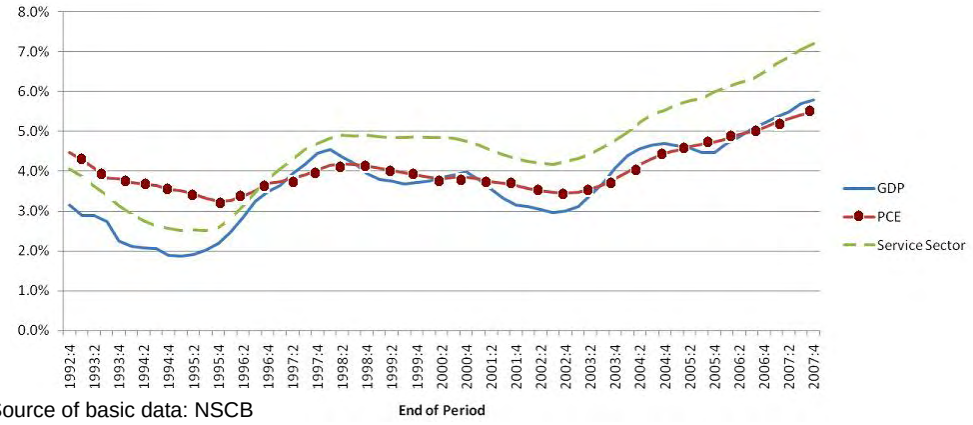
2. The Conventional Wisdom and Official Story

According to the National Statistical Coordination Board (NSCB), Gross Domestic Product (GDP) grew by 7.3% in 2007, the highest in 31 years. Given charts like Figure 1 below, analysts have described the growth as driven by consumption and led by the service sector. On the other hand, the rise in the growth rates of consumption and the service sector is attributed to the rapid growth of remittances, the rise of business process outsourcing (e.g., call centers) and the improvement in the macroeconomic environment (e.g., low interest rates and strong peso). The latter is largely attributed to the significant improvement in the national government's fiscal position that was largely achieved by increasing both the VAT rate and base (e.g., imposing VAT on electricity and petroleum products) and NAPOCOR's electricity prices.

Figure 1: Growth Rates of GDP, Consumption and the Service Sector
(20-quarter moving average)



Source of basic data: NSCB

As shown in Table 1 below, a decomposition of the increase in the growth of output would attribute nearly three quarters of the increase (1.1 percentage points out of 1.5) in GDP growth after the Asian Financial Crisis (AFC) to the acceleration in the growth of the service sector.[1]

[1] The decomposition follows from the fact that the change in GDP equals the sum of the changes in the value added in the Agricultural, Industrial and Service sectors. Thus, $\Delta GDP = \Delta A + \Delta I + \Delta S$ and dividing both sides by GDP_0 (GDP of previous period) yields: $\frac{\Delta GDP}{GDP_0} = \frac{\Delta A}{GDP_0} + \frac{\Delta IND}{GDP_0} + \frac{\Delta S}{GDP_0}$, where $\Delta GDP/GDP$ is the growth rate of GDP and the terms in the right hand side equals the contribution of agriculture, industry and services, respectively, to GDP growth.

Table 1. Decomposition of Average GDP Growth: Before and After the Asian Financial Crisis (Value-Added Approach)

	GDP Growth Due to:			
	(1)	(2)	(3)	(4)
	Agriculture	Industry	Services	Average GDP Growth
1999-2007 (36 quarters)	0.83	1.31	2.79	4.94
1989-1997 (36 quarters)	0.44	1.31	1.73	3.49
Difference	0.39	0.00	1.06	1.45

Source of basic data: NSCB

However, it is worth noting that the economic growth was higher after than before the crisis not just because of the increase in the growth rate of the service sector but also because the agricultural sector (which includes forestry and fishing) grew faster (contributing 0.4 percentage points to the increase in GDP growth after the AFC) and because the contribution of the industrial sector did not fall in spite of the rapid rise of exports of industrial products (e.g., garments and textiles) from China, Vietnam and other Asian economies. In short, the National Income Accounts (NIA) depicts a very resilient Philippine economy.

3. Increase in GDP Growth due to Import Growth Compression

Although many analysts and institutions seem to accept the conventional wisdom, we argue that the rise in economic growth after the AFC being consumption-driven, service-sector-led and remittance-fueled is just a part of the full story if one accepts NSCB's estimates of the growth rates of GDP and its components. Using the expenditure side of the NIA, the growth of GDP can decomposed into the contributions of Personal Consumption Expenditures (C), Gross Domestic Capital Formation (I), Government Consumption Expenditures (G), Exports (X), Imports (M) and the Statistical Discrepancy (SD). [2] Table 2 below compares the contributions of the different components of GDP before and after the Asian Financial Crisis.

[2] As in the calculation of the contributions of the different sectors of production to output growth in the previous section, $\Delta GDP = \Delta C + \Delta I + \Delta G + \Delta X - \Delta M + \Delta SD$ where "Δ" means the change in the variable from the initial period. Dividing both sides by GDP_0 (GDP prevailing in the initial period) yields $\frac{\Delta GDP}{GDP_0} = \frac{\Delta C}{GDP_0} + \frac{\Delta I}{GDP_0} + \frac{\Delta G}{GDP_0} + \frac{\Delta X}{GDP_0} - \frac{\Delta M}{GDP_0} + \frac{\Delta SD}{GDP_0}$. The left-hand side is GDP growth and the right hand side gives the contributions of C, I, G, X, M and SD, respectively, to GDP growth.

Table 2. Decomposition of Average GDP Growth: Before and After the Asian Financial Crisis
(Expenditure Approach)

	GDP Growth Due to:									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	C	I	G	C+I+G	SD	X	I+G+X	C+I+G+X+SD	M	Average GDP growth
1999-2007 (36 quarters)	3.59	0.46	0.19	4.24	-0.78	2.95	3.61	6.42	-1.48	4.94
1989-1997 (36 quarters)	3.05	1.66	0.34	5.05	-0.22	3.88	5.88	8.71	-5.22	3.49
Difference	0.54	-1.20	-0.14	-0.81	-0.56	-0.92	-2.27	-2.28	3.74	1.45

Source of basic data: NSCB

Assuming that the data from the National Income Accounts are correct, the story that can be told from Table 2 is that the domestic economy grew 1.5 percentage points faster (Column 10) after the AFC, in spite of the fact that domestic demand and exports contributed 2.3 percentage points less (Column 8) to output growth, because import growth compression more than compensated for the fall in the growth of demand by contributing 3.7 percentage points more (Column 9) to GDP growth after the AFC. In other words, the compression of import growth accounts for more than two hundred fifty percent of the increase in the growth rate of GDP after the AFC. Moreover, the 3.7 percentage point contribution of import growth compression to the increase in GDP growth dwarfs the combined *negative* contributions (1.2 + 0.9 percentage points) of the decline in the growth rates of investment and exports (Column 2 and Column 6, respectively).

Since there were several changes in the methodology of estimating the National Income Accounts (NIA), the NSCB has consistently cautioned users of the NIA not to use the updated linked long time series to estimate changes in the levels of real GDP in 1999-2000, 2002-2003 and 2003-2004 to calculate growth rates or changes in GDP. Because of this, we recalculated the decomposition of GDP growth by replacing numbers from the linked time series for the years mentioned with numbers from NSCB's releases for the month of May (which is when the growth rates for the first quarter are first released to the public) for those years. As shown in Table 3 below, the average growth rates of GDP and their decomposition hardly changed. The same pattern holds: the fall of the growth rates of capital formation, government consumption and exports more than offset the supposed rise in the growth rate of personal consumption expenditures and the average growth rate of GDP would have fallen after the Asian Financial crisis if not for the large fall in the growth rate of imports.

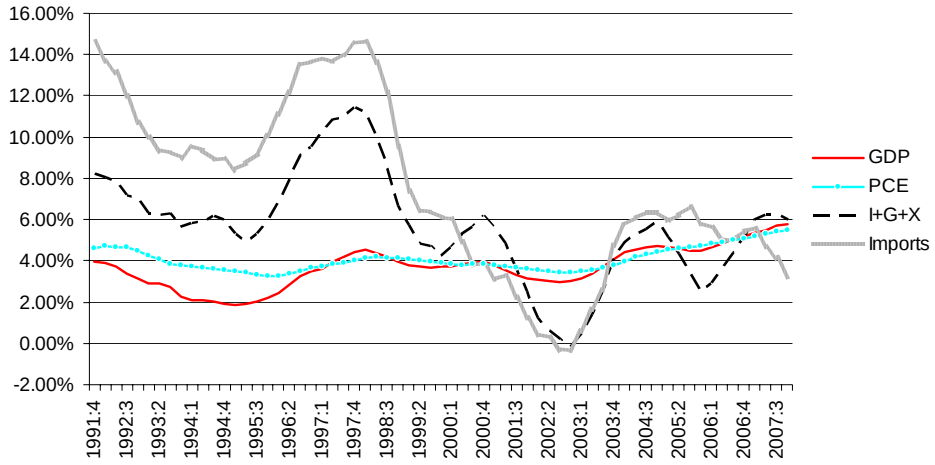
Table 3. Decomposition of Average GDP Growth: Before and After the Asian Financial Crisis
(using NSCB's May 2001, 2004, 2005 releases for 2000, 2003 and 2004, respectively)

	GDP Growth Due to:									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	C	I	G	C+I+G	SD	X	I+G+X	C+I+G+X+SD	M	Average GDP Growth
1999-2007 (36 quarters)	3.61	0.43	0.19	4.22	-0.76	2.95	3.57	6.42	-1.48	4.93
1989-1997 (36 quarters)	3.05	1.66	0.34	5.05	-0.22	3.88	5.88	8.71	-5.22	3.49
Difference	0.56	-1.23	-0.15	-0.83	-0.54	-0.92	-2.31	-2.29	3.74	1.45

Source of basic data: NSCB

As shown in Figure 2 below, the fall in the growth rate of the sum of investment, government consumption and exports (I+G+X) was much larger than the rise in the growth rate of personal consumption (C or PCE), which resulted in a significant drop in the growth rate of C+I+G+X. Indeed, the fall in the growth of capital formation (I) more than offset the rise in the growth of personal consumption such that the growth rate of domestic absorption (C+I+G) fell after the AFC. How can the growth rate of domestic production rise when there is a fall in the growth rate of demand due to the decline in the growth rates of *both* domestic absorption (C+I+G) and exports?

Figure 2: Growth Rates of GDP, Consumption, Imports and Investments+Government Consumption+Exports (20-quarter moving average)



Source of basic data: NSCB

Since total supply is the sum of domestic production and imports, the growth rate of production can rise in spite of a significant fall in the growth rate of demand (domestic

absorption plus exports) if there is an even larger fall in imports.[3] *If the National Income Accounts are reliable, GDP grew faster after the AFC because of the large decline in the growth rate of imports after the AFC, not because of the rise in consumption growth.* This is so since the growth rate of domestic demand fell in spite of the reported rise in consumption growth due to the large fall in the growth rate of capital formation. Moreover, there was also a large fall in the growth rate of exports. Since the large fall in the growth rates of investment and exports more than offset the reported rise in the growth rates of consumption growth, the growth rate of GDP could rise only if there is an even larger fall in the growth rate of imports.

As shown in Column 8 of Table 3 above, the combined contribution of the changes in personal consumption, capital formation and exports, together with changes in the statistical discrepancy,[4] to GDP growth after the Asian Financial Crisis was 2.3 percentage point lower than before the AFC. Yet, GDP growth was on average 1.5 percentage points higher (Column 10) after the AFC because of the contribution of the decline in imports, which was 3.7 percentage points higher (Column 9) after the AFC. Indeed, even if it is assumed that Philippine exports and capital formation have import content of 80% and 60%, respectively, the *net* contribution of import growth compression to the increase in GDP growth would still be larger than the increase in GDP growth after the AFC (since 3.74 - 80% *0.92 - 60%*1.23 = 2.2 is greater than the 1.5 percentage point increase in GDP growth after the AFC).

By any measure, the increase in GDP growth after the AFC could not have happened if not for the large decline in the growth rate of imports. This is might seem odd given that rapid of growth overseas workers' remittances could finance not just consumption growth but import growth as well. However, as shown by the large rise in both the current account surplus in the balance of payments and the central bank's international reserves (Figures 3 and 4), a significant fraction of the remittances was saved which allowed the central bank to build up its international reserves. Moreover, if one combines the central bank reserves with the Foreign Currency Deposit Units' (FCDU)

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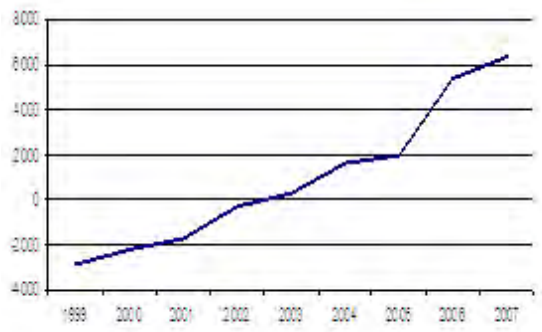
[3] Abstracting from the Statistical Discrepancy, which tends to average out over the long run, GDP + M = C + I + G + X. Thus, the growth rate of GDP can rise in spite of a fall in the growth rates of both exports and domestic absorption (C+I+G) if there is a very large fall in the growth rate of imports. Higher output growth can occur in spite of lower demand growth provided domestic goods substitute for imports or production processes become less import-intensive.

[4] The difference between the production and expenditure accounts is shown as the statistical discrepancy in the expenditure account. The statistical discrepancy could account for a large fraction of the change in GDP in any given year or quarter but it accounts for a relatively small part of average GDP growth in the long run.

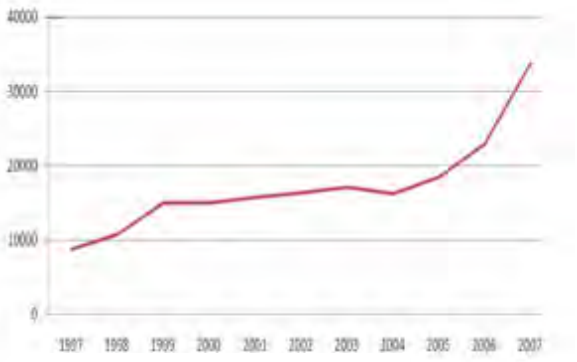
foreign currency deposits of individuals and corporations, Philippine foreign assets now exceed the country's external debt, i.e., the Philippines is now a net creditor country. At any rate, it is quite clear that NIA statistics and even indicators of foreign asset holdings depict not a consumption-driven rise in economic growth after the Asian Financial Crisis but an import-substitution driven one.

Figure 3: Current Account Balance (in Million US$)



Source: Bangko Sentral ng Pilipinas website

Figure 4: Gross International Reserves (in million US$)



Source: Bangko Sentral ng Pilipinas website

4. The Philippines was the only Asian economy where higher economic growth was achieved through the compression of import growth despite the fall in aggregate demand

Can expenditure switching or import substitution explain the rise in Philippine economic growth after the Asian Financial Crisis? If the national income accounts are reliable, this would be a tautological question since the numbers clearly say that such was indeed the case. However, even if one assumes that economic growth has been measured correctly, it is still interesting how the pattern of Philippine economic growth compares with other Asian countries. The traditional view is that import growth compression could turn current account deficits into surpluses but at the cost of reducing the growth rate of output. It is shown in this section that the Philippine experience of achieving higher economic growth in the face of lower domestic demand and export growth through import growth compression is quite unique compared to what happened in other Asian economies. It is also at odds with studies that show that in most countries GDP growth moves in the same direction with the growth in imports (Ram [1990]). This is particularly true for developing countries such as the Philippines, which have little oil reserves and

do not have the capacity to produce many types of capital goods. A strong demand for imports usually stems from increased demand for imported inputs which are used in production. As the economy grows faster, so does import growth; and import growth is almost always positively correlated with GDP growth, despite the fact that imports are a negative entry in the expenditure approach for computing GDP.

Asian countries typically follow the normal pattern where the growth rates of imports and GDP move in the same direction. When GDP and import growth patterns before and after the Asian Financial Crisis are compared, China and the Philippines turn out to be the exceptions. Philippine GDP growth rose after the Asian Financial Crisis as the growth of its imports fell. On the other hand, China's import growth rate rose as its GDP growth rate fell slightly.

But the fact that China's import and GDP growth rates went in opposite directions is easy to explain. An economy that has been growing very rapidly for several decades would sooner or later experience a rise in import growth, even as its high GDP growth tapers off, especially if it has been running current account and trade surpluses during the long period of high economic growth. The rise in per capita incomes and the accumulation of foreign assets will be sufficient to finance a surge in import growth even as the growth rate of the economy slightly diminishes from very high initial levels. This is the reason why the momentum of China's import growth still continued despite the marginal slowdown in its economic growth after the Asian Financial Crisis[5]. Decades of high economic growth and accumulation of foreign assets have increased China's appetite for imports (not to mention the fact that it has to allow more imports to appease its big trading partners), thus registering an accelerating import demand growth after the AFC even as its very rapid economic growth slowed down a bit.

[5] The decline was less than a percentage point, from an average of 9.84 percent GDP growth before the Crisis to 9.13 percent after.

Table 4. Relationship of Trade and GDP growth for selected Asian countries

		What happened to GDP growth after the Asian Financial Crisis?	
		GDP growth rose	*GDP growth fell*
What happened to export and import growth after the Asian Financial Crisis?	*Import growth rose and Export growth rose*	India	China
	Import growth fell and Export growth rose		Korea
	Import growth rose and Export growth fell		
	Import growth fell and Export growth fell	Philippines	Thailand, Vietnam, Indonesia and Malaysia, Japan

Source of basic data: Worldbank World Development Indicators

As shown in Table 4 above, the Philippines and China are the only countries where import growth and GDP growth went in opposite directions after the AFC, but as already mentioned, China's import growth, unlike the Philippines', rose. In India, both import and GDP growth rose. In Korea, Thailand, Vietnam, Indonesia, Malaysia and Japan, both fell after the AFC. As already discussed, the fact that import growth rose as GDP growth fell slightly in China is not surprising. What happened in the Philippines, where import growth fell as GDP growth rose, is quite unusual. Indeed, as shown in Table 5 below, the Philippines is the only country in the table where the growth rate of GDP rose as the growth rate of imports fell *substantially* after the Asian Financial Crisis. Moreover, the Philippines is the only country in the table where the growth rates of *both* imports and exports fell as the growth rate of GDP rose after the AFC.

Table 5. Average Growth of GDP, Imports and Exports Before and After the AFC

	GDP Growth		Import Growth		Export Growth	
	1989-1997	1998-2006	1989-1997	1998-2006	1989-1997	1998-2006
Philippines	3.47	4.05	11.67	2.33	10.21	3.57
China	9.84	9.13	11.76	18.39	11.04	21.42
Indonesia	7.75	2.41	14.02	3.27	9.08	4.69
Malaysia	9.20	4.01	17.63	5.76	14.28	6.99
Thailand	7.89	3.23	11.43	6.24	12.03	8.00
Vietnam	7.89	7.00	27.18	16.36	29.94	16.33
India	5.59	6.80	11.92	12.72	11.10	16.69
Korea	7.41	4.33	13.70	8.85	12.26	12.56
Japan	2.45	1.15	6.28	2.81	5.49	5.01

Source of basic data: Worldbank World Development Indicators

It was also shown earlier that Philippine GDP grew faster after the AFC despite the fall in the growth of domestic absorption (C+I+G) in the same period. Again, is the Philippines unique in this respect? The relationship between the growth of domestic absorption and GDP growth is given in the next table for the same set of countries in the previous tables. Again, the Philippines is *rara avis*. It was the only country where the growth rate of GDP rose as the growth rate of domestic demand (C+I+G) fell after the AFC. For the other countries, the growth of GDP followed the path of the growth of domestic demand. Except for the Philippines, either the growth rates of both GDP and domestic demand fell or, in the case of India which was not negatively affected by the AFC, both rose.

Table 6. Relationship of Domestic Absorption and GDP growth for selected Asian countries

		What happened to GDP growth after the Asian Financial Crisis?	
		GDP growth rose	*GDP growth fell*
What happened to C+I+G growth after the Asian Financial Crisis?	*C+I+G growth rose*	India	
	C+I+G growth fell	Philippines	Thailand, Vietnam, Indonesia, Malaysia, China, Japan and Korea

Source of basic data: Worldbank World Development Indicators

In both Tables 4 and 6, our country seems to be the odd man in Asia. Is this uniqueness due to the resilience of its economy or the weakness of its statistical system? In the following sections we discuss why we think it is the latter.

5. Consumption growth is probably overestimated

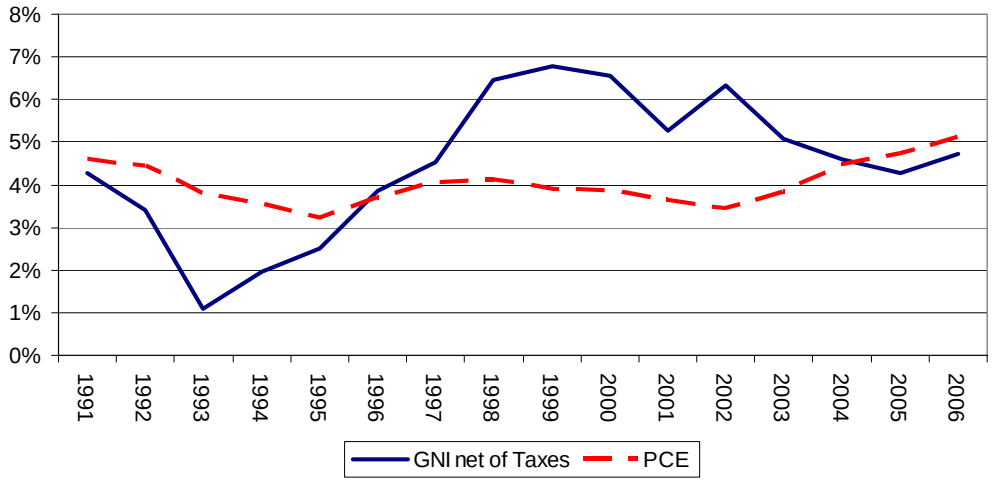
If personal consumption expenditures had not grown faster after the AFC, the compression of import growth would be the only factor in the expenditure side of the NIA that would explain why the growth rate of GDP rose after the AFC. Since consumption is a very large part of GDP and the estimates of personal consumption expenditures in the accounts are derived directly from the estimates of value added in the production side of the accounts, any evidence that would show that the growth of personal

consumption is over-estimated is also evidence that the growth rate of GDP is over-estimated. Moreover, since the estimates of the growth of personal consumption and GDP are based on the same sources (i.e., the estimates of consumption come from the estimates of production of goods and services that are classified as purchased by consumers), the growth rate of both personal consumption and GDP could be over-estimated without necessarily causing any large change in the statistical discrepancy.

Much of this section of the paper will focus on showing that there are major inconsistencies between the National Income Accounts and the Family Income and Expenditure Surveys (FIES). However, even without using data other than those that come from the NIA itself and some tax revenue information, careful analysis of some of the trends derived from these other sources will also show some inconsistencies. For instance, Figure 5 below shows that the average growth rate of Personal Consumption Expenditure (from the National Income Accounts) in 2006 was the highest in 15 years but the growth rate of Gross National Income (GNI) net of taxes was falling and was lowest in the last 10 years.[6] The fact that consumption was rising fastest in the period when there was a continuing and steep fall in real purchasing power of the private sector would be enough to cast doubt on whether personal consumption expenditures in fact grew as fast as reported in the NIA. More concretely, it is rather puzzling that the growth of personal consumption expenditures accelerated as the imposition of new taxes (e.g., the expanded and increased VAT) and the rise in oil prices imposed a very heavy drag on the growth households' purchasing power as shown by NSCB's own estimates of GNI.

[6] Gross National Income (GNI) is just Gross National Product adjusted for changes in international terms of trade (which reflect price differentials between exports and imports) and taxes. For instance, an increase in the price of imported petroleum will worsen the country's terms of trade and thus will contribute to a slowing down of GNI. GNI net of taxes is closer to the concept of the private sector's purchasing power than GNP and GDP.

Figure 5: Growth Rates of Personal Consumption Expenditure and Gross National Income (GNI) net of Taxes (5-year moving averages)

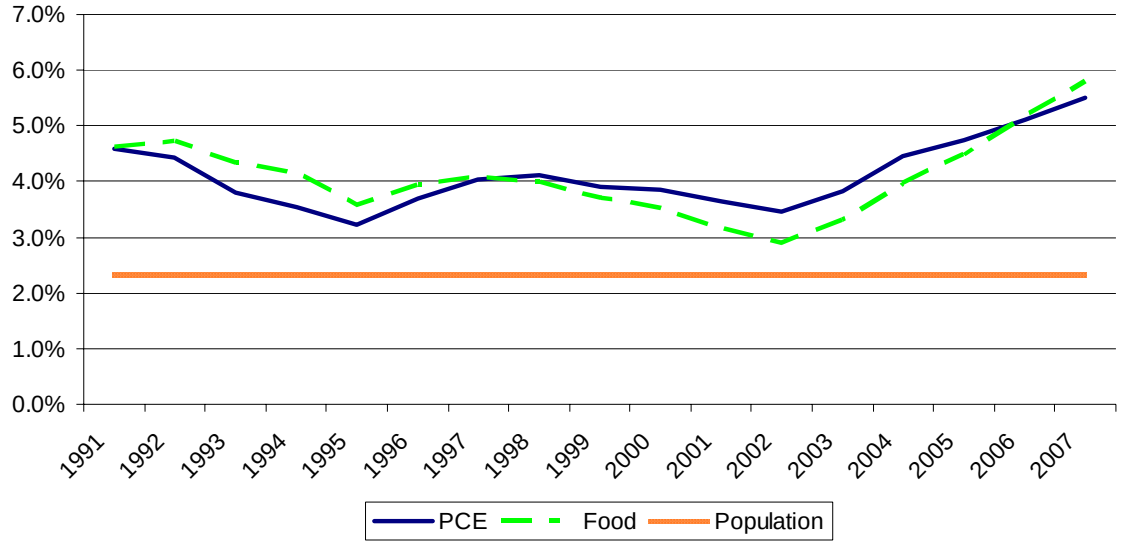


Source of basic data: NSCB and DOF

Another pattern from the NIA series which is rather puzzling is the acceleration and the high level of the growth rate of food consumption as shown in Figure 6. As shown in the chart, the growth rate of real food consumption expenditures had risen so much that its growth is now higher than that of total real personal consumption expenditures, with an average growth of nearly 6% during the last five years which is much higher than the historical average. This phenomenon is not consistent with the long-held view that food consumption should not grow as fast as total consumption when the growth of the latter is fast and rising unless there is a large drop in food prices (which did not happen). This, of course, is Engel's Law.[7] Moreover, the estimated average growth rate of food consumption during the last five years was more than double the growth rate of population. This incredible growth of food consumption also supports our view (which will be discussed in one of the next sections) that the growth of agricultural output is significantly over-stated (since production and consumption estimates are drawn for the same data set).

[7] Engel's Law is an empirical regularity which states that, with a given set of tastes and preferences, as income increases the proportion of income spent on food falls, even if actual expenditure on food rises.

Figure 6: Growth Rates of Population, PCE and PCE Components (5-year moving averages)

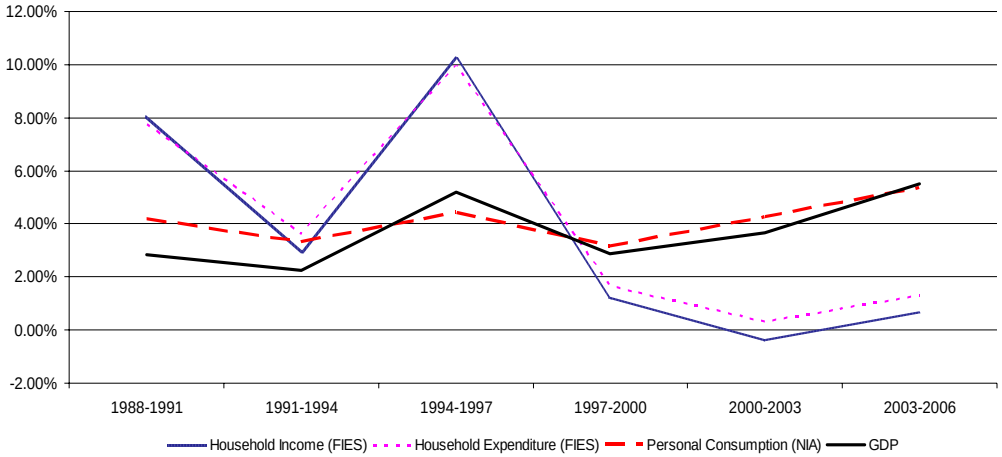


Source of basic data: NSCB

When data other than what is provided in the National Income Accounts are brought into the picture, the inconsistencies become even more striking. For example, looking at the trends in the GDP and PCE from the National Income Accounts, it can be seen that the growth rates of both indicators are at their highest levels after 2000. Data from the Family Income and Expenditure Survey (FIES)[8], however, show that the growth of household (or family) income and expenditures was slowest during the same period (Figure 7). In fact, growth in FIES income and expenditures were *above* the growth in NIA GDP and consumption before the Asian Financial Crisis and were *below* after the AFC.

[8] The FIES is a nationwide survey of households undertaken every three years by the National Statistics Office (NSO). It is the main source of data on family income and expenditure, which include among others, levels of consumption by item of expenditure as well as sources of income in cash and in kind. The results of the FIES provide information on the levels of living and disparities in income of Filipino families, as well as their spending patterns.

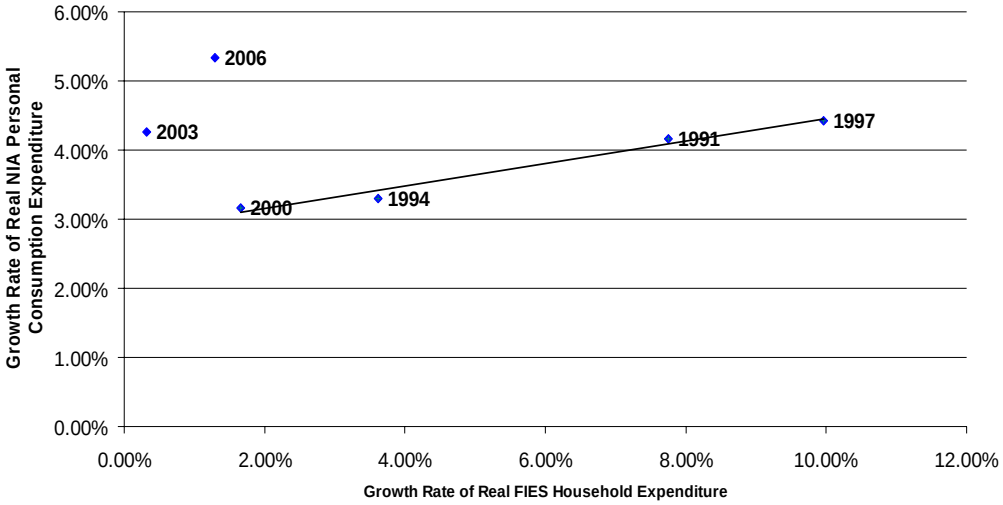
Figure 7: Annualized growth rates of FIES Household Income and Expenditure, NIA Consumption and GDP



Source of basic data: NSCB and NSO

Some would argue that NIA data and FIES statistics measure different things and should not be compared. However, even though that the definitions and methodologies used in estimating household expenditures in the FIES and personal consumption expenditures differ, it appears that there used to be a stable relationship between the two variables until the 2000 FIES and it is only after 2000 that the two series diverged. This is shown in Figure 8 below which is a scatter graph with the growth rate of personal consumption on the vertical axis and the growth rate of FIES expenditures on the horizontal axis. The data points for the years 1991, 1994, 1997 and 2000 lie very close to what seems to be a stable relationship between the two variables for the years mentioned, with the two pairs of growth rates in 2003 and 2006 as highly visible "outliers" showing a large upward shift from the stable relationship from previous years. This, of course, is just another way of presenting the fact that was shown in the previous chart that showed that growth in personal consumption expenditures as reported in the NIA was highest after 2000 while the growth of household expenditure from the FIES was slowest during the same period. Moreover, the series shows a large discrete jump after 2000 relative to the relationship between the two growth rates during the earlier years.

Figure 8: Plot of Growth rates of Real NIA Personal Consumption Expenditure and Real FIES Household Expenditure



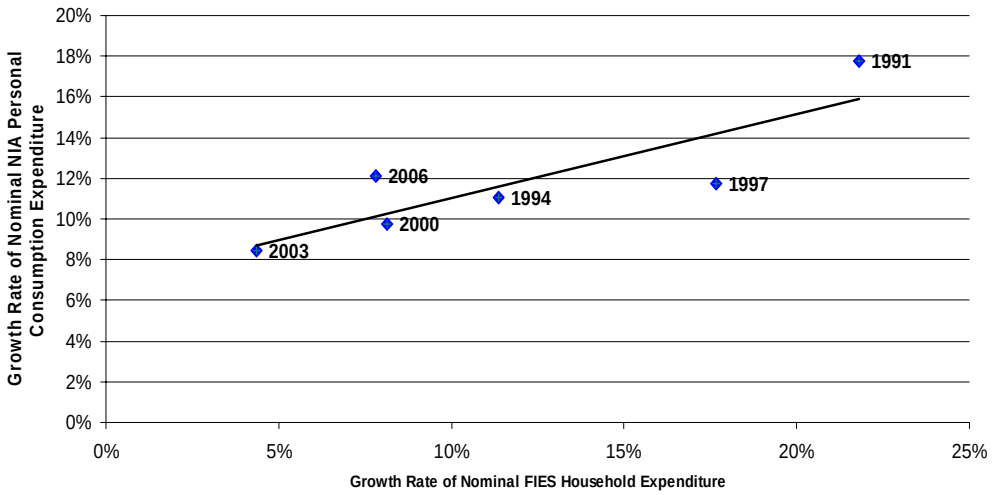
Source of basic data: NSCB and NSO

No less than the head of NSCB has argued that there would no visible inconsistency between the histories of the growth rates of personal consumption in the NIA and household expenditures in the FIES if the nominal instead of real growth rates had been used in the analysis. To quote:

> "…I do not understand the "inconsistencies" they are talking about. Here is why.
>
> 1. As we have said in the past, the Philippine System of National Accounts (PSNA) statistics are not exactly the same as the FIES statistics. For instance, PCE from the PSNA is not the same as the Family/Household Expenditures from the FIES. Likewise, the Disposable Income of the Household Sector from the PSNA is not the same as the Family Income from the FIES.
> 2. If these terms are conceptually different, why should their growth rates be the same? Simple arithmetic should be able to explain why not. However, since these sets of terms are conceptually close to each other, one can expect the trends to be the same. Indeed they are, and not only before 2001, as our official statistics show.
> 3. ***If we look at the PSNA PCE and the FIES Total Family Expenditures at Current Prices, their trends are definitely not divergent!*** … (emphasis ours)" (Virola [2008])

Indeed, as shown in the Figure 9 below, the scatter diagram of the two growth rates shows a very nice linear fit without a single point appearing to be a visible outlier.

Figure 9: Plot of Growth rates of Nominal NIA Personal Consumption Expenditure and Nominal FIES Household Expenditure



Source of basic data: NSCB and NSO

However, the first lesson that one is taught in any introductory undergraduate course in microeconomics or macroeconomics is that the effects of inflation should always be sorted out from real changes in economic variables; and that from the point of view of measuring welfare, expenditures and output, it is real, and not nominal variables, that matter. If real expenditures are rising in the NIA and are falling in the FIES, either one or both data sets are wrong unless they refer to completely different things. Moreover, it should be equally obvious that inflation has a way of making the value of things go up in the same direction, even if they are not correlated in real terms. For instance, unless one controls for inflation, one would observe that the average expenditures of unskilled workers and presidents of corporations are much greater in nominal terms today than they were ten years ago, but that does not mean that their fortunes are moving in the same direction and that their real expenditures are correlated.[9] (For those who are

[9] Suppose **X** and **Y** are two real variables that change over time but have become uncorrelated due to measurement errors, with unit prices are **P** and **Q**, respectively. Let the growth rate of **X**, **Y**, and **P** be **x**, **y**, and **p** respectively and the growth rate of Q be p + u, where u is a purely random term. By definition **covariance**(**x**, **y**) is zero, but **covariance**(growth rate of **PX**, growth rate of **QY**) = **covariance**(**p+x**, **p+u+y**) which is clearly not zero and will be larger the larger variance of **p** is. In other words, inflation rates that vary over time would tend make two real variables which have uncorrelated growth rates appear to have correlated nominal growth rates.

interested in a more rigorous discussion of how inflation can make things that are uncorrelated in real terms appear correlated in nominal terms see Appendix 1.)

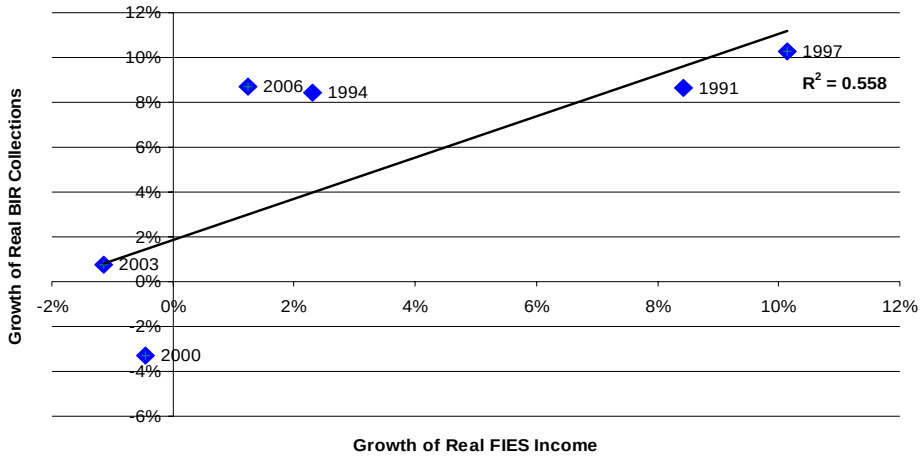
That the NSCB head could brush aside a very obvious inconsistency between the NIA and the FIES just because the inconsistency is not apparent from a comparison of nominal growth rates is a glaring error, but it would be irrelevant if the NIA were based on a very strong database (and would leave us no other choice but to conclude that there was something wrong with the 2003 and 2006 FIES). But given the obvious weaknesses of the NIA, it is quite alarming that the head of NSCB could argue with alacrity that the divergence between the growth rates of real expenditures in the FIES and the NIA is not an inconsistency just because the relationship between the nominal growth rates of FIES expenditures and personal consumption expenditures seem to show a nice fit. The NIA's estimation methodologies have undergone several *ad hoc* changes and some of the values used in the accounts are based on imputations that are hard to validate due to a very weak data base. In such a context, an NSCB head who does not understand very simple economic relationships but plays a major role in decisions that lead to the introduction of the *ad hoc changes* and imputations would be quite alarming.

Now, if the obvious fact that the FIES and the NIA begun to diverge after 2000 is accepted, the question is which data set should given more weight for assessing what happened to the economy after 2000. As already pointed out, the incredibly high growth of food consumption and personal consumption growth that far exceeds the growth of purchasing power as estimated in the NIA itself already casts strong doubt on the claims that the economy has grown the fastest in recent years. Moreover, as shown in the charts below, tax collections of the Bureau of Internal Revenue (BIR) seem more correlated with the FIES than with the NIA.[10] There are too few data points to do statistical tests but Figures 10 and 11 below indicate that trends in BIR collections jibe better with the FIES than with the GDP growth statistics. Moreover, the outliers in Figure 10 could be easily explained given what we know about what happened to the economy and the tax laws. Fore instance, the very high growth rates of real BIR collections in 1991-1994 and 2003-2006 were due to an economic boom and the increase and expansion of VAT, respectively, while the very low growth of collections in

[10] The higher R^2 shows a better fit for FIES than GDP, but there are not enough data points for the purpose of doing statistical tests.

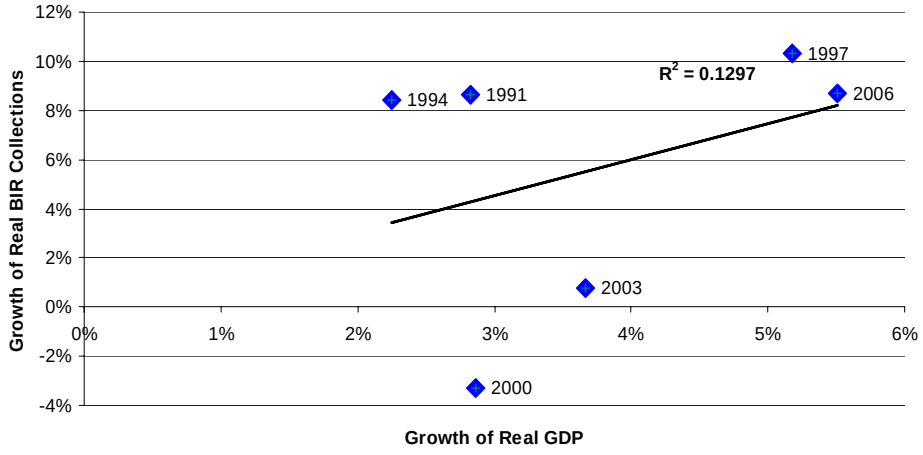
1997-2000 was due to the fact that the Asian Financial Crisis took a much greater toll on parts of the economy that are relatively easy to tax (e.g., banks and large corporations). At any rate, there is no basis for saying that the FIES should be given less weight than the GDP growth statistics in assessing how well the economy has performed. At the very least, researchers who want to explain why recent high Philippine economic growth has not trickled down and reduced the incidence of poverty must first ask whether the high growth rates of the economy are for real in the first place.

Figure 10: Growth rates of FIES Household Income and BIR Collections (1991-2006)



Source of basic data: NSCB and DOF

Figure 11: Growth rates of GDP and BIR Collections (1991-2006)



Source of basic data: NSCB and DOF

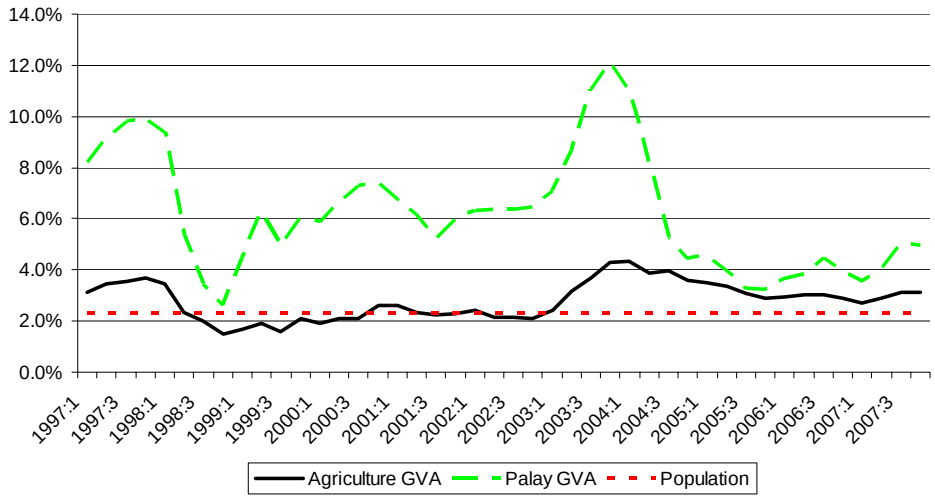
The foregoing discussion leads us to the conclusion that the growth rates of personal consumption expenditures and GDP may be overestimated after the Asian Financial Crisis, especially for the years after 2000. The fall in the growth of imports may have

been accompanied by a fall in consumption growth, and as a result, a fall in the GDP growth as well. This would make Philippine growth trends fit the pattern for the rest the Asian economies discussed in one of the previous sections. The next sections look at reasons why we think growth may be over-stated in agriculture, manufacturing, and services.

6. Agriculture may not be as robust

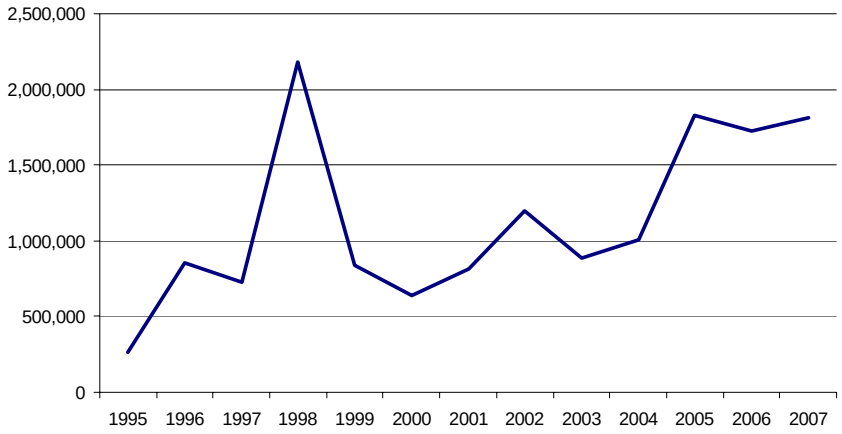
The decomposition using the *value-added* approach shows that agriculture contributed positively to the increase in GDP after the Asian Financial crisis. That the growth rate of food consumption has risen to incredibly high levels should be accepted as a fact if only it were not common knowledge that there are tremendous problems with agricultural statistics. Figure 12 below plots the average growth rates of agriculture Gross Value Added (GVA) and palay GVA along with the population growth rate. From 1999 (after the El Niño phenomenon in 1998) both palay and agricultural GVA growth rates were significantly above the rate of population growth. If it is true that palay value added has been growing much faster than population, why, except for the effect of a very severe El Niño in 1998, have rice imports shown an increasing trend as shown in Figure 13? This increasing dependence on rice imports makes the Philippines very vulnerable to increases in the world price of rice.

Figure 12: Growth rates of Population, Agriculture and Palay Gross Value Added (20-quarter moving average)



Source of basic data: NSCB

Figure 13: Volume of Rice Imports in Metric Tons



Source of basic data: NSO

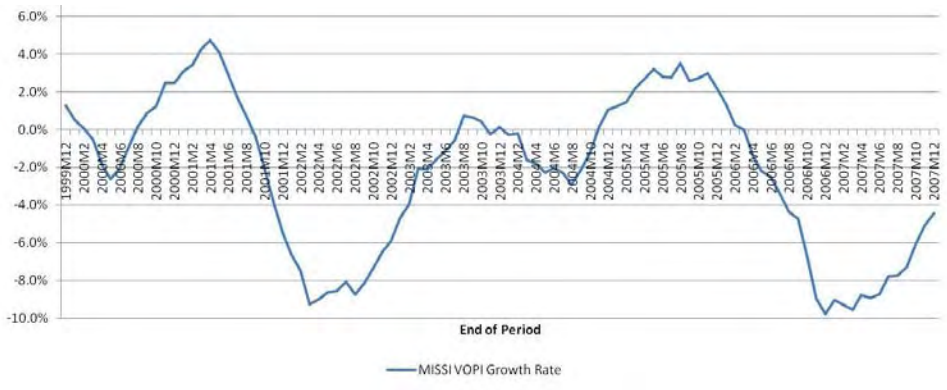
Whether palay production growth tends to be systematically over-estimated is an important question, given that rice importation decisions are made by government rather than by profit-seeking firms. The bureau that measures production growth is under the Department of Agriculture, which receives substantial funding from the General Appropriations Act for increasing agricultural production (with a big part of the budget focused on increasing the production of rice and corn). Moreover, the issue of rice self-sufficiency has always been important politically. Still, the chart does not indicate that palay production growth has been more over-estimated in recent years compared to the past. However, what the chart does show is a one to two percentage point increase in the average growth rate of agricultural value added during the last ten years compared to the 1990's. Whereas agricultural value added grew at about the same rate as population before, its average growth is now one to two percentage points higher. While a one to two percentage point increase in the growth of agricultural value added may not seem large, it might be significant when it is taken together with the fact that labor has migrated to urban centers to find employment in the service sector. Increasing value added in palay in the face of migration of workers out of agriculture can only be possible if the labor productivity of those workers who remained in the rural sector increases. Indeed, as can be seen in one of the charts in the next section (Figure 16), there has been a large rise in labor productivity in the agricultural sector if the NIA estimates of value added growth in agriculture are reliable. The question is whether agricultural workers have indeed become so productive in recent years. With the level of public investments falling short of the actual requirements of the whole agricultural sector, the

assertion that labor productivity in agriculture has increased does not hold much water (Habito and Briones [2005]).

7. On the contrary, Industry is weakening

According to the NIA, the contribution of the Industrial Sector to economic growth did not fall after the AFC. That the NIA depicts an industrial sector that managed to maintain its contribution to output growth after the Asian Financial Crisis is questionable since the Volume of Production Index (VOPI) from the Monthly Integrated Survey of Selected Industries (MISSI) points to a *weakening*, not a growing, Manufacturing Industry (Manufacturing is the biggest component of the Industrial Sector)[11]. Figure 14 below shows that the VOPI had few-and-far-between episodes of growth since 1999.

Figure 14: Growth rates of MISSI Volume of Production Indices (12-month moving average)



Source of basic data: NSO

And though MISSI data are used as inputs in estimating manufacturing value-added in the NIA, there has been a significant change in the statistical relationship between real manufacturing growth in the NIA and MISSI VOPI since 2002: Table 7 shows that in the period 2002-2007, the strength of the relationship between Manufacturing growth in the NIA and MISSI VOPI growth deteriorated as reflected by the lower R-square. Thus, the

[11] According to NSO, MISSI "provide(s) timely flash indicators that monitor the performance of growth-oriented industries in the manufacturing sector". It is a "non-probability sample survey of manufacturing establishments" and the survey "is done purposively so as to include only the large establishments or the so-called industry leaders".

correlation between the two series weakened and manufacturing growth rates are now higher than before 2002, holding the movements of VOPI constant.[12]

Table 7. Regression of Real Manufacturing Growth in the NIA against MISSI Volume of Production Index (VOPI)

Regression: Manufacturing Growth = Intercept + (Slope) x VOPI Growth	**Regression using 2002- 2007 Data**	**Regression using 1996 – 2001 Data**	**Difference**
Intercept	4.962	2.556	2.406
Slope	0.096	0.212	-0.116
R Square	0.196	0.563	-0.367
Predicted Manufacturing Growth Given a 5% Decline in VOPI	4.50%	1.50%	3.00%

Source of basic data: NSO

What accounts for the structural break between the MISSI VOPI and NIA value-added data? One of the many possible reasons is the continued use of 1985 as the base year for measuring output at constant prices in the NIA. Interestingly enough, there is no evidence of a structural break in the relationship of the growth of the MISSI Value of Production Index (VAPI) and the *nominal* (that is, not adjusted for inflation) manufacturing value-added from the NIA; it is only when we deal with *real* (adjusted for inflation) manufacturing value-added that we run into some problems of association between the two series (See Table 8). However, as in the case of the relationship between expenditure growth the FIES and the NIA in the previous section, this could be explained by the fact that inflation can make variables that are uncorrelated in real terms correlated in nominal terms.

Table 8. Regression of Nominal Manufacturing Growth in the NIA against MISSI Value of Production Index (VAPI)

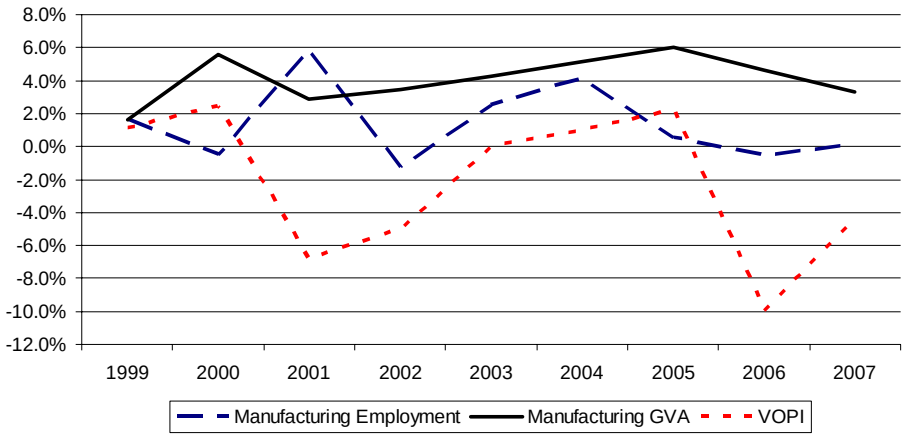
Regression: Nominal Manufacturing Growth = Intercept + (Slope) x VAPI Growth	**Regression using 2002- 2007 Data**	**Regression using 1996 – 2001 Data**	**Difference**
Intercept	9.044	8.923	0.121
Slope	0.273	0.265	0.008
R Square	0.529	0.685	-0.156

Source of basic data: NSO

[12] We performed a Chow test to determine if there has been a structural change in the relationship of real manufacturing growth and VOPI from 1996-2001 to 2002-2007. The test indicated evidence of a structural break and rejects the hypothesis of a stable relationship during the two periods.

Another possible source of bias would be the method of estimating the unorganized sector. After 2004, the NIA estimates used "either updated data from existing data sources or data from new data sources."[13] Since the MISSI surveys are conducted only on large establishments, information from other surveys such as the Quarterly Survey of Philippine Business and Industry (QSPBI) are added to capture the performance of the smaller firms and the unorganized sector. However, great care should be exercised in using the information from these data sources as faulty methods of "blowing-up" could generate estimates that are severely biased. And indeed, there may be grounds to believe that the NIA manufacturing estimates are inclined to be overestimated. For instance, Figure 15 shows that the MISSI VOPI and the Manufacturing employment estimates from the Labor Force Surveys show roughly the same story—and sometimes contradict the growth statistics from the NIA. Notice that since 2005, both manufacturing employment and VOPI are falling continuously (growth is *negative*) but Manufacturing value-added from the NIA still registers *positive* growth! Employment and VOPI figures both indicate a relatively weakening Manufacturing Industry in the last three years but NIA data points to the exact opposite.

Figure 15: Growth rates of Manufacturing Value Added, VOPI and Manufacturing employment



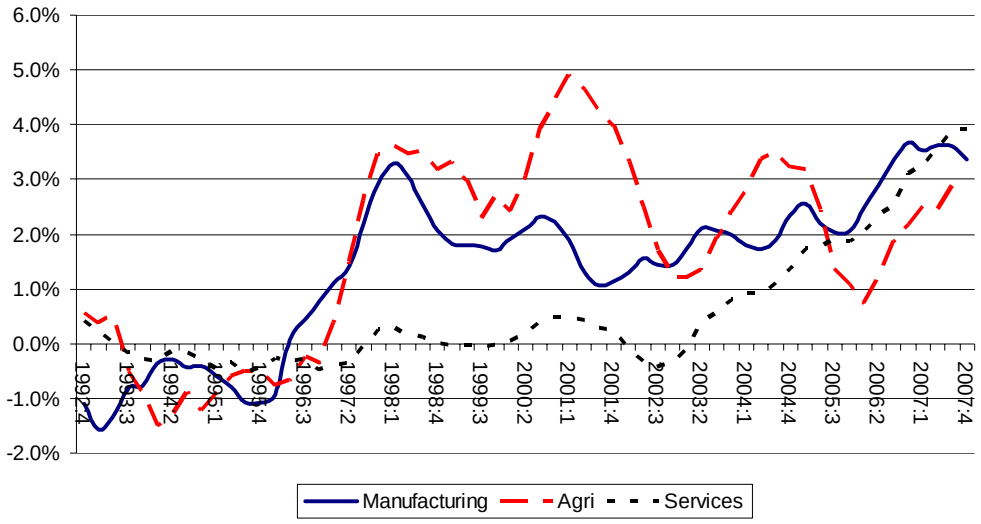
Source of basic data: NSCB and NSO

Moreover, if it is initially assumed that the Manufacturing value-added from the NIA is correct and the data is used together with manufacturing employment statistics from the Labor Force Surveys, what results is a very high labor productivity growth rate, which grew much more rapidly in more recent years than in the past. This does not seem very

[13] The quote is from NSCB's technical notes explaining why data from 2004 cannot be linked to the earlier series.

plausible because apart from the fact that there is no episode in Philippine post-AFC history that the growth rates have been this high (see Figure 16), studies do not support rapidly increasing labor productivity growth rates in the country (see, for instance, Canlas [2005]; Felipe and Lanzona [2007]). Moreover, this rise in labor productivity is happening during a time of declining rate of growth of investments.

Figure 16: Growth rates of Implied Productivity (Gross Value Added/Employed Persons) in Manufacturing, Agriculture and Services (20-quarter moving average)



Source of basic data: NSCB and NSO

All said, it seems that other indicators point to a weakening, not an improving, Industrial Sector—contradicting statistics from the NIA.

8. There are many problems in the measurement of service sector growth

The decomposition in Table 1 earlier showed that the Services Sector had the highest contribution to the increase in GDP growth after the Asian Financial Crisis. Wholesale and Retail Trade (WRT) and Transportation, Communication and Storage (TCS) were the subsectors in Services that contributed the most to GDP growth after the AFC (Table 9). As we have mentioned earlier, the boom in these subsectors may have been driven partly by the rapid growth of overseas remittances and by rapid growth in mobile telephone services (e.g., Globe and Smart) and the wave of technological changes in information and communication that occurred in the recent years (for TCS).

Table 9. Decomposing the Service Sector's contribution to GDP growth

	1999-2007 (36 quarters)	1989-1997 (36 quarters)	Difference
Transport., Comm., Stor.	0.64	0.25	0.39
Trade	1.00	0.60	0.40
Finance	0.34	0.29	0.05
O. Dwellings & R. Estate	0.15	0.16	-0.01
Private Services	0.54	0.23	0.31
Government Services	0.11	0.20	-0.09
Total Contribution of the Services Sector to GDP Growth	2.79	1.73	1.06

Source of basic data: NSCB

Few would doubt that some segments of the services sector are recently becoming the most dynamic segments in the economy. The number of cell phone subscribers grew very rapidly and the Information and Communication Technology (ICT) industry of the TCS subsector has replaced electronics as the main driver of export growth. In terms of employment and revenue generated, the nascent ICT industry has grown by leaps and bounds for the past five years (Table 10). However, given the low growth of both expenditures and income in the FIES after 2000, it is rather puzzling that two segments of the service sector—Wholesale and Retail Trade and Private Services—account for two thirds (0.4 and 0.3 out of 1.1, respectively) of the increase in the contribution of the service sector to GDP growth after the Asian Financial Crisis. In other words, the bulk of the increase in the growth rate of the service sector is accounted for by two subsectors where output is hard to measure and where a significant part of the value added is imputed.

Table 10. Employment and Revenue in the Information and Communication Technology (ICT) Industry

	2004	2005	% Increase
Contact Centers	65,006	96,246	48.10%
Medical Transcription	901	1,785	98.10%
Animation	1,488	1,864	25.30%
Software Development	11,975	17,829	48.90%
Other BPOs	15,118	20,278	34.10%
Total	94,488	138,002	46.10%
Revenue (in Million US $)	1,323.50	1,995.90	50.80%

Because the boom of the ICT industry is relatively recent, there has been a clamor for its inclusion in the estimation of GDP. Thus, recent estimates of GDP now include data for the service sector which have not been used in previous GDP estimates: for instance, GDP estimates now include data from the Business Processing Association of the

Philippines (BPAP), Contact Center Association of the Philippines (CCAP), Commission on Information and Communication Technology and the Board of Investments (BOI).

While there is nothing inherently wrong with trying to capture the effects of new sources of growth in the National Income Accounts, it is important to make sure that such does not introduce an upward bias in the growth rates. For instance, if the attempt to capture the output of new sectors is done for current years but is not done retroactively, then estimated growth in recent years would be over estimated since the output in the earlier years would be understated.

Moreover, as is openly admitted by NSCB, if a poor job is being done to take into account the effects of births and deaths of firms and that there is a greater zeal in including high profile births of firms in the estimation of output (without similar efforts to factor in the death of firms due to lack of resources), the estimates of GDP growth maybe biased upwards. (One might ask whether the zeal in doing new surveys to cover the "unorganized sector" to supplement the MISSI is driven by the same tendency.) If this is the case, then the country's statistical system may start looking like an honest but erratic cashier who will end up giving too much change at the end of the day because only customers who receive less than the correct change are likely to complain.

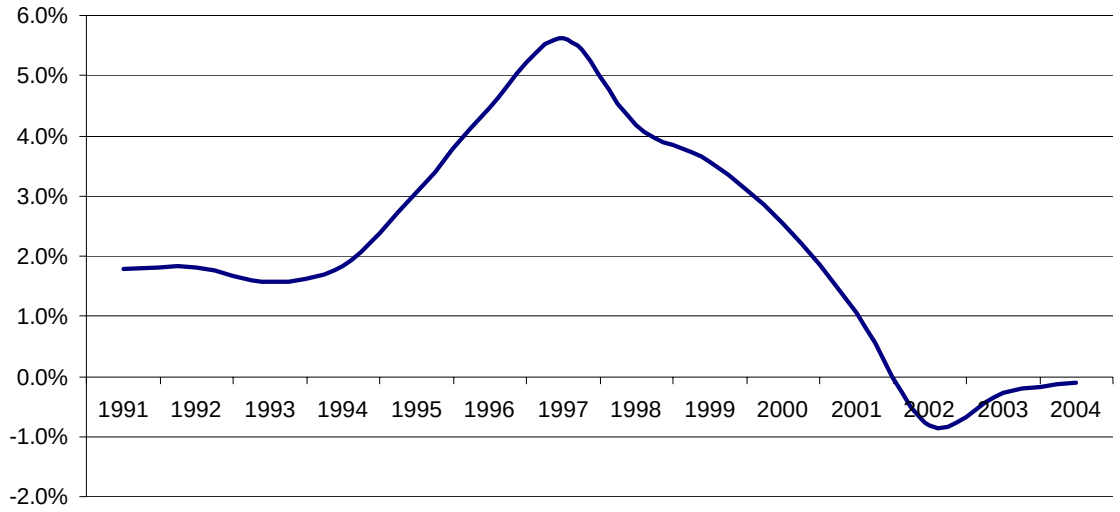
This, however, is not just symptomatic of the services sector. For instance, there is also a demand to include the "unorganized/informal sector" or agricultural output of some subsectors which some public officials have direct knowledge of. The challenge, therefore, is to make the National Income Accounts more reflective of the true state of economy by using updated establishment censuses and updating of base years for computing constant prices instead of *ad hoc* inclusion of sectors just for the mere reason that they are perceived to be more dynamic than others. (Again, this is a good argument for taking agricultural statistics out of the Department of Agriculture.)

9. Other indicators point to a lethargic economy

There are also other indicators that lend to the belief that the economy is not as robust as the NSCB paints it to be. A rapidly growing economy should be intensive users of energy: the increase in demand comes from both residents that increase their energy requirements to complement their higher standards of living, and from firms that need

more energy to fuel their increased production. The energy use picture for the Philippines remains bleak in the recent years. Figure 17 shows that energy use has decreased in the period where economic growth should have supposedly taken place.

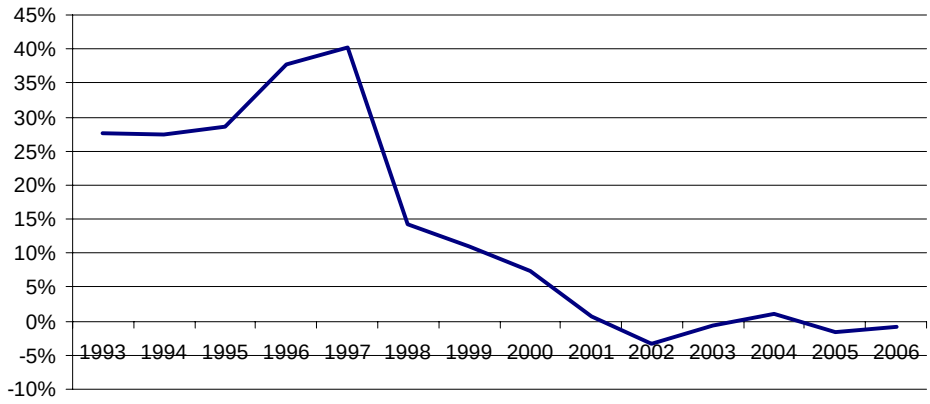
Figure 17: Growth rate of Energy Usage (kg of oil equivalent per capita), 5-year moving average



Source: Worldbank World Development Indicators

The same story is told when we look at the movement of domestic credit (Figure 18). Lending has been sluggish in the past five years, indicating a weakening of the economy. As with the trends in energy use, the slowdown of credit coincides with the period where economic growth has been robust as indicated by the NIA statistics. This indicator appears to be pointing at an economy that is relatively more fragile than what official statistics suggests.

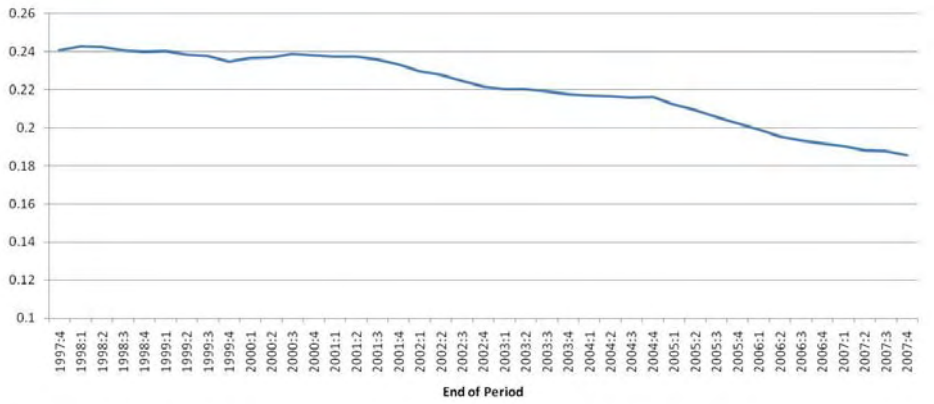
Figure 18: Growth rate of real net domestic credit, 5-year moving average



Source: Worldbank World Development Indicators

As an offshoot of weak domestic lending, Investment as a proportion of GDP (Investment to GDP ratio) continues its slide dating back to the Asian Financial Crisis.[14] This slide not only reflects the current weakness of the economy but also suggests that long-run growth prospects may be jeopardized as well. Unless public and private investments recover in the medium term, it is doubtful whether the Philippines can achieve and sustain higher economic growth in the future. The government, for its part, must provide catalytic investments in infrastructure and education.

Figure 19: Ratio of Capital Formation (Investment) to Gross Domestic Product
(GDP and Investment in constant 1985 prices, 20-quarter moving average)



Source: NSCB

Finally, even some of the indicators that government trumpets to show a healthy economy (such as the fall in inflation and interest rates) may be partially due to the fact that economic growth is not as high as the NSCB says it is.

10. Conclusion: The National Income Accounts Should Be Improved

The measurement of GDP growth plays a very important role in how policy-makers, researchers and opinion leaders frame economic policy problems and issues. For example, the question of why recent high economic growth seems not to have benefited the poor is a very important one. If GDP growth rates are taken at face value, there is no choice but to conclude that the quality of Philippine economic growth leaves much to be desired because of its failure to create enough jobs and raise the incomes of the poor. But what if the problem is the level, not just the quality, of economic growth?

[14] The Investments-to-GDP ratio has declined even if adjustments for possible GDP overstatement are factored in.

What if the economy is not creating enough jobs and the incomes of the poor because it is not growing as fast as official GDP growth statistics would indicate? Is the problem both the quality and the level of economic growth? These are important questions and it seems that there is enough evidence to at least make government and analysts re-examine the quality of economic growth statistics before they try to answer these policy questions.

The question of productivity growth is also important. Past studies have shown that there has been very little total factor productivity growth since the rise in GDP has been fully accounted for by the increase in the employment of labor and capital. Would recent economic growth now be seen as being driven by total factor productivity growth given that output growth has accelerated while employment growth has not and as capital formation has decelerated? If total factor productivity has grown as indicated by NIA statistics, what caused break from long our history of zero total factor productivity growth? Or is the growth in productivity a statistical illusion?

Also important is the issue of why the collections of the Bureau of Internal Revenue (BIR) have fallen behind the growth of GDP and GNP since the Asian Financial Crisis. Often, the fact that BIR collections have lagged behind GDP and GNP has been cited as one of the reasons for saying that the BIR has not only performed badly but has actually gone from bad to worse---even triggering the replacement of two BIR commissioners. While it is quite likely that the performance of the BIR leaves much to be desired, it could very well be that its performance has not deteriorated. While the distance between weak performance and deterioration is not a large one, one should be more guarded about forecasting large gains from improving collection performance based on the growth of the economy. It may be the case that the country's tax collection performance, though low by regional standards to begin with, has not really deteriorated as much as indicated by the falling ratio of BIR collections to GNP. Maybe the problem in using the tax-effort ratio for rating the BIR's performance is not just in the numerator but in the denominator as well.

The same applies to forecasting demand for electricity. Less than ten years ago, shortage has been forecasted to occur in Luzon as early as this year or the next. It turns out that electricity shortage in Luzon is not as imminent as what was forecasted. It is now fashionable to attribute the failure of electricity shortage to materialize to low

elasticity or responsiveness of demand for electricity to output growth. But again, it could very well be that output has not grown as fast the NSCB's estimates.

There are many other policy issues or debates (e.g., the relationship between credit creation and economic growth) that are affected by the way output growth is measured. There are two ways of looking at things. The first is to accept the growth statistics—and say that the Philippines is unique—as a way to explain why patterns that normally apply to other countries or used to apply to the Philippines no longer apply now. The other is to question the quality of the National Income Accounts and see how they can be improved. Several initial steps are important and increased funding for the statistical system will certainly help. Changing the base year for measuring GDP and GNP at constant prices is long overdue. Sampling frames can be improved by getting better data on births and deaths of firms and establishments. In agriculture, better estimates of area planted to different crops and the extent and quality of irrigation would be very helpful, but it may be even more important to take agricultural statistics out of the Department of Agriculture.

Meanwhile, NSCB should be more cautious when it makes imputations and *ad hoc* changes in methodologies in using survey data to estimate value added.

Reference

Canlas, D. [2005] “Probing GDP, Employment and Unemployment: a Little Forensic Macroeconomics” *Philippine Review of Economics,* 42(1), 1-9.

Felipe, J., and L. Lanzona [2007] “Unemployment, Labor Laws, and Economic Policies in the Philippines” in J. Felipe and R. Hasan, eds. *Labor Market Issues in Asia: Issues and Perspectives*. London: Palgrave Macmillan for the Asian Development Bank.

Habito, C., and R. Briones [2005] “Philippine Agriculture over the Years: Performance, Policies and Pitfalls” Paper presented at the conference entitled “Policies to Strengthen Productivity in the Philippines,” sponsored by the Asia-Europe Meeting (ASEM) Trust Fund, Asian Institute of Management Policy Center, Foreign Investment Advisory Service, Philippines Institute of Development Studies and the World Bank, held in Makati City, June 27, 2005.

Ram, R. [1990] “Imports and Economic Growth: A Cross Country Study,” *Economia Internazionale,* 43, 45-66.

Virola, R. [2008] “The U.P. Centennial: Do U.P. Graduates Know How to Use Statistics?” http://www.nscb.gov.ph/headlines/StatsSpeak/2008/041408_upStats.asp. Accessed 20 April 2008

Appendix 1. Why nominal growth rates seem to be more correlated than real growth rates

Let **X** and **Y** be two real variables whose growth rates are **x** and **y,** respectively. Assume that **x** and **y** are uncorrelated, that is:

$$\text{cov}(\mathbf{x},\mathbf{y}) = 0 \Rightarrow \rho(\mathbf{x},\mathbf{y}) = 0 \qquad \text{(A1)}$$

The unit prices of **X** and **Y** are **P** and **Q**, respectively. The growth rate of **P** is **p**, the inflation rate, and the growth rate of **Q** is (**p** + **u)** where **u** is a purely random term. Thus, the nominal growth rates of **X** and **Y** are (**p** + **x)** and (**p** + **u** + **y**), respectively. Assume further that the inflation rate is independent of either **x** or **y**. (In the macroeconomics literature, output growth and inflation could be either positively or negatively correlated.) Thus,

$$\text{cov}(\mathbf{p},\mathbf{x}) = \text{cov}(\mathbf{p},\mathbf{y}) = 0 \qquad \text{(A2)}$$

and that term **u** is purely random and independent with either **x, y** or **p**:

$$\text{cov}(\mathbf{p},\mathbf{u}) = \text{cov}(\mathbf{x},\mathbf{u}) = \text{cov}(\mathbf{y},\mathbf{u}) = 0 \qquad \text{(A3)}$$

The covariance of the nominal growth rates can thus be denoted by $\text{cov}(\mathbf{p}+\mathbf{x}\ ,\ \mathbf{p}+\mathbf{u}+\mathbf{y})$. Expanding this expression yields:

$$\text{cov}(\mathbf{p}+\mathbf{x}\ ,\ \mathbf{p}+\mathbf{u}+\mathbf{y}) = \text{cov}(\mathbf{p},\mathbf{p}) + \text{cov}(\mathbf{p},\mathbf{u}) + \text{cov}(\mathbf{p},\mathbf{y}) + \text{cov}(\mathbf{p},\mathbf{x}) + \text{cov}(\mathbf{x},\mathbf{u}) + \text{cov}(\mathbf{x},\mathbf{y}) \qquad (1)$$

(A1), (A2), (A3) and (1) yield:

$$\text{cov}(\mathbf{p}+\mathbf{x}\ ,\ \mathbf{p}+\mathbf{u}+\mathbf{y}) = \text{cov}(\mathbf{p},\mathbf{p}) = \text{var}(\mathbf{p}) \qquad (2)$$

The larger the variance of **p** is (meaning the greater is the variation in the inflation rate over time), the more correlated the nominal growth rates of two variables are. Moreover, analysts who use nominal growth rates to correlate the growth of two variables over time would find a strong correlation even if the growth rates of the correctly defined real variable are uncorrelated.