

# CUBAN GDP STATISTICS UNDER THE SPECIAL PERIOD: DISCONTINUITIES, OBFUSCATION, AND PUZZLES

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For nearly three decades—from 1962 through 1989—Cuban national income and product accounts were constructed based on the Material Product System (MPS), a methodology developed by the former Soviet Union and applied by other socialist countries. MPS aggregates were not comparable to those of most other nations, who followed the System of National Accounts (SNA) developed by the United Nations.

In the early 1990s, with the disappearance of the Soviet Union and dissolution of the socialist bloc, Cuba abandoned the MPS and began to construct national income and product accounts based on the SNA. Gross domestic product (GDP) statistics, the most commonly-used SNA aggregate, have been available in Cuban statistical publications that provide data back to 1990.<sup>1</sup> These GDP figures are not comparable to macroeconomic aggregates produced during the time when Cuba applied the MPS methodology,<sup>2</sup> thus giving rise to one of the many discontinuities in national accounts statistics.

The adoption of the SNA beginning in the 1990s is a welcome development, as Cuban national income and product accounts are no longer different conceptually from those produced by virtually all other nations. Cu-

ba, however, has altered in various ways the SNA methodology and therefore interpretation of the data published by Cuba gives rise to numerous challenges.<sup>3</sup> This paper has two objectives: (1) analyze discontinuities in official GDP statistics and lack of documentation on the several methodological changes that have been implemented, and (2) present some puzzles regarding official Cuban GDP statistics that raise questions about their reliability as indicators of overall economic performance.

## GDP STATISTICS 1990–2000

Through 1989, Cuba's first statistical office under the revolution (*Comité Estatal de Estadísticas*: CEE) compiled and published Cuban macroeconomic indicators based on the MPS. The CEE's annual statistical yearbook, *Anuario estadístico de Cuba* (hereafter AEC), published regularly since the 1970s, included official statistics on national accounts; the principal macroeconomic indicator under the MPS was the global social product (GSP).

With the economic crisis that enveloped Cuba in the early 1990s, largely provoked by the collapse of the USSR and the dissolution of the socialist economic community, Cuba halted publication of the AEC with

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1. The Cuban statistical yearbook for 1996, *Anuario estadístico de Cuba 1996*, confirms in its methodological notes (p. 73) that GDP statistics for 1990 forward are based on the SNA.

2. For a comparison of Cuba's two accounting systems and their aggregates see Carmelo Mesa-Lago and Jorge Pérez-López, *A Study of Cuba's Material Product System, Its Conversion to the System of National Accounts, and Estimation of Gross Domestic Product per Capita and Growth Rates*, World Bank Staff Working Papers No. 770 (Washington: World Bank, 1985).

3. See, e.g., Carmelo Mesa-Lago, "Las dificultades para medir el crecimiento económico cubano," *Revista Vitral*, No. 63 (September-October 2004), <http://www.vitral.org/vitral/vitral63/econo.htm>.

the 1989 edition (which appeared in 1991, already in the midst of the crisis) as well as other statistical publications.<sup>4</sup> In 1995 and again in 1996, Cuba's Central Bank (*Banco Nacional de Cuba*: BNC) issued reports that provided GDP statistics for the period 1989–1995, now based on the SNA.<sup>5</sup> It was not until 1998, however, that the publication of the AEC was resumed (with issuance of the 1996 yearbook<sup>6</sup>) now under the responsibility of a new National Statistical Office (*Oficina Nacional de Estadísticas*: ONE).

Table 1 presents Cuban GDP statistical series for 1990–2000 at current prices (column 1) and constant prices of 1981 (column 4) culled from various issues of AEC. Cuba retained 1981 as the base for the SNA accounts, the same base used in the MPS statistics, although by the time the GDP statistics were published in 1998, over one and one-half decades had elapsed from the base year. Although Cuba has not provided a rationale for the long reliance on 1981 as the price base, it is probably attributable to the fact that the only major wholesale and retail price reform in revolutionary Cuba took place in December of that year.<sup>7</sup>

Based on statistics in Table 1, GDP at constant prices declined by 33% during 1990–1993 and began to recover starting in 1994; still the GDP level at constant prices in 2000 was 25% below the 1990 level. The decline and recovery trends are observable in both the current and constant 1981 price series (see Figure 1). But there are significant disparities in growth rates for 1993–1995 in the two series: 1.3% growth in current prices in 1993 compared to a 14.8% decline in constant prices; 27.1% and 0.7% increases for 1994, re-

**Table 1. Cuban GDP Statistics Based on AEC Series (1990–2000) and ECLAC Series (1985–1998), at Current and Constant 1981 Prices (in million pesos)**

	Current Prices			Constant Prices 1981		
	AEC 1996–2000	ECLAC	ECLAC/AEC Difference (%)	AEC 1996–2000	ECLAC	ECLAC/AEC Difference (%)
1985		20176			20352	
1986		19489			20385	
1987		19146			19934	
1988		20120			20644	
1989		20795			20960	
1990	19645	20879	6.3	19008	20349	7.0
1991	16248	17554	8.0	16976	18415	8.4
1992	14905	16382	9.9	15010	16591	10.5
1993	15094	16617	10.0	12777	14332	12.2
1994	19198	20375	6.1	12868	14421	12.1
1995	21737	23025	5.9	13185	14783	12.1
1996	22815	24481	7.3	14218	15908	11.9
1997	22952	24675	7.5	14572	16306	11.9
1998	23901	25863	8.2	14754	16522	11.9
1999	25504			15674		
2000	27635			16556		

Source: AEC: Oficina Nacional de Estadísticas, *Anuario estadístico de Cuba*, various years; ECLAC: Comisión Económica para América Latina y el Caribe, *La economía cubana: Reformas estructurales y desempeño en los noventa* (Mexico: Fondo de Cultura Económica, 1997 and 2000).

spectively; and 13.2% and 2.4% increases in 1995, respectively (Figure 2). Cuban officials have not explained these discrepancies and scattered data on inflation for 1993–1998 cannot explain them either. For instance, a deflation rate of 11.5% was officially report-

4. Partially filling the gap created by the absence of official statistics, some Cuban scholars made GSP estimates for 1990–1993, e.g., Julio Carranza, “Cuba: Los retos de la economía,” *Cuadernos de Nuestra América*, no. 19 (1993) and Julio Carranza, Luis Gutiérrez and Pedro Monreal, *Cuba: La restructuración de la economía. Una propuesta para el debate* (La Habana: Editorial de Ciencias Sociales, 1995).

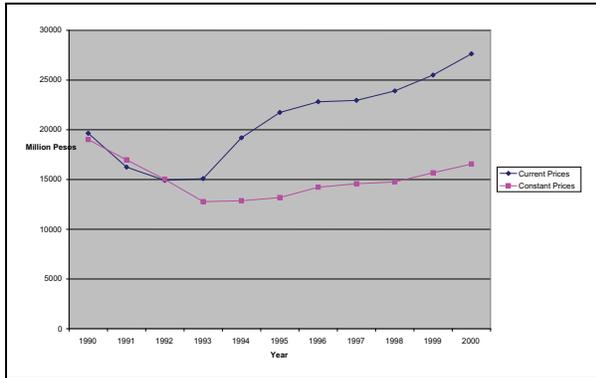
5. Banco Nacional de Cuba, *Reporte económico 1994* (La Habana, 1995) and *Reporte económico 1995* (La Habana, 1996). Earlier, a Cuban journalist published semi-official GDP statistics for the early 1990s; see Ariel Terrero, “Tendencias de un ajuste,” *Bohemia* (October 28, 1994).

6. Oficina Nacional de Estadísticas, *Anuario estadístico de Cuba 1996* (La Habana, 1998).

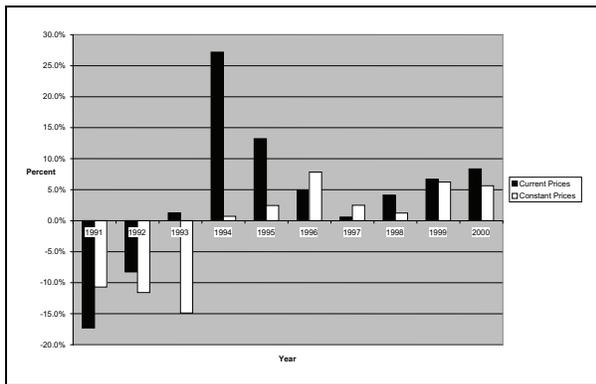
7. The reforms generated price increases ranging from 7% to 525% in 1,510 rationed consumer goods, including most essential foodstuffs and manufactures, as well as many services. See Carmelo Mesa-Lago, *Market, Socialist, and Mixed Economies: Comparative Policy and Performance—Chile, Cuba, and Costa Rica* (Baltimore: The Johns Hopkins University Press, 2000), p. 235.

ed for 1995 but GDP at current prices rose 13.2% that year whereas it increased only 2.4% at constant prices.<sup>8</sup>

**Figure 1. Absolute GDP at Current and Constant 1981 Prices from AEC, 1990–2000**



**Figure 2. GDP Growth Rates at Current and Constant 1981 Prices from AEC, 1990–2000**

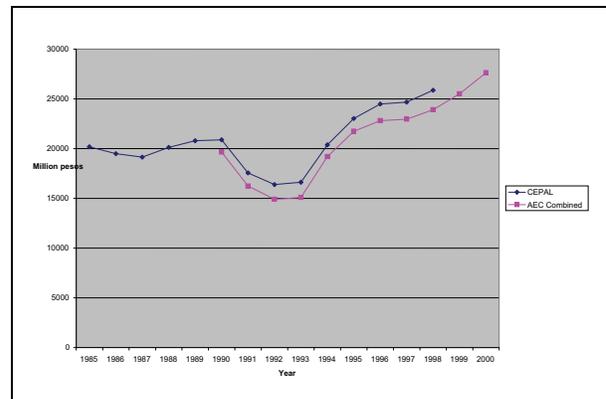


In 1997, the Economic Commission for Latin America and the Caribbean (ECLAC) published a major study on the Cuban economy, with a second edition in 2000.<sup>9</sup> In preparing the study and the accompanying statistical annexes, ECLAC relied on published and unpublished statistics provided by ONE. Available in these reports—although not officially published in Cuba—are GDP statistical series for 1985–1998 at

current and constant prices of 1981, presumably compiled using the ONE methodology and therefore comparable to those published in the AEC for the same period (see Table 1, columns 2 and 5).

It can be observed in Figures 3 and 4 that the *trends* in GDP series from AEC and ECLAC for 1990–1998—the time period for which series from both sources are available—are very similar. GDP growth rates calculated from either series are relatively similar also. Absolute GDP values, however, are consistently higher each year in the ECLAC series than in the AEC series. At current prices, annual differences range from about 6% to about 10%, whereas at constant prices, differences range from 7% to 10% in 1990–1992, but for 1993 forward consistently around 12% (see Table 1, columns 3 and 6). In the ECLAC series, GDP at constant prices in 1998 was 21.8% lower than in 1990, compared with 25.2% in the AEC series. The reasons for the differences in the two series have not been explained either by ECLAC or by ONE.

**Figure 3. Absolute GDP at Current Prices, AEC v. CEPAL, 1985–2000**



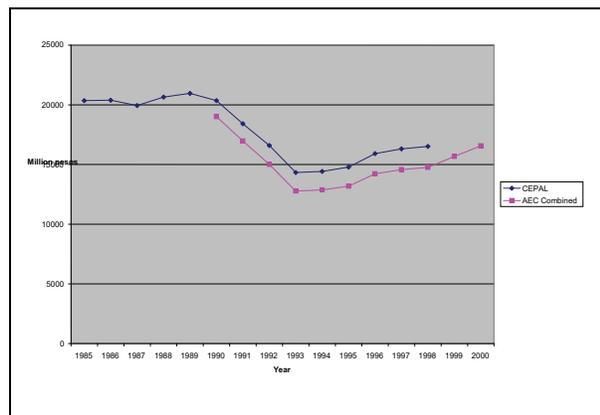
### GDP STATISTICS SINCE 2001

Beginning with 2001, Cuba rebased its national income statistics, switching the base year from 1981 to 1997. National account statistics with the 1997 base have been published through the year 2007 in various

8. Carmelo Mesa-Lago and Jorge Pérez-López, *Cuba's Aborted Reform: Socioeconomic Effects, International Comparisons, and Transition Policies* (Gainesville: University Press of Florida, 2005), p. 29.

9. Comisión Económica para América Latina y el Caribe, *La economía cubana: Reformas estructurales y desempeño en los noventa* (Mexico: Fondo de Cultura Económica, 1997 and 2000).

**Figure 4. Absolute GDP at Constant Prices of 1981, AEC v. CEPAL, 1985–2000**



editions of the AEC, which introduced at least three different series associated with modifications to the calculation methodology. In this section we will discuss rebasing and other minor changes. The remaining changes are analyzed in the following sections.

### GDP Rebasings

Rebasing may have different meanings in different contexts.<sup>10</sup> It may mean the following:

- changing the weights (relative importance of components) in an index or some other measure;
- changing the price reference period of an index number series or some other measure; or
- changing the temporal reference period of an index number series or some other measure.

The weights, the price reference period, and the temporal reference period may be changed at the same time, but not necessarily so.

Cuban statistical sources have released only the scantiest information regarding the rebasing exercise. Below is the full extent of explanation provided in the “National Accounts” chapter of the AEC 2001 edition, a note that has been repeated in subsequent issues:

**Comparability of series:** The figures presented in this chapter are calculated on the basis of current prices and, for the principal aggregates, also in compa-

table terms [constant prices]. The former represent the transactions that occurred according to prevailing conditions during the reference period and therefore correspond to prices, methodology, and institutional structure of each year.

The constant-term series is based on prices and the economic structure of 1997. The methodology relied on extrapolation using Laspeyres physical volume indexes of the aggregate sector values during the reference year with as much disaggregation as possible.

Baskets of products consisting of 409 goods representative of branches and sub-branches of the economy were available. With regard to services, indirect indicators were used, which complemented those of the national economic activities presented in the classification system.<sup>11</sup>

It appears, then, that the rebasing of Cuban statistics involved changes in base year, weights, and prices. The Cuban government has not released information regarding the specific goods included in the baskets, their relative importance, and the level at which the transaction is measured (e.g., retail, wholesale). For services sectors, the lack of information is even more acute. Cuba has not ever published information on which measures of performance of services sectors are collected by the national economic activity classification system and are included in the national account statistics and their value, or about indirect indicators of activity that ostensibly also have been used for some services activities. In the absence of these data, it is impossible to analyze the thoroughness of the rebasing exercise and to interpret the statistical results.

There are no GDP data available at the 1997 base for the period 1989–1995. They are available for 1996–2000, however, and can be compared for those five years with the series at the 1981 base. Table 2 shows that while growth trends are generally similar, the 1997–base series consistently yields GDP values 60% higher for each observation than the 1981–base series.<sup>12</sup> This means that value of GDP or GDP per capita and other measures that rely on absolute values of economic activity are significantly different depending

10. For a very thorough and practical treatment of issues related to rebasing of price indexes and national accounts see Asian Development Bank, *Rebasing and Linking National Accounts Series*, [www.adb.org/Statistics/reta\\_5874.asp](http://www.adb.org/Statistics/reta_5874.asp).

11. *Anuario estadístico de Cuba 2001*, p. 95. All translations from Spanish have been done by the authors.

12. Mesa-Lago and Pérez-López (2005), p. 30.

on which of the two series is used. For example, GDP per capita in 2000 calculated with the 1981–base series was 1,476 pesos, while with the 1997–base series it was 2,361 pesos.<sup>13</sup>

**Table 2.** Comparison of GDP at Constant Prices of 1981 and 1997 Bases, 1996–2000 (in million pesos)

	1981–base		1997–base		Ratio of GDP Levels
	AEC 1998–2000		AEC 2001		
	Level	% change	Level	% change	
1996	14218	—	22819	—	160.49
1997	14572	2.49	23439	2.72	160.85
1998	14754	1.25	23476	0.16	159.17
1999	15674	6.24	24956	6.30	159.22
2000	16556	5.63	26482	6.11	159.95

Source: AEC: Oficina Nacional de Estadísticas, *Anuario estadístico de Cuba*, various years.

### Measurement Changes Introduced in 2001

In addition to the rebasing of national accounts to 1997 described above, Cuban statisticians reportedly made other revisions to GDP effective in 2001: (1) introduced measures of activity in the banking and insurance sector; (2) changed the methodology for imputing rents for privately-owned dwellings; (3) incorporated additional data from the tourism sector; and (4) expanded coverage of production by self-employed workers and by households.<sup>14</sup> Detailed information on these changes is not available. A comparison of the two current-price GDP series—which presumably are not affected by modifications associated with the rebasing—suggests that the changes to GDP calculation introduced in 2001 resulted in variation in GDP levels from 0.5 to 4.2 percentage points, averaging an increase of 2 percentage points.<sup>15</sup>

### CUBAN “ADAPTATION” OF THE SNA METHODOLOGY

At the start of 21<sup>st</sup> century, Cuba began a systematic effort to “adapt” the SNA methodology to better reflect the nature of its economy. The government’s ar-

gument was that the traditional SNA methodology, with its emphasis on measurement of products and services exchanged through market transactions, significantly undervalued Cuba’s GDP, which included a large component of state-provided services offered to the population for free. Cuba could have set aside the SNA altogether and developed its own measure of national output independent of international benchmarks, but instead chose to alter the international methodology to fit its objectives. The result of this decision has been widespread obfuscation, disagreements between Cuba and regional and international organizations, and overall lack of confidence on the validity of that nation statistics, e.g., they showed extremely high growth rates that seemed to be inconsistent with other economic performance indicators.

How an arcane subject such as the methodology of GDP calculation became a political issue can be attributed to the “*Batalla de Ideas*” (Battle of Ideas) that Fidel Castro and the Cuban Communist Party launched in 2000 to defend the communist system and its accomplishments. A potent reason was the economic slowdown in Cuba’s GDP growth from 6.1% in 2000 to 1.5% in 2002 (see below). Demonstrating a superior economic growth performance in comparison with other nations became part of the ideological battle to show the bounties of the Cuban system. Osvaldo Martínez, a Deputy to the National Assembly and President of that body’s Economic Affairs Commission, highlighted the political importance of this endeavor in his December 2000 address to the Assembly:

... we Cuban economists and professionals in the field of economics have the obligation to propose, as soon as possible, a solution to the problem of the valuation of very important social activities that are highly relevant in Cuba. The international methodology to compute the gross national product (GDP) tends to undervalue these activities and thereby understate the value of GDP and GDP per capita. As a result, Cuba appears in some international comparisons in posi-

13. Calculated on the basis of 1981–base GDP of 16,556 million pesos and 1997–base GDP of 26,482 million pesos and population of 11,217,000 persons. All data from *Anuario estadístico de Cuba 2001*.

14. *Anuario estadístico de Cuba 2001*, pp. 85–86.

15. The disparity in the current-price series was observed by Oscar Espinosa Chepe, “Anuario Estadístico: una inexplicable modificación,” *Encuentro en la red* (January 18, 2003).

tions that do not reflect the economic reality of the country because of the undervaluation of the contribution to GDP of sectors of high importance to the country and quality of life, such as education, health, and culture. ... In capitalist economies, the high costs to the population of services such as health, university studies, and other activities are counted in GDP because they are market transactions. In Cuba, education and health services are not sold, and the population receives other social services through payments that are not related to the generation of profits.<sup>16</sup>

Meanwhile, Minister of the Economy and Planning José Luis Rodríguez was cited as making a similar argument to the same session of the National Assembly:

...the universally-established methodology to construct GDP undervalues the contribution of social services, as is the case with Cuba. This is so, for example, when the price rather than the cost of a kidney transplant operation, valued at about \$15,000, or the price of education, which at a U.S. university such as Yale would cost \$24,000 per student, [are considered in GDP] while on the island education at all levels and public health are free and constitute a contribution to GDP that is not measured. ... The contribution of sports, culture, and other social activities are also minimized, so that the true value of activities in those sectors for society are reduced practically to zero in terms of growth as they are not the subject of mercantile transactions associated with high levels of profits, as in the case in other nations.<sup>17</sup>

President Castro himself discussed the GDP methodology, demonstrating once again that no topic is out of the bounds of his erudition. In his address at the closing session of the IV International Economists' Meeting in February 2002, Castro raised concerns about the use of GDP—and the SNA more generally—as an indicator of development. He said:

Some ... [poor countries] have Gross Domestic Product three times greater than Cuba's and hundreds of thousands of illiterate persons and persons who do

not receive medical attention because they practice the doctrine of neoliberalism and include in their GDP the production of numerous free zones.

Today, the whole world wants to be a free zone. They have put countries in competition with one another and such industries do not leave anything in the country other than low salaries. Medical services are commercialized, education is also commercialized to a large degree, all recreation activities are commercialized. The work of our 60,000 plus medical doctors, the work of around 250,000 professors and teachers, the work of our sports instructors, because their services are free, do not contribute, do not have any value according to the methodology to measure GDP. As perhaps the recent Nobel Prize winner, Stiglitz, would say, this is asymmetrical information. Thus, everything is misleading, even the way of measuring GDP, simply because in our country those services are free and only wages and some other expenses enter into the GDP statistics. ...

Gross domestic product tells us very little. What tells us much more are the quality of life, educational services, health services, sports, health, and recreational services. The security of each person tells us more. The absolute certainty that no one will be abandoned, the certainty that people have guaranteed services, whereas, even in our very rich neighbor to the North, more than 40 million people lack guaranteed medical services and those that are guaranteed are costly and partial.<sup>18</sup>

And in December 2003, Castro again spoke critically about the treatment of services in GDP accounting: "In our country, we have more medical doctors per capita than in the United States, more teachers per capita than in the United States, and of course their contribution does not appear in the Gross Domestic Product because they are not commercial services, their services are totally free."<sup>19</sup>

Cuba's long term objective in "adapting" the SNA methodology was laid out by Minister of the Economy

16. Osvaldo Martínez, "Entramos al siglo XXI con la economía creciendo, pero aún más importante, con la dignidad multiplicada," *Granma* (22 December 2000).

17. Ledys Camacho Casado, "Al Siglo XXI con la economía creciendo," *El Economista de Cuba Digital*, [http://www.economista.cubaweb.cu/2000/2001/nro127/127\\_163.html](http://www.economista.cubaweb.cu/2000/2001/nro127/127_163.html).

18. Fidel Castro, Discurso en la clausura del IV Encuentro Internacional de Economistas, el 15 de febrero de 2002, <http://www.cuba.cu/gobierno/discursos/2002/esp/f150202.html>.

19. Fidel Castro, Discurso con motivo del cumpleaños de Elián González y el cuarto año del inicio de la Batalla de Ideas, el 5 de diciembre de 2003. <http://www.cuba.cu/gobierno/discursos/2003/esp/f05203e.html>

José Luis Rodríguez in his report to the National Assembly at the close of 2002:

In more than one occasion, comrade Fidel has referred to the deficiencies of GDP to reflect the development of a country. This indicator, designed for a market economy where the emphasis is on the sale and purchase of goods, is incapable of reflecting either social accomplishments of a country, or inequalities in wealth distribution, the wellbeing of society or the depletion of natural resources associated with an irrational consumerist society. ...

The very just criticisms leveled by comrade Fidel are the more evident in the case of Cuba, as this international methodology, in addition to the intrinsic deficiencies associated with GDP, underestimates our performance in comparison with other countries because of the larger share of free and subsidized consumption in Cuba as well as because of its inability to capture adequately the values created by a society such as ours, thereby placing us in a notoriously unequal position. ...

To address some of the deficiencies outlined, we have worked, on the one hand, to achieve more equitable international comparison and, on the other, on a proposal to measure services within GDP that would provide a less restrictive vision of our reality. ...

In order to address the deficiencies in the measurement of social services, we have developed a consistent proposal to value these services on the basis of their final value rather than on their costs, using tariffs [prices] that reflect that the value of the services produced exceeds the costs of production. The bases for this proposal will be developed during 2003.<sup>20</sup>

And in a companion address to the National Assembly, Deputy Osvaldo Martínez stated:

... 2002 was a year of low growth but high development. Low growth with respect to the gross domestic product, and high development with respect to setting the essential bases for integral human development that transcends the narrow confines of mercantile transactions and goes beyond the conceptions of

development that exist in the neoliberal, globalized world, affected by a crisis in human values.<sup>21</sup>

The claim that the value of health care, education, social security, and other services provided by the government was not counted in Cuban GDP statistics during the Special Period is directly refuted by the methodological notes to AEC. For example, said notes to AEC 1998 state that among the activities included in Cuban GDP calculations were: "Activities of government services: Their production is valued based on the explicit costs associated with the provision of the services, that is, based on expenditures on goods and services inputted, depreciation of fixed assets, salaries and other forms of remuneration earned by the personnel offering the services, and corresponding social security payments. These activities are comprised of units subject to the national, provincial or municipal budgets."<sup>22</sup> The mentioned methodological notes also indicate that banking and insurance services and housing services, which are not social services, were also included in GDP calculations through the use of proxy variables.

#### Revaluation of Services

At the end of 2003, Minister Rodríguez reported that Cuban statisticians were working on implementing the mentioned proposal to enhance the inclusion of free social services in GDP. Hinting at the adjustments that would be implemented starting with the following year's statistics, Rodríguez reported that while GDP growth measured using the "conventional" (SNA) method for 2003 was 2.6%, it would have been 3.8% (46% higher) had the revised methodology been used.<sup>23</sup>

In his December 2004 report to the National Assembly, Minister Rodríguez reported a growth rate of 5% for 2004. He stated:

20. José Luis Rodríguez, "Informe de los resultados económicos del 2002 y el plan económico social para el año 2003," *Granma* (December 26, 2002); [http://www.cubagob.cu/des\\_eco/mep/discursosjrannp.htm](http://www.cubagob.cu/des_eco/mep/discursosjrannp.htm). See also Michel Suárez, "Más claro ni el agua," *Encuentro en la red* (January 6, 2003).

21. Osvaldo Martínez, "La hermosa paradoja de la economía cubana en 2002," *El Economista de Cuba Digital*, <http://www.eleconomista.cubaweb.cu/2002/nro188/188.406.html>.

22. *Anuario estadístico de Cuba 1998*, p. 75.

23. José Luis Rodríguez, "Informe de los resultados económicos del 2003 y el plan económico social para el 2004," *Granma* (December 25, 2003); [http://www.cubagob.cu/des\\_eco/mep/informe\\_sobre\\_los\\_resultados\\_eco03.htm](http://www.cubagob.cu/des_eco/mep/informe_sobre_los_resultados_eco03.htm).

... it should be noted that, as we reported to the National Assembly last year, we have been working on a methodology that would reflect more precisely the economic development of our country, considering that the traditional manner of calculating GDP underestimates social services as they are provided for free, which do not have profits or other charges attached to them.

The indicator (GDP) reported today has been calculated using tariffs or prices for services offered that better reflect the value added created within GDP. It should be noted that the methodology used only reflects partially the qualitative transformations that that social services have reached in our country.

For this reason, GDP estimates of value added by services will continue to be perfected, improving their quality and precision. At the same time, work will continue on other methods and indicators that will be capable of reflecting more properly our economic and social advancement.<sup>24</sup>

Rodríguez did not report a growth rate for 2004 based on the “conventional” approach to measure GDP. However, a well-connected foreign journalist wrote in January 2005 that economic ministry sources had told him that Cuban GDP growth in 2004 based on the “conventional” GDP formula was 2.8% to 3.0%,<sup>25</sup> compared to the 5% official growth rate. This means that the growth rate derived from GDP calculated under the new methodology was 67% to 79% higher than under the “conventional” approach.

Table 3 compares two series of GDP statistics at constant prices of 1997 for the 2000–2003 period based on: the 2003 AEC and earlier issues, and the 2004 AEC. For each of the four years, the 2004 series—which includes the revaluation of services using a new set of tariffs or prices—was consistently higher by 15.3% to 16.5% than the earlier unadjusted 2003 series. Thus, the addition of the value of free social services resulted in a boost of 15–16% in GDP value. The

growth rates for 2002 and 2003 obtained from GDP after services were revalued were higher by 18% and 29%, respectively, compared to the unadjusted GDP data.

**Table 3. Comparison of GDP at Constant Prices of 1997 (in million pesos and percentages)**

	AEC 2003		AEC 2004		Ratio of GDP Levels
	Level	% change	Level	% change	
2000	26482	—	30531	—	115.3
2001	27268	2.97	31447	3.00	115.3
2002	27686	1.53	32013	1.80	115.6
2003	28502	2.95	33229	3.80	116.5

Source: AEC: Oficina Nacional de Estadísticas, *Anuario estadístico de Cuba*, various years.

ECLAC, in its annual “note” summarizing economic development and prospects in each of the countries in the region for 2004–2005, reported Cuban GDP growth in 2004 at 3.0%, and did not include in the body of the “note” the 5% GDP growth rate reported by Cuban officials.<sup>26</sup> However, ECLAC stated in a footnote: “Cuba is in the process of implementing a new methodology, consistent with the principles of the *System of National Accounts 1993 Manual*, to compute GDP that would correct measurement problems that arise from various distortions in the structure of relative prices. This has led to the estimation of a growth rate of GDP of 5% in 2004.”<sup>27</sup> That is, Cuba’s estimate of GDP incorporating the revalued services was higher than the growth estimated by ECLAC by 2 percentage points or by 66%.

Cuban statistical sources have not provided any information on the ways and means of this first adaptation of the SNA methodology associated with the adjustment in the value of services other than the brief state-

24. José Luis Rodríguez, “Informe de los resultados económicos del 2004 y el plan económico social para el 2005,” [http://www.cubagob.cu/des\\_eco/mep/informe\\_resultados\\_eco\\_04.htm](http://www.cubagob.cu/des_eco/mep/informe_resultados_eco_04.htm).

25. Marc Frank, “Cuba’s new ‘growth’ rate fails to cure old problems,” *Financial Times* (January 14, 2005); Frank, “Cuba decides to disregard GDP rankings,” *The Miami Herald* (January 18, 2005); Frank, “2004 Cuban economy grows by 5%—but what is GDP in Cuba?,” *Havana Journal.com* (January 18, 2005).

26. Comisión Económica para América Latina, *Cuba: Evolución económica durante 2004 y perspectivas para 2005*, LC/MEX/L.664 (20 June 2005).

27. *Cuba: Evolución económica durante 2004 y perspectivas para 2005*, p. 15.

ment by Minister Rodríguez mentioned above. For example, there is no information on which services sectors were subject to the revaluation, the specific services offerings affected, and the revised prices/tariffs that were used and how they were derived.<sup>28</sup>

### Changing the Relative Importance of Services within the Economy

A second stage in the “adaptation” of the GDP methodology in Cuba began with the national accounts statistics for 2005. Although the description of the adjustments is very sparse, it appears that at least two such adjustments were made: (1) a change to the relative importance of the “community, social, and personal services” sector within the economy, which resulted in enhancing the relative importance of this sector within GDP; and (2) valuation at market prices of exports of professional services (particularly medical, education, and sports services). With respect to exports of professional (primarily medical) services, these services were offered by Cuba for free or nearly for free in previous years as foreign aid under its “internationalism” policy; more recently, professional services exports have been turned into very important sources of foreign exchange. Official foreign trade data show a large jump in the value of exports of services beginning in 2004, about the time when professional services exports to Venezuela, particularly in the public health

and education sectors, took off.<sup>29</sup> For instance, the value of hard-currency payments for Cuban professionals working in Venezuela in 2008 has been estimated at \$5.6 billion.<sup>30</sup>

At the close of 2005, Minister Rodríguez announced that GDP at constant prices grew by 11.8% in 2005, the highest rate of growth in revolutionary Cuba’s history.<sup>31</sup> He attributed the record growth rate to value added of social services offered domestically as well as internationally.<sup>32</sup> In its annual summary on the Cuban economy for 2005, ECLAC reported the official growth statistics provided by the Cuban government, but added the following cautionary statement:

The data on output growth contained in this note are provided by the Government of Cuba and take into account high levels of social services exports to a number of countries, particularly the Bolivarian Republic of Venezuela. ECLAC is evaluating those calculations on the basis of the methodology used by the United Nations, a process which has not yet been concluded; ECLAC, therefore, does not yet have its own figures. Furthermore, Cuba has begun applying a new way of valuing social services, which is also being analyzed.<sup>33</sup>

ECLAC also excluded the 2005 growth rate of 11.8% from a summary table in the same report that compared economic performance in Latin America and the Caribbean, warning that “this estimated growth

28. Referring to how the adjustments might have been made, a journalist from a Mexican newspaper reported the following from La Habana: “A Cuban economist, who asked not be identified, told *La Jornada* that apparently the following method was used: ‘We carried out a given number of heart operations in a given year; what would they cost if we charged the prices of country X?’ Or ‘An English language course was delivered via television; what would it have cost if it had been sold via cassettes as is done in another country?’” Gerardo Arreola, “Cuba se aparta de la ONU para medir el PIB,” *La Jornada* (January 9, 2005). See also Tomás G. Muñoz, “PIB: Números a conveniencia,” *Encuentro en la Red* (January 20, 2005) and “Expertos advierten que será más difícil conocer la situación real de la economía cubana,” *Encuentro en la Red* (January 10, 2005).

29. On this point see, Jorge F. Pérez-López, “Cuba’s International Trade: Becoming More Invisible,” *Cuba in Transition—Volume 18* (Washington: Association for the Study of the Cuban Economy, 2008), pp. 151–152.

30. Carmelo Mesa-Lago, “The Cuban Economy in 2008–2009: Internal and External Challenges, State of the Reforms and Perspectives,” forthcoming 2010.

31. José Luis Rodríguez, Informe de los resultados económicos del 2005 y el plan económico social para el 2006, [http://www.cubagob.cu/des\\_eco/mep/informe\\_resultados\\_eco\\_%2005.htm](http://www.cubagob.cu/des_eco/mep/informe_resultados_eco_%2005.htm). As is discussed below, this record-setting growth rate was actually exceeded, according to official statistics, in the following year.

32. Interestingly, Minister Rodríguez used as external validator of this very high growth rate a report prepared by ECLAC, which attributed the positive performance to exports of highly complex services and the expansion of tourism and construction, coupled with assistance to Guatemala and Pakistan; as the ECLAC report (*Preliminary Overview of the Economies of Latin America and the Caribbean, 2005*, December 2005) is based on information provided by the Cuban government, it therefore is of questionable value as an external validator.

33. Economic Commission for Latin America and the Caribbean, *Preliminary Overview of the Economies of Latin America and the Caribbean, 2005* (Santiago, December 2005).

rate was based on a new methodology which is being analyzed by ECLAC and the Government of Cuba.”

For 2006, Minister Rodríguez reported a GDP growth rate at constant prices of 12.5%, even higher than in the previous year; he also reported that the growth rate would have been 9.5% if “services and trade were excluded from the calculations.”<sup>34</sup> In anticipation of criticism about the China-like growth rate, Rodríguez stated:

... as set out previously, Cuba’s GDP is currently comparable to that of any country of the world. We have imputed a value to basic social services such as education and health, which in our country are offered free of charge, so that they can be properly measured and compared with those capitalist economies where these services are sold as commodities and thereby incorporated into GDP, just as drug and prostitution are included in the GDP of these economies without provoking astonishment or concern on the part of anyone. ...

Cuba does not make up its statistics and does not manipulate them for electoral purposes. It abides responsibly by the internationally-recognized statistical systems and defends its right to have its accomplishments reflected cleanly, without resorting to lies or deceit.

For this reason, against those who doubt or do not believe what a revolution is able to do, we shall continue to demand the right that our statistics be published by all international organizations, particularly those of the United Nations system.<sup>35</sup>

This last reference was a not-so-veiled criticism at ECLAC, which had begun to question Cuban GDP

statistics since 2004 and had not embraced Cuban official statistics in regional aggregates since that year.

In its 2006 annual regional report, ECLAC reproduced the 12.5% GDP growth rate, attributing it to ONE, but omitted the cautionary statement in the previous edition, although a summary table that included said growth rate had a footnote saying that the figures were provided by the Cuban government “elaborated according to a new methodology that is being analyzed by ECLAC and the Cuban authorities.”<sup>36</sup> ECLAC solved the problem of the competing Cuban GDP growth rates in the statistical annex by presenting two Cuban GDP time series: (1) the first running through 2004 consisting of a combination of official growth rates and estimates by ECLAC for some years; and (2) the more recent (and very high) growth rates for the period 2001–2006 from ONE, as is acknowledged in a footnote.

At the close of 2007, Minister Rodríguez reported GDP growth rate at constant prices for that year of 7.5%, lower than the projected 10%, but still a remarkable growth rate. Returning to the methodology issue he stated:

...as we explained last year, Cuba’s GDP is currently comparable to that of any country of the world. In its calculation we observe internationally recognized statistical systems. Our country restates its right to have its accomplishments cleanly reflected, without conditions or ill-intentioned questioning, as has been done in the publications of some international organizations and in the press organs at the service of the enemies of our people.<sup>37</sup>

Meanwhile, ECLAC’s 2007 note on the Cuban economy was very sparse, mentioning the 7.5% GDP growth rate reported by Cuban official sources, with-

34. See, e.g., Oscar Espinosa Chepe, “Cuba, crecimiento no sustentado,” [www.cubanet.org](http://www.cubanet.org) (January 30, 2007); Elías Amor Bravo, “Balance de la economía cubana en 2006: análisis y perspectivas,” <http://fumacas.weblog.com.pt/arquivo/379924.html> (December 19, 2006); Amor Bravo, “¿Por qué no podemos creer que la economía cubana ha crecido en un 12.5% en 2006?,” <http://www.miscelaneasdecuba.net/web/article.asp?artID=10956> (July 28, 2007).

35. José Luis Rodríguez, Presentación a la Asamblea Nacional del Poder Popular del Informe sobre los Resultados económicos del año 2006 y los Lineamientos del Plan Económico y Social para el año 2007, <http://america.cubaminrex.cu/MirarCuba/Articulos/Economia/2007/00-00-00/Presentación.htm>.

36. Economic Commission for Latin America and the Caribbean, *Preliminary Overview of the Economies of Latin America and the Caribbean, 2006* (December 2006).

37. José Luis Rodríguez, Presentación a la Asamblea Nacional del Poder Popular del Informe sobre los Resultados económicos del 2007 y los Lineamientos del Plan Económico y Social para el 2008, [http://www.cubagob.cu/des\\_eco/mep/informe\\_resultados\\_eco\\_2007.htm](http://www.cubagob.cu/des_eco/mep/informe_resultados_eco_2007.htm).

out any qualification or indication that the figure was under review or subject to a review process.<sup>38</sup> In the statistical appendix, ECLAC continued the practice begun in the previous year of reporting two GDP series for Cuba.

In AEC 2004–2006, ONE published a Cuban GDP series at constant prices of 1997 for the period 2000–2006 with the methodological adjustment that contributed to the high GDP growth rates of 11.8% in 2005 and 12.5% in 2006. Said series was not recomputed for earlier years and therefore back data that would reflect the impact of the methodological change are not available. The lack of back data means that it is not possible to make even a rough attempt at decomposing the very high growth rates reported for 2004–2006 into components such as methodology change, genuine economic growth, and other factors.<sup>39</sup>

### Bringing the Cuban GDP Methodology Closer to SNA

According to ONE, it engaged in very intense technical consultations with ECLAC in 2008 with the objective of “perfecting” its national accounts methodology by adopting best practices in the application of the SNA to the calculation of Cuban national accounts.<sup>40</sup> Reportedly, three ECLAC technical missions traveled to La Habana between April and May 2008 for this purpose. As a result of these consultations, ONE revised estimates for 2000–2006 of the value of non-market services in the “community, social, and personal services” sector and calculated estimates for 2007

following the new methodology; ONE further linked the 2000–2007 estimates with national accounts statistics for earlier periods to create a GDP series with consistent methodology for the twelve-year period 1996–2007. The revised statistics arising from this third methodological adaptation were reported in a special publication of ONE issued in July 2008 titled *Serie de Cuentas Nacionales de Cuba: Años 1996–2007*<sup>41</sup> and also published in AEC 2007.

In mid-December 2008, Oscar Mederos Mesa, Director of ONE, informed the international press that, after years of discussion, ECLAC had “accepted without reservation” Cuba’s “formula” for computing GDP and henceforth would accept the Cuban methodology and include Cuban GDP statistics in its publications without any special reservation, notation, or footnote.<sup>42</sup> The ONE announcement was followed immediately by a statement from ECLAC contradicting Mederos and stating that Cuba had agreed to make changes to its methodology for calculating GDP to bring it into conformity with international standards. Luis Beccaria, head of ECLAC’s Statistics and Economic Projections Office, was quoted in the press as stating that “a few months ago, Cuba’s National Statistical Office modified the methodology with regard to the [community, social, and personal services] sector for its 2007 calculations, aligning it with international practice, and also adjusted calculations for earlier years.”<sup>43</sup> Unfortunately, ECLAC has not made public its discussions with ONE nor has it provided informa-

38. Economic Commission for Latin America and the Caribbean, *Preliminary Overview of the Economies of Latin America and the Caribbean, 2007* (December 2007).

39. A factor that had a very favorable on Cuban GDP in 2004–2007 was the very high export price of nickel. The London Metal Exchange (LME) annual average price of nickel nearly doubled from \$6,772 per ton in 2002 to \$13,823 in 2004, \$14,728 in 2005, \$24,244 in 2006, and \$37,216 in 2007. The average price was \$21,360 in 2008 and most recently was \$11,043 (January–May 2009). See U.S. Geological Survey, Mineral Commodity Summaries—Nickel (January 2009 and earlier issues) and World Bank, Commodity Price Data Pink Sheet (June 2009).

40. Oficina Nacional de Estadísticas, *Serie de Cuentas Nacionales de Cuba: Años 1996–2007* (La Habana, julio de 2008), <http://www.one.cu/seriescuentasnacionales.htm>.

41. The publication, *Serie de Cuentas Nacionales de Cuba: Años 1996–2007* (La Habana, julio de 2008), is available on the ONE’s website, <http://www.one.cu/seriescuentasnacionales.htm>.

42. “El gobierno dice que la ECLAC ha aceptado su fórmula para medir el PIB,” *Encuentro en la Red* (December 17, 2008); “Cuba says United Nations accepts GDP formula,” Reuters (December 18, 2008).

43. “La ECLAC dice que La Habana aceptó modificar su método para el cálculo del PIB,” *Encuentro en la Red* (December 18, 2008).

tion to assess the “adjustments” that ONE might have done.<sup>44</sup>

### ASSESSING RECENT GDP STATISTICS

Table 4 brings together Cuban GDP statistics, in current and constant 1997 prices, compiled from annual AEC publications starting in 2001. Three different series are presented: (1) for the period 1996–2003 compiled from the AEC issues for 2001–2003, which embody some of the early methodological changes such as rebasing and changes to estimation of the contribution of banking, insurance, tourism, and self-employment; (2) for the period 2000–2006 compiled from the AEC 2004–2006 issues, which incorporates the value of free social services, revaluation of the importance of community, social and personal services, and the valuation of exports of professional services; and (3) for the entire period 1996–2007 from the AEC 2007, which in addition to the changes mentioned above, also purportedly follows SNA methodology. The three series are plotted in Figures 5 and 6 (current prices and constant prices, respectively).

Figure 5, which plots the three absolute GDP series from the AEC at current prices, shows that while trend lines in the three series are similar, the 2001–2003 one lies below the other two, consistent with the “adaptation” of the methodology in stages that has been described in this paper. The second stage of the “adaptation”—essentially a change in the relative importance of social services and incorporation of exports of services at market value in 2004–2006—resulted in an increase in the *level* of GDP at current prices of about 14% to 19%. The methodological changes introduced in 2007 and applied to statistics for earlier years—a change in the weight of the services sector and other adjustments to the methodology of calculation that reportedly brought the overall methodology closer to the SNA—resulted in a reduction of 6% to 7% in the *level* of GDP, roughly half of the gain registered earlier. Still in the comparable period 1996–2003, GDP values in the 2007 series were from 7% to 11% higher than in the 2001–2003 series. The 2007 adjustments may have been the ones that ECLAC offi-

**Table 4. Comparison of Cuban GDP at Current and Constant Prices of 1997, Culled from AEC 1998–2007 Issues (in million pesos)**

	AEC 2001–03	Rate (%)	AEC 2004–06	Rate (%)	AEC 2007	Rate (%)
<b>Current prices</b>						
1996	23125				25017	
1997	23439	1.4			25366	1.4
1998	23777	1.4			25736	1.5
1999	26147	10.0			28365	10.2
2000	28206	7.9	32685		30565	7.8
2001	29557	4.8	33819	3.5	31682	3.6
2002	30680	3.8	36089	6.7	33591	6.0
2003	32337	5.4	38625	7.0	35901	6.9
2004			41065	6.3	38203	6.4
2005			46162	12.4	42644	11.6
2006			56181	21.7	52743	23.7
2007					58604	11.1
<b>Constant prices</b>						
1996	22819				24679	
1997	23439	2.7			25636	3.9
1998	23476	0.2			25406	-0.9
1999	24956	6.3			26979	6.2
2000	26482	6.1	30531		28574	5.9
2001	27268	3.0	31447	3.0	29484	3.2
2002	27686	1.5	32013	1.8	29905	1.4
2003	28502	2.9	33229	3.8	31039	3.8
2004			35024	5.4	32830	5.8
2005			39168	11.8	36507	11.2
2006			44064	12.5	40912	12.1
2007					43883	7.3

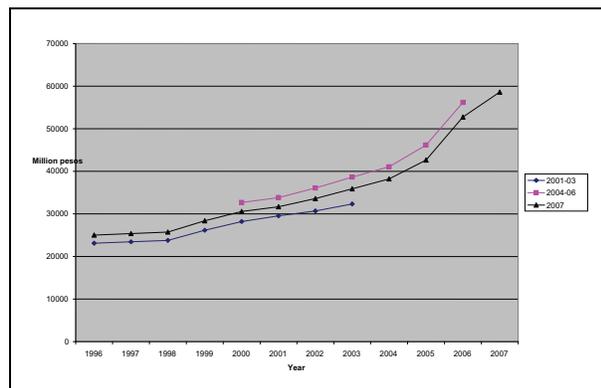
Source: AEC: Oficina Nacional de Estadísticas, *Anuario estadístico de Cuba*, various years.

cial referred to in their December 2008 statement. It is also evident from Figure 5 that the GDP trend line became much steeper beginning in 2004, consistent with the very high growth rates reported by Cuban officials for 2004–2006, although growth flattened out in 2007.

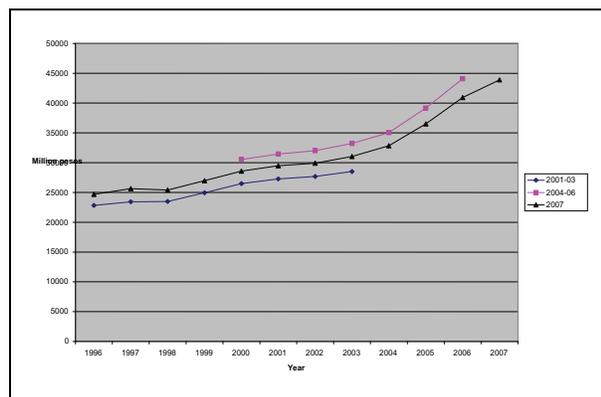
Figure 6, which plots the three absolute GDP series at constant prices, shows very similar patterns to those associated with the corresponding current price statistics in Figure 5. The values of GDP in the series culled from AEC 2004–2006 issues were 15% to 16% higher than for those culled from AEC 2001–2003. The methodological changes introduced in 2007 resulted in 6% to 8% GDP values lower than those culled from

44. Carmelo Mesa-Lago, “¿Cúal fue el ajuste,?” *Encuentro en la Red* (January 23, 2008).

**Figure 5. Absolute GDP at Current Prices from AEC, Three Series**



**Figure 6. Absolute GDP at Constant 1997 Prices from AEC, Three Series**



AEC 2004–2006, and were applied to statistics for earlier years as well. Still in the period 1996–2003, GDP values in the 2007 series were from 8% to 9% higher than in the 2001–2003 series. The trend lines become steeper in 2004, but less so than for the current price data, as the barn busting growth rate of over 20% in 2006 from GDP at current prices becomes a 12%-13% growth rate from GDP at constant prices.

The comparison in the period 2001–2006 of the AEC 2004–2006 series (before the third adjustment) and the AEC 2007 series (after said adjustment) reveals a significant difference between absolute GDP values and their annual growth rates, as the latter are virtually identical both at current and constant 1997 prices

(Table 5). In current prices the average rate for the six years before the adjustment is 9.58% where it's 9.70% after the adjustment, the difference being only 0.12 percentage points *higher* in the latter. In constant prices, averages are 6.38% before the adjustment and 6.23% after it, for a minute 0.05 percentage points *lower* in the 2007 series.

**Table 5. Comparison of Cuba's GDP Growth Rates in Current and Constant 1997 Prices Before and After the Third Adjustment (in percentages)**

	2001	2002	2003	2004	2005	2006	Average
Current Prices							
AEC 2004–2006	3.4	6.7	7.0	6.3	12.4	21.7	9.58
AEC 2007	3.6	6.0	6.9	6.4	11.6	23.7	9.70
Constant Prices							
AEC 2004–2006	3.0	1.8	3.8	5.4	11.8	12.5	6.38
AEC 2007	3.1	1.4	3.8	5.8	11.2	12.1	6.23

The change in growth rates is not consistent in the 2001–2006 period. At current prices, the 2006 growth rate in the 2007 series is 2 percentage points *higher* than in the 2004–2006 series and slightly higher rates are also noted in 2001 and 2004, where the opposite is true in 2002, 2003 and 2005. At constant prices, the 2006 rate is slightly *lower* in the 2007 series vis-à-vis the 2004–2006 series and this is true also in 2002, and 2005, while the opposite occurs in 2001 and 2004, and rates are identical in 2003. There is no reasonable explanation for these inconsistencies.

Finally, it is worth noting that in the statistical tables accompanying its 2008 economic report for the region, ECLAC included Cuba's growth rates from AEC 2007 without any qualification or footnote.<sup>45</sup>

## CONCLUDING REMARKS

From 1961 to the start of the 1990s Cuba's national account statistics were computed on the basis of the MPS methodology and were not comparable with those of most countries in the world. Cuba's decision

45. Comisión Económica para América Latina y el Caribe, *Balance preliminar de las economías de América Latina y el Caribe, 2008* (December 2008), Table A-2, p. 158.

in mid-1990s to convert its national statistical system to the SNA was a welcome development.

Under the Special Period, Cuba's series on GDP growth rates in 1990–2000, at current and constant 1981 prices, exhibit significant disparities in several years that cannot be explained by official inflation rates. Statistical series on absolute GDP values, at current and constant 1981 prices, available for 1991–2000 from ECLAC and the AEC (both based on Cuban sources) are remarkably different: the former were consistently higher each year (ranging from 6% to 12%) than the latter. No explanation has been given for these discrepancies.

Cuba's ONE has published GDP statistics for the period 1990–2007,<sup>46</sup> but with several modifications in calculation methodology that resulted in discontinuities and three unconnected GDP series for different stages:

1. 1996–2003 based on the AEC 2001–2003: GDP data available until 2000 were calculated based on 1981 prices but in 2001 the price base was shifted to 1997 (rebasing), in addition there were measurement changes in the calculation of the contribution of banking, insurance, and tourist services as well as self-employment activities;
2. 2001–2006 based on the AEC 2004–2006: Starting in 2004, free social services were added to the value of GDP, and since 2005 the relative importance of community, social and personal services was modified, and valuation of exports of professional services incorporated; and
3. 1996–2007 based on the AEC 2007: Since 2007 there has been a methodological adaptation of Cuba's GDP purportedly to make it closer to the SNA, including a revision of community, social and personal services.

ONE has released only the barest information with regard to the calculation of those changes and not made available the underlying data that would allow independent observers to verify its calculations.

The shift in the base year from 1981 to 1997 generated an annual average increase of 60% in the value of GDP in 1996–2000, whereas the measurement changes in GDP related to services raised it by an average of 2 percentage points. These anomalies have not been explained.

The systematic “adaptation” (altering) of Cuba's GDP to the SNA system purportedly seeks to make it better reflect Cuban economic realities. The main alterations have been to add to GDP the value of free social services and re-weighting the services sector within the economy. The latter “adaptation” coincided with record-high GDP growth rates, which reached double-digit figures in some years, and raised credibility questions within and outside the island, as they are inconsistent with the overall development of the economy and the standard of living of the population.<sup>47</sup>

Although an in-depth analysis of the calculation methodology and behavior of GDP statistics for the complete period 1996–2007 is not possible due to discontinuities in the available series, the years in which such evaluation of the three series is feasible show the following results:

- GDP values in the first series (AEC 2001–2003) are considerably lower than in the other two series;
- GDP values in the second series (AEC 2004–2006) are considerably higher (15% to 19%) than in the first series;
- GDP values in the third series (AEC 2007) are lower (6% to 7%) than in the second series but still significantly above (7% to 11%) the first series; and
- growth rates in both current and constant prices for the period 2001–2006 between the second and the third series are very similar, their six-year averages are virtually identical, and they show inconsistent changes.

46. GDP growth rate at constant prices for the year 2008 has been reported in ONE, *Panorama Económico y Social 2008* (La Habana, 2009). This statistic is not discussed in this paper, which focuses on the fuller statistics reported in the AEC.

47. Some Cuban analysts acknowledge the divorce between official economic growth statistics and improvement in people's lives. Rafael Hernández, director of the magazine *Temas*, says: “the Cuban people may believe the economy is growing statistically, but not in their households.” Pérez Villanueva (“La economía en Cuba: Balance actual y propuestas necesarias,” La Habana, CEEC, 2008) asserts that GDP growth “is still insufficient to recover the economic levels previous to the crisis.”

ECLAC and some other international organizations<sup>48</sup> questioned the methodology and results of Cuba's "adaptation," although at present it appears that ECLAC

is satisfied that Cuban absolute GDP and growth rates are being calculated in a manner consistent with the SNA.

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48. The United Nations Development Program in its *Human Development Index* has for years used surrogate figures and dubious estimates to compute Cuban GDP in international dollars PPP (Purchasing Power Parity), inserting notes about conversations with Cuban authorities to arrive at reliable figures. See Mesa-Lago and Pérez-López, (2005), *Cuba's Aborted Reform*, Chapter 4.