BRINGING THE CUBAN ECONOMY INTO FOCUS:
Conceptual and Empirical Challenges*

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Two differing views of the economy of contemporary Cuba continue to coexist. One portrays it as dynamic, largely unaffected by inflation, providing full employment for its citizens, diversified, and the unquestioned leader within Latin America in real economic growth in the 1970s and 1980s. The logical conclusion to be drawn from this view is that the Cuban economic model and its implementation in the island have been a success and that other developing countries in Latin America and elsewhere would do well to emulate the Cuban paradigm.

A competing view depicts the Cuban economy as stagnant, inefficient, burdened by repressed inflation and severe underemployment, still heavily dependent on sugar, and reliant on Soviet aid. The logical conclusion of this perspective is that the economic model applied in revolutionary Cuba has not worked and that its transferability to other developing countries is a moot issue.

To bridge the gap between these two views, which are obviously colored by ideology and politics, it may be helpful to consider an analogy drawn from human physiology. Because of the position of human eyes, the right eye sees objects from a slightly different angle than the left does and each sends slightly different messages to the brain. Individual images seen by each of the eyes are flat (two-dimensional). Moreover, objects have somewhat different positions in the images cast on each of the retinas, a difference in position that is termed *disparity*. When putting the images together, the brain is capable of adjusting for disparity and actually uses it to create the sensation of depth (three-dimensional vision). Unlike the individual images perceived by each eye, the single image formed by the brain has thickness and shape, and the brain can therefore judge the object's distance from the body (Marr 1982, 100).[1]

I would argue that the dichotomous views of the Cuban economy

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1. See also *World Book Encyclopedia* (Chicago: World Book, 1985), 6:361–62.

simplified above can be likened to the images perceived by one or the other of the human eyes when working alone. For the last twenty years, despite severe handicaps arising from data limitations and the inability to carry out field research, scholars in the United States and Europe have been analyzing the Cuban economy, thus undertaking a task analogous to that of the brain in human vision: inputting different partial views of the Cuban economy to come up with a focused, in-depth, and richer image of Cuban economic reality.[2] The resulting images differ substantially, depending on the information, assumptions, and methodology used by each scholar (and some wear tinted glasses), but each image adds to overall understanding of the operation and performance of the economy of revolutionary Cuba. It is the difference in these images that has given rise to the "debate" or "controversy" on the economy of contemporary Cuba.[3]

Let me state at the outset that my objective here is neither to revisit the debate nor to attempt to justify the validity of my own analyses nor to try to "score" the debate by determining winners and losers. Rather, my intention is to use selected themes of the debate to discuss some of the conceptual and empirical challenges to serious scholarship on the economy of contemporary Cuba that are largely responsible for the disagreements that have emerged. In particular, this article will examine issues related to Cuban economic growth, the price system, economic relations with the Soviet Union, and the economic development model.

ECONOMIC GROWTH: MEANING AND MEASUREMENT

The quantity and timeliness of Cuban economic statistics (and probably also their quality) have improved substantially since the publication of Carmelo Mesa-Lago's seminal critical analysis in the late 1960s (1969).[4] Cuba's most recent statistical yearbook (for 1987) is an impressive

2. The intellectual leader of this group has been Carmelo Mesa-Lago, an acknowledgement not intended to demean the role of others. Mesa-Lago was the pioneer in analytical studies on the Cuban economy from outside the island. His publications since the late 1960s have addressed virtually all areas of the economy and include several seminal pieces.

3. A controversy arose between Claes Brundenius and Andrew Zimbalist on the one hand and Carmelo Mesa-Lago and me on the other in the pages of *Comparative Economic Studies*. See Brundenius and Zimbalist (1985a), Mesa-Lago and Pérez-López (1985c), Brundenius and Zimbalist (1985b), Mesa-Lago and Pérez-López (1985d), and Brundenius and Zimbalist (1985c). Brundenius and Zimbalist have published a condensed and updated version of their arguments as "Cubanology and Economic Performance," in Zimbalist, ed. (1988). Another example was the debate on Cuban planning between Zimbalist and Sergio Roca in the journal *Cuban Studies*. See Roca (1986), Zimbalist (1987b), Roca (1987), Zimbalist (1988b), and Roca (1988a).

4. For a review of Cuban statistical materials since that time, which shows a trend toward greater availability and timeliness of data, see the occasional notes and reviews of statistical materials by Mesa-Lago in *Cuban Studies/Estudios Cubanos* (current title *Cuban Studies*).

document containing more than six hundred pages of domestic statistics and a fifty-page section on international comparisons (Comité Estatal de Estadísticas 1989).[5] This publication of the Comité Estatal de Estadísticas (CEE), which became available to researchers in 1989, includes time-series data through 1987 for a wide range of economic variables (with some exceptions).[6]

In addition, since 1982 the Banco Nacional de Cuba (BNC) has been publishing an annual report on the economy, *Informe Económico* (also published in English as *Economic Report*), which surveys economic performance and provides some preliminary economic statistics for the applicable year.[7] Aimed primarily at the Western financial community, the *Informe* contains statistics on hard-currency trade, debt, and the balance of payments as well as data on the state budget that are not available in the *Anuario*. The BNC and CEE collaborate on a quarterly publication, the *Reporte Económico Trimestral* (published in English as the *Quarterly Economic Report*),[8] which provides information on hard-currency transactions.

Macroeconomic Statistics

Economic accounts provide an empirical summary description of the economic performance and structure of a nation (or nations) and their changes over time. Synthetic economic indicators that measure the aggregate value of economic activity, like the gross national product (GNP) and the global social product (GSP), are shorthand indicators of the level of economic development of a nation and are often used as the basis for estimating economic growth.

Table 1 reports official Cuban statistics for the period 1962–1987 on the global social product (GSP), the broadest measure of economic activity produced by Cuba (official statistics for 1960–61 are not available). The first column reports GSP at current prices and the second at constant (1981) prices, for the period 1975–1987. A cursory examination of the current-price data suggests that overall the Cuban economy performed extremely well, growing at an average rate of 5.9 percent per year from 1962 to 1987. GSP at current prices grew at an average annual rate of 6.7

5. Other publications of the Comité Estatal de Estadísticas, such as the *Compendio del Anuario Estadístico de Cuba* or *Cuba en Cifras*, generally provide the same information as the *Anuario* but in different formats.

6. The most conspicuous gaps occur in the areas of energy consumption and foreign trade. For example, data are missing for 1987 on imports of oil and oil products and also on re-exports of these products.

7. See Banco Nacional de Cuba, *Economic Report* (or *Informe Económico*), published in Havana, Aug. 1982, and also issues dated Feb. 1985, Mar. 1986, May 1987, June 1988, and May 1989.

8. Banco Nacional de Cuba and Comité Estatal de Estadísticas, *Quarterly Economic Report*. The first issue available to me is dated Dec. 1982 and the most recent, Dec. 1988.

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percent during 1975–1985 and 8.9 percent during 1980–1985. When more recent years are considered (GSP at current prices contracted by –1.6 percent and by –3.6 percent, respectively, in 1986–87), growth rates are still impressive: 5.1 percent per year for 1975–1987 and 5.5 percent for 1980–1987. Growth rates derived from official GSP data at constant 1981 prices (column 3) are slightly lower but still suggest a solid growth performance since 1975.

In view of the above statistics, reasonable observers might wonder why opinions differ on the performance of the economy of revolutionary Cuba. Is it not obvious from the official data that the Cuban economy has grown steadily in the last twenty-five years? Is it not also true that Cuba has outperformed other Latin American economies over the entire period from 1960 to 1987 and particularly in the 1980s, when growth of the Latin American economies did not even keep pace with population growth?[9]

For reasons that will be discussed below, I would argue that the limitations of Cuban macroeconomic data are so severe that they cannot be used to measure reliably the real growth of the economy over the entire revolutionary period or even over relatively short spans within that period.[10] Moreover, macroeconomic statistics produced by revolutionary Cuba cannot be compared with those produced by most developing countries, including its neighbors in Latin America.

Methodological Changes / The data reported in table 1 do not represent a continuous series but several unconnected GSP subseries for 1962–1966, 1967–1969, 1970–1974, and 1975–1987. These subseries have presumably arisen because of changes in methods of calculation.[11] For example, GSP

9. Gross domestic product (GDP) in millions of 1986 dollars for twenty-five Latin American and Caribbean countries grew at an average annual rate of 4.7 percent over the period 1960–1987. For 1980–1987, the average annual growth rate of GDP for these same countries was 1.5 percent. Over the period 1981–1987, the population of the same Latin American and Caribbean countries grew at a rate of 2.3 percent per annum. See Inter-American Development Bank (1988, 534, 540). Latin American growth rates are presented here for illustrative purposes only, without implying that they are comparable with those for Cuba discussed in more detail in this essay.

10. This discussion of Cuban macroeconomic data relies heavily on Mesa-Lago and Pérez-López (1985b); see also Abouchar (1986) and Salazar-Carrillo (1989).

11. For a thoughtful discussion of the importance of time-series data for economic analysis and control, along with an assessment of economic times-series data in Cuba, see Martínez Carrera (1988). He comments, "The comparability of time series data . . . continues to be a serious problem for the current Cuban statistical system. In the last few years, efforts were made to deal with this problem regarding macroeconomic statistics, in an attempt to overcome shortcomings of basic statistics" (p. 75). If I interpret the author correctly, he seems to be saying that Cuban statisticians have attempted to improve comparability of economic time series from the top, by adjusting macroeconomic time series first and leaving comparability of basic (presumably microeconomic) statistics for later. It appears to me that, regardless of the level of effort expended, significant improvements cannot be made in the comparability of macroeconomic time series unless comparability in basic economic time series is also achieved.

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TABLE 1 *Official Cuban Statistics on the Global Social Product, 1962–1987*

Year	Current Prices (millions of pesos)	Growth Rate (%)	Constant Prices of 1981 (millions of pesos)	Growth Rate (%)
1962	6,082[a]	—		
1963	6,013[a]	–1.1		
1964	6,454[a]	7.3		
1965	6,771[a]	4.9		
1966	6,709[a]	–0.9		
1967	7,212	7.5		
1968	7,331	1.7		
1969	7,236	–1.3		
1970	8,356	15.5		
1971	8,936	6.9		
1972	10,349	15.8		
1973	11,910	15.1		
1974	13,424	12.7		
1975	14,063	4.8	16,134	—
1976	14,458	2.8	16,666	3.3
1977	14,773	2.2	17,628	5.8
1978	16,458	3.2	18,919	7.3
1979	16,987	3.2	19,208	1.5
1980	17,606	3.6	19,111	–0.5
1981	22,173	25.9	22,173	16.0
1982	23,119	4.3	23,029	3.9
1983	24,337	5.3	24,149	4.9
1984	26,053	7.1	25,890	7.2
1985	26,957	3.5	27,070	4.6
1986	26,516	–1.6	27,390	1.2
1987	25,536	–3.7	26,350	–3.8
1962–1987[b]		5.9		—
1975–1987[b]		5.1		4.2
1975–1985[b]		6.7		5.3
1980–1985[b]		8.9		7.2
1980–1987[b]		5.5		4.7

Sources: For 1975–1987, *Anuario Estadístico de Cuba 1987* and *Anuario Estadístico de Cuba 1985*; for 1970–1974, *Anuario Estadístico de Cuba 1976* and *Anuario Estadístico de Cuba 1973*; for 1967–1969, *Anuario Estadístico de Cuba 1972*; and for 1962–1966, *Boletín Estadístico de Cuba 1971*.

[a] At constant 1965 prices.
[b] Average annual growth rates.

data for 1962–1966 have been reported only at constant prices of 1965. For other years, data have been reported at current (and, for some time periods, also at constant) prices.

One methodological change that has occurred in generating Cuban macroeconomic data is the way in which output is valued. It is not clear how Cuba valued output from 1962 to 1969. For 1970–1976, however, data on the value of output were calculated on the basis of *circulación completa* (complete circulation), a method of output valuation that is particularly susceptible to double-counting because the value of intermediate consumption is not subtracted from total output. Beginning with the year 1977, valuation was changed to a method called *a salida de empresa* (enterprise exit), one that largely eliminates double-counting. For agriculture, however, valuation has continued to employ the complete circulation method,[12] while construction reportedly uses yet another valuation method known as *a salida de rama* (branch exit). Thus the Cuban statistical sources published to date have not provided long-term series that employ a consistent methodology of valuation.

The extent to which double-counting affects GSP is a function of industrial organization (among other factors): the greater the number of enterprises, the larger the volume of supplier-user relations among enterprises and the larger the potential distortions created by double-counting. In the 1960s, a process of vertical integration of enterprises resulted in a significant reduction in the number of enterprises and probably reduced double-counting in GSP. But in the 1970s, large production units were broken up, with the number of enterprises increasing tenfold (from three hundred to three thousand), potentially inflating GSP (see Mesa-Lago and Pérez-López 1985b, 7). In the late 1970s and early 1980s, the number of state enterprises again declined (from some three thousand to twenty-two hundred in 1984).[13] Moreover, in 1981–1986, sugarcane agricultural activities and sugar mills were integrated into *complejos agroindustriales* under the same management (García Marrero and Morales Pita 1987), which also tended to reduce the potential for double-counting in GSP data.

Changes in valuation methodology can have a significant impact on macroeconomic aggregates and therefore on estimates of economic growth and structural change. To illustrate this point, for 1975 and 1976, the only two years for which official data are available on GSP and its

12. An interesting discussion of perverse signals in economic indicators of the agricultural sector related to the output valuation methodology is given in Morales Rodríguez (1984).

13. Based on statistics in Gilberto Díaz Martínez, "El sistema empresarial de Cuba," *Cuba Socialista*, no. 8 (Sept.–Nov. 1983); and Alexis Codina Jiménez and Gonzalo Rodríguez Mesa, "El papel de la empresa estatal en la economía cubana," paper presented at the International Symposium on the Role of Public Enterprises, sponsored by the Centro de Investigación y Docencia Económica, in Mexico City, 1985, as cited in Moncarz (1989, 61).

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T A B L E 2 Impact of Valuation Method on Cuban Official Macroeconomic Indicators

Sector	1975 (%)	1976 (%)
Global social product	88.1	88.8
Industry	109.4	110.5
Construction	88.9	88.5
Agriculture	118.6	117.9
Fishing	38.7	132.4
Forestry	194.9	203.2
Transportation	99.5	99.7
Communications	100.1	100.0
Commerce	55.1	53.1

Sources: For the complete circulation method, *Anuario Estadístico de Cuba 1976;* for the enterprise exit method, *Anuario Estadístico de Cuba 1980.*

Note: Value for each indicator calculated by the enterprise exit valuation method as a percentage of value for that same indicator under the complete circulation valuation methodology.

components under both complete circulation and enterprise exit valuation methodologies (see table 2), GSP under the enterprise exit methodology was about 88 percent of the level reported using the complete circulation methodology (88.1 percent in 1975, 88.8 percent in 1976).

The impact of the change of valuation method across components of GSP varies considerably. Output of the transportation sector is relatively unaffected by the choice of valuation method. But for industry, agriculture, fishing, and forestry, the value of output is higher (twice as high in forestry) when valued by the enterprise exit method rather than by complete circulation. Conversely, the value of output of the construction and commerce sectors is significantly lower when valued at enterprise exit; for commerce (which includes retail and wholesale trade), the value of output is lower by about half.

Valuation changes also affect estimates of structural change. For example, industry's share of GSP under the complete circulation method was 38.4 percent in 1975 and 39.4 percent in 1976. Under the enterprise exit method, industry's share rises to 47.7 percent and 49.1 percent, respectively, suggesting significant expansion in the industrial sector.

Inflation / The value of output of a given economic unit, an economic sector, or a national economy reflects both the quantity of outputs produced and the prices at which they are transacted. Changes in the value of output may be due to changes in the quantity of outputs, changes in the prices of those outputs, or both. Economic growth is typically associated with changes in real, or constant-price, output. Thus estimating economic growth requires the adjustment (or deflation) of current-price value of output statistics to remove the effect of pure price changes.

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Official Cuban macroeconomic data reflect a mixture of data at current and constant prices. Cuban statistical yearbooks through 1981 generally reported output data at current prices (the exception being the data for 1962–1966). But because internal prices were fixed in the 1960s for some sectors (like agriculture and industry, except for new products), Cuban statisticians and some independent analysts have argued that output reflected primarily economic activity at constant prices (for example, Rodríguez 1988, 18–28; Brundenius 1984, 23). For other sectors such as trade and transportation, however, output has normally reflected activity at current prices.

The Cuban government produces no measures of domestic inflation such as consumer price indexes, wholesale price indexes, or cost of living indexes.[14] Using the concept of monetary surplus (the difference between population income and personal consumption expenditures) as a rough measure of excess demand, Mesa-Lago has posited that strong inflationary pressures (repressed inflation) were present in the late 1960s. In the 1970s, these pressures subsided somewhat as the government implemented several steps to reduce the amount of money in circulation, such as increasing the availability of consumer goods and raising the prices of some nonessential goods (Mesa-Lago 1981, 47–49).

Comparing Cuban official data on GSP and growth rates at current and constant prices, Mesa-Lago has estimated the average open inflation rate for 1963–1981 at 3.7 percent per year (Mesa-Lago 1986, 296). Open inflation in Cuba can also be confirmed in at least three other sources. First, comparing official data on personal consumption at current and constant 1981 prices suggests that between 1975 and 1987, consumer prices rose at an average annual rate of 3 percent; over the period 1982–1987, the annual rate of growth of consumer prices was about 2 percent.[15] Second, a prominent visitor to Cuba reported that an official of the Junta Central de Planificación (JUCEPLAN) told him in May 1985: "[I]nflation, which can not be calculated on the basis of capitalist methods because there is no financial speculation and [which] is controlled by the government so that it does not burden the real value of worker salaries, is around 3 percent per annum."[16] Third, the United Nations International Civil Service Commission periodically computes retail price indexes relating to

14. For a proposal by two Cuban economists for retail (consumer) price indexes based on the ongoing family budget survey (*encuesta del presupuesto familiar*), see Rodríguez Delgado and Riverón Mulet (1985). To my knowledge, the proposal has not been implemented to date.
15. Calculated from data in *Anuario Estadístico de Cuba 1985*, p. 98, and *Anuario Estadístico de Cuba 1987*, p. 101. The same conclusion can be reached from examining implicit deflators for personal consumption in *Anuario Estadístico de Cuba 1987*, p. 169. According to Zimbalist and Brundenius, the consumption data reflected activity in the farmers' free markets until they were eliminated in 1986 (Zimbalist and Brundenius 1989, 37).
16. See Betto's report of a conversation with JUCEPLAN official Alfredo Ham (Betto 1985, 33).

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living expenditures of UN officials. Indexes comparing living costs be-
tween cities are then used to adjust salaries, allowances, and benefits of
some UN employees in order to preserve their equivalent purchasing
power at different duty stations. The indexes of the commission suggest
that over the period from December 1977 through December 1987, the cost
of living in Havana for UN officials rose by 64.6 percent, or 5.1 percent
yearly.[17]

The 1981 Price Reforms / In 1981 the Cuban government significantly
adjusted domestic prices. Wholesale prices underwent major reform in
January, as did retail prices in December. The 1981 price reforms are a
critical factor because of the steep increases in GSP recorded in that year
(25.9 percent at current prices and 16.0 percent at constant prices) and the
influence of this high growth rate on statistics over longer periods.
Several reasons can be cited for doubting the reliability of official GSP
statistics for 1981.

First, when then-president of JUCEPLAN Humberto Pérez was
speaking to the General Assembly in the closing days of 1981, he stated:

Last year, when we submitted the draft Plan for 1981 we mentioned a projected
growth of about four percent on the basis of stable prices. However, . . . that
figure was amended subsequently since at the time when we presented the draft
Plan the estimates for the Plan implemented in 1980 were not completely updated
nor did the levels of activity of the 1981 Plan correspond to the new prices set by
the wholesale price reform that was put into effect precisely on January 1, 1981. A
few months later, when these estimates were duly corrected and updated, we
were able to determine that the Plan we had approved for 1981 should really
represent a growth of approximately eight percent compared to 1980. However, in
practice, the growth obtained ran to 12 percent.[18]

Pérez made no reference to the growth rates for 1981 that were subse-
quently recorded in Cuban official statistics: 16 percent at constant prices
or nearly 26 percent at current prices.

Second, Jorge Domínguez has made the point that "Castro's blis-
tering criticism of Cuba's economic performance at the Third Party Con-
gress suggests it is very unlikely that the economy achieved the officially

17. Because the indexes relate to the consumption of UN officials, whose pattern may differ
from that of the general Cuban population and may include some imported goods, the
indexes cannot be used as general measures of price levels. The "Retail Price Indexes Relating
to Living Expenditures of United Nations Officials" are published in the March and Sep-
tember issues of the UN Statistical Office's *Monthly Bulletin of Statistics*. The methodology of
the indexes is explained in United Nations (1977, 323–24). They are comparisons of the cost of
living in given cities relative to New York City. To estimate inflation in Cuba (Havana), the
cost of living in New York City has been approximated by its official consumer price index.
Dollar to peso conversions rely on the official exchange rate.

18. See "Report to the National Assembly of the Fulfillment of the Plan for the National
Economy for 1981 and on the Draft Plan for 1982, read by Humberto Pérez," *Granma Weekly
Review*, 10 Jan. 1981, p. 4.

reported growth rate" (Domínguez 1989, 91).[19] He therefore posits that real growth in 1981 (at 1980 prices) might have been about 6 percent. He attributes the much higher official growth rates to the failure of the statistical system to make the proper adjustments to current-price data in order to account for price changes introduced in 1981. Along the same line, Andrew Zimbalist and Claes Brundenius have stated, "The official Cuban figure of real industrial growth in 1981, the year of the wholesale price reform, does appear excessive, and it is possible that an incomplete accounting for inflation in that year biased the official figure upward" (Zimbalist and Brundenius 1989, 19).

Finally, at a meeting in Mexico City in December 1987, a prominent Cuban economist urged caution in using official growth-rate data for 1981, acknowledging that the 1981 growth record was in fact "less than it appears."[20]

A comparison of rates of growth for value of output and for physical production for branches within the industrial sector casts further doubt on the official constant-price statistics. Column 1 of table 3 lists official 1981 growth rates of the value of output for all twenty-one branches of the industrial sector. These growth rates were purportedly calculated by comparing current-price value of output in 1981 to value of output in 1980, adjusted to take into account the 1981 price structure. Thus the growth rates should reflect real changes in output.

Column 2 of table 3 reports the number of physical output series (such as thousands of metric tons of raw sugar, number of kerosene stoves, hectoliters of paint, cubic meters of sawn wood) in Cuban official statistics for each of the twenty-one branches of industry. Overall, 216 physical output series are available. Columns 3 and 4 separate the physical output series into two groups, depending on whether the growth in physical output was below or above the branch growth rate reported in column 1. Assuming that changes in physical output are distributed normally around the mean, it would be reasonable to expect that the number of series falling below or above the mean to be roughly equal. This is not the case, however: 145 (67 percent) of the physical output series exhibited lower growth rates than the mean while 71 (33 percent) showed higher growth rates.

Because the contribution of each physical series in table 3 to the value of branch output is not the same and because the output of branches of the industrial sector may include products other than those reported in official statistics, the fact that 67 percent of the physical output series show

19. Castro's central report to the Third Congress of the Cuban Communist Party held in February 1986 is in Castro (1986b).
20. The statement was made by Cuban economist José Luis Rodríguez, as reported in Roca (1988b, 203).

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T A B L E 3 Performance of the Cuban Industrial Sector in 1981

Industrial Branch	Mean Growth Rate (%)ᵃ	Number in Category	Growth less than Mean	Growth greater than Mean
Electricity	16.0	1	1	0
Fuels	3.7	13	11	2
Ferrous mining and metallurgy	16.2	10	8	2
Nonferrous mining and metallurgy	6.2	5	2	3
Nonelectrical machinery	20.1	10	4	6
Electronics	31.3	9	4	5
Metal products	11.9	7	4	3
Chemicals	12.3	40	26	14
Paper and cellulose	9.7	8	4	4
Printing	13.4	5	4	1
Furniture and wood products	23.4	5	4	1
Construction materials	12.1	13	10	3
Glass	–5.8	6	2	4
Textiles	12.3	7	5	2
Apparel	22.2	11	7	4
Leather	31.6	4	4	0
Sugar	16.8	4	3	1
Food products	10.8	27	20	7
Fishing	–3.0	7	5	2
Beverages and tobacco	44.3	19	14	5
Other	21.1	5	3	2
Total		216	145	71

Sources: For gross value of output, *Anuario Estadístico de Cuba 1987*, 117–18. The gross value of output data at enterprise prices was taken from the same work, 125–26. The physical output series came from the *Anuario Estadístico de Cuba 1985*, 237–43.

ᵃGross output at producer prices of 1981. Growth rates from data based on enterprise prices (which exclude turnover taxes) are identical to those reported above, with the exception of the printing branch, for which the rate of growth at enterprise prices is reported as 13.6 percent.

growth rates lower than the mean growth rate for the branch does not invalidate the value of output data. But in many cases, the two sets of data are difficult to reconcile. Several examples can be cited. First, the electricity branch reportedly grew at a real rate of 16 percent in 1981. Yet the only product of the branch reported in Cuban statistics, electricity, increased from 9,990 gigawatt-hours in 1980 to 10,575 gigawatt-hours in 1981, or by 6.9 percent.

Second, the leather products branch reportedly grew at a real rate of 31.6 percent in 1981. Yet all four outputs of this branch reported in official statistics grew at substantially lower rates or even contracted: leather grew at 8.4 percent; leather soles declined by –2.9 percent; cattle

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hides went down by –1.0 percent; and leather footwear increased by 19.3 percent.

Third, the furniture and wood products branch reportedly grew at a real rate of 23.4 percent in 1981. Four of the five products of this branch reported in official statistics grew at substantially lower rates than the mean (sawn wood, 3.3 percent; railroad ties, 0.6 percent; timber, 1.3 percent; and lumber, 5.3 percent). Only one product exceeded the mean rate of growth for the branch (cigar boxes, at 47.8 percent).

To cite one last example, the sugar branch reportedly grew at a real rate of 16.8 percent in 1981. Out of the four series for which output was reported, three grew at a rate lower than the mean branch growth (raw sugar, 16.6 percent; refined sugar, 8.4 percent; final syrups, 2.4 percent) and one at a faster rate (bagasse for industrial purposes, 20.7 percent).

International Comparability

Two systems of national economic accounting are used today: the System of National Accounts (SNA), used by market economies (developed countries and most developing countries), and the System of Balances of the National Economy, also known as the Material Product System (MPS), used by countries with centrally planned economies. The differences between these two systems go beyond what sectors of the economy are included or excluded to extend to the very concept of what is being measured.[21]

In the system of national accounts, economic product is a comprehensive concept, associated with the production of all final goods and services. The material product system, however, which is based on the Marxist definition of value, measures total output of goods and services produced by "material" sectors of an economy (excluding the output of "nonmaterial" sectors, such as education, housing, health care, and defense). Because the system of national accounts refers to the value of final goods and services, it essentially aggregates value-added at each stage in the systems of production and distribution. But the material product system measures total output of goods and services, including the value of intermediate products, and is therefore subject to double-counting.[22] The broadest measure of economic activity under the system of national accounts is gross national product (GNP) or gross domestic product

21. For a useful comparison of the system of national accounts and the material product system, see U.S. Central Intelligence Agency (1978); see also Jansen (1973) and Ivanov (1987). For a Cuban view of conceptual and empirical differences between the two accounting systems, see Ibáñez Morales (1988).

22. Some MPS aggregates, such as the gross material product (GMP) and the net material product (NMP), are not affected by double-counting because the value of intermediate goods has purportedly been extracted out.

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(GDP), while the corresponding measure for the material product system is global social product (GSP).

Prerevolutionary Cuba's macroeconomic statistics were based on the system of national accounts. In 1962, however, Cuba shifted to the material product system. Through 1960, then, the broadest measures of Cuban economic activity that are available for the Cuban economy are GNP or GDP; after 1962, the available measure is GSP. Official macroeconomic statistics for 1960 and 1961 have not been published under either economic accounting system.

Official SNA Statistics / Since 1981 Cuban statisticians have been working on producing estimates of Cuban economic activity on the basis of the system of national accounts (Ibáñez Morales 1988, 65). But to date, Cuba has released an estimate of overall economic activity based on the system of national accounts for only one year, 1974 (Comité Estatal de Estadísticas 1982). According to Cuban statisticians, Cuban gross domestic product in 1974 was 9,239 million pesos, roughly 74 percent of estimated GSP of 12,479 million pesos.[23] Intermediate consumption totaled 5,199 million pesos (42 percent of GSP in that year) and nonmaterial services 1,236 million pesos (13.3 percent of GDP).

SNA Estimates / Absent official Cuban official statistics, analysts have attempted to estimate Cuban GDP using the method called "scaling up to GDP." It estimates GDP by adding estimates of the value of nonmaterial services to the gross material product (GMP) or the net material product (NMP), two measures of the material product system that are often available for centrally planned economies (GMP equals GSP minus intermediate consumption, and NMP equals GMP minus depreciation). Application of the "scaling-up" method to Cuba, however, is seriously hampered by two factors: the lack of official, consistent time-series data on GMP or NMP or both; and the total absence of official time-series data on the value of nonmaterial services (except for the official estimate for 1974 already mentioned) or the value of output of individual nonmaterial services that would permit estimation of nonmaterial services overall.

Mesa-Lago and I experimented with the scaling-up method by using budgeted government expenditures for social, administrative, and defense services as a proxy for nonmaterial services (Mesa-Lago and

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23. The GSP estimate for 1974 of 12,479 million pesos differs from that of 13,424 in table 1 because the former was adjusted by Cuban statisticians to reflect enterprise exit valuation. The GSP estimate in table 1 is based on complete circulation valuation. Note that the shift in valuation method gives rise to a difference of 8 percent in the value of GSP.

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Pérez-López 1985b, 32–34).[24] This experiment was conducted on four years, 1963, 1964, 1965, and 1978, the only years for which GMP data were available at the time of our study. Nonmaterial services defined in this manner represented from 21 to 30 percent of GDP for those years. This share of nonmaterial services in GDP appeared more reasonable to us than the 13.3 percent yielded by the (official) Cuban estimate for 1974, considering that the share of nonmaterial services in GDP in 1963–1965 and 1978 for Latin American countries ranged from 23 to 24 percent and for Caribbean countries, from 24 to 25 percent. The lack of data, however, precluded evaluation of the proxy relationship.

Relying on the value of wages in the nonmaterial sector and estimates for depreciation and profits, Zimbalist and Brundenius estimated that in 1981, nonmaterial services accounted for 26.5 percent of GDP. These analysts regard their estimates of the magnitude of Cuba's services sector (including so-called material and nonmaterial activities) as "the most reliable" to date, but they also observe that "our estimate for nonmaterial services is, if anything, too low" (Zimbalist and Brundenius 1989, 43).[25]

THE PRICE SYSTEM: IMPACT ON ECONOMIC ACCOUNTS

Many of the problems that afflict Cuban value-based macroeconomic statistics are associated with the price system. In centrally planned economies, prices—including the exchange rate—are set administratively and do not reflect relative scarcities and costs of production of goods and services.[26] Most prices are set by the planning hierarchy and remain fixed for long periods of time. Fixed wholesale prices facilitate plan construction and monitoring of plan implementation, while fixed consumer prices avoid open inflation. But because prices reflect planners' preferences rather than those of consumers, macroeconomic aggregates based on such prices do not measure population welfare.

Official growth rates of centrally planned economies are unreliable for two reasons: they are calculated on the basis of distorted prices, and

24. Five budget lines for specific expenditures were aggregated to obtain the proxy for the value of nonmaterial services: housing and community services; education and public health services; social security, welfare, and cultural and scientific services; public administration; and defense and internal order.

25. Interestingly, replicating the unsophisticated "scaling-up" procedure that Mesa-Lago and I employed for 1981 yields an estimate of nonmaterial services accounting for 31 percent of GDP in that year. We used data on national income created (equivalent to GMP) from *Anuario Estadístico de Cuba 1987*, p. 101, and budget data from the Asamblea Nacional del Poder Popular, "Ley No. 32: del presupuesto del Estado para el año 1981," mimeo (Dec. 1980), 2–3.

26. The discussion of prices and growth rates in centrally planned economies draws heavily on Marer (1985), especially chaps. 1, 4, and 5.

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methods of calculation tend to bias them upward. Gross value of output at current prices is typically overstated because enterprise managers and officials at all levels are under intense pressure to maximize production and meet—or exceed—quantitative targets. Moreover, price indexes used to deflate gross value of output figures tend to be downward-biased.[27] As a result, constant-price growth rates are upward-biased.

Price Setting in Cuba

The fact that prices are set administratively in contemporary Cuba is confirmed by Zimbalist's description of the price-setting process:

The Comité Estatal de Precios (State Price Committee) is in charge of fixing prices for Cuba's one million plus products. . . . The committee is divided into groups that deal with different types of products and other functions of the committee. One group in charge of price setting for most nonperishable consumer goods has fourteen employees. It is responsible for over 250,000 individual products, each having at least two prices—one wholesale and one retail. Each year the group will consider adjusting approximately 15,000 prices as cost conditions and inventory levels change.
    The actual setting of prices takes place more or less as follows. The enterprises producing a particular product (sometimes disaggregated to include style detail, sometimes at the level of generic product, e.g., cotton shirt, adult male) send a price proposal along with information on production costs to the State Price Committee. The relevant group within the committee analyzes the cost data it receives from each of the producers, and if it finds no irregularities, proceeds to take an average of the estimated costs of production for all of the enterprises in the branch. To this estimate of average cost of production in the branch is added a percent markup for profit. . . .
    There is a State Committee on Standards that . . . is in charge of classifying product quality into three grades. For products in the top grade (quality of international competitiveness) planned profits are allowed to rise by 30 to 50 percent; this increase is effected by a price increase of a couple of percentage points. The second grade is entitled to a profit increase from 10 to 30 percent, implying yet a different price increase. The third grade retains the base price. Further, there is always the possibility of a price increase for new product designs and styles, as an incentive to enterprises that innovate. All these price modifications are the responsibility of the State Price Committee. (Zimbalist 1988c, 38–40; also in Zimbalist and Brundenius 1989, 14–16)

27. The downward bias in price deflators comes about primarily because of the treatment of "new" products. "New" products (often slightly redesigned variants of goods already being produced) are generally introduced into enterprise accounts at high prices. Because there was no previous production of the product, the introduction price becomes the "constant" price and enterprise output at constant prices is thus higher than it would have been had the enterprise continued to devote resources to the production of "old" products. Hence the downward bias in price deflators for "new" products. For examples, see Gerschenkron (1947) and Cohn (1972, 130–33).

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Independent Growth Estimates in Domestic Currency

Western economists attempting to estimate real economic growth in the Soviet Union and other centrally planned economies have made extensive use of the "bottom-up" approach pioneered by Abram Bergson (1950, 1961).[28] This method relies on nonmonetary (physical) measures of activity in a large number of categories, which are then aggregated using factor-cost prices and value added. Although bottom-up estimates of economic growth of centrally planned economies are generally preferred by Western economists because they tend to minimize the distortions and inflationary biases associated with data on gross value (Gershenkron 1947, 223, 226; Baran 1947, 227–28), the approach has certain limitations. For example, it has been argued that this approach tends to underestimate real economic growth because physical output measures fail to capture the impact of quality improvements and also because new products are underrepresented in official statistics and therefore in the product samples used (Boretsky 1987).

Several analysts have used the bottom-up approach to estimate real economic growth in contemporary Cuba (Pérez-López 1986b, 1987b; Zimbalist and Brundenius 1989).[29] Table 4 presents Cuban official data on the real value of industrial output and bottom-up estimates from Zimbalist and Brundenius and my work. To facilitate the comparison, all three series have been converted to index numbers, with 1975 equaling 100. Official data on value of industrial output at constant prices are not available for years before 1975.

Official statistics on the value of real industrial output suggest that from 1975 to 1985, the Cuban industrial sector grew at an average annual rate of 5.6 percent. Zimbalist and Brundenius have estimated real growth at 4.9 percent per year over the same period, using the bottom-up method. For the period from 1975 to 1982, a time span for which all three series are available, the average annual growth rates are 5.3 percent for the official data, 1.5 percent for my estimates, and 5.1 percent for the Zimbalist-Brundenius estimates. For both time periods, the bottom-up estimates suggest lower growth rates than those obtained from the official data. For the period 1975–1981, however, the Zimbalist-Brundenius estimate (6.2

28. A number of other studies on the Soviet Union using this approach are cited in U.S. Congress, Joint Economic Committee (1982). On application of the methodology to other economies, see Chang (1969), Lee and Montias (1967), and Staller (1962). Thornton (1983) reviews conceptual and empirical issues associated with the study of Soviet national accounts.

29. Zimbalist's estimates of Cuban real industrial output are given in Zimbalist (1987a) and reproduced in Zimbalist, ed. (1987). Brundenius used the "bottom-up" approach for selected sectors (mainly consumer goods sectors) in his estimates of Cuban real economic growth reported in Brundenius (1984), chap. 2. For estimates of industrial growth in prerevolutionary Cuba using the bottom-up method, see Pérez-López (1977), chap. 3.

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TABLE 4   Measures of Growth of Real Industrial Output

Year	Official[a]	"Bottom-Up" Estimates	
		Pérez-López[b]	Zimbalist and Brundenius[c]
1965		74.1	53.4
1966		76.9	54.9
1967		84.3	63.1
1968		83.3	60.8
1969		84.3	59.5
1970		75.9	67.1
1971		76.9	71.7
1972		81.5	73.3
1973		88.9	84.1
1974		92.6	90.0
1975	100.0	100.0	100.0
1976	101.3	99.1	99.4
1977	104.4	100.0	107.9
1978	113.8	106.5	121.0
1979	116.9	107.4	129.0
1980	120.6	104.6	128.3
1981	138.4	111.1	143.1
1982	143.6	111.1	141.5
1983	150.5		147.8
1984	162.1		155.4
1985	172.3		161.8

Sources: For official measures, *Anuario Estadístico de Cuba 1987*, 125; for Pérez-Lopez estimates, Pérez-López (1987, 111); for Zimbalist-Brundenius estimates, Zimbalist and Brundenius (1989, 38, 40).

Note: For purposes of the calculations in this table, 1975 equals 100.
[a] At enterprise prices, according to constant 1981 prices.
[b] Foreign proxy prices of around 1973; value added weights for 1974.
[c] Cuban prices of 1981; value added weights for 1981.

percent) actually exceeds the official average annual growth rates (5.6 percent).

The two bottom-up estimates of Cuban industrial output yield substantially different industrial growth patterns, with the Zimbalist-Brundenius estimates suggesting much faster real growth than mine.[30]

30. Brundenius and Zimbalist have criticized my measures on a number of counts, including the use of proxy prices (i.e., relative prices in another country), the small sample size in certain industrial sectors, and alleged miscellaneous conceptual and computational errors (see Brundenius and Zimbalist 1988). Underlying these criticisms is their view that the measures were deliberately designed to understate Cuban industrial growth. These points cannot be covered in detail here, but a few comments are in order. Regarding the use of proxy prices, Zimbalist concluded that "the use of Cuban rather than Guatemalan prices has virtually no impact" on estimated growth rates (1987a, 91). Moreover, Zimbalist and Brundenius

The urge to choose which of the two sets of measures is the "correct" one must be rejected.[31] Simply stated, the two measures are not comparable: although each is based on what are purportedly the same physical output data, the relative prices and the implied industrial structure are different (in conceptual terms as well as regarding the year used as a base).[32]

Having said as much, it is worth highlighting two differences in the series. First, regarding the run of the series prior to 1975, the main divergence concerns the length and severity of the decline in industrial output that occurred around 1970, the year when Cuba concentrated on producing a ten-million-ton sugar crop and neglected other sectors of the economy. In my series, industrial output begins to decline in 1968, reaches a trough in 1970 (when industrial output fell below the 1967 total by almost 10 percent), and does not recover until 1972. The Zimbalist-Brundenius series shows a much smaller decline, concentrated only in 1968–69. Second, for the period 1975–1982, the main divergences between the two series occur in 1977 and 1981. For 1977, my series shows output growing in real terms at about 1 percent, while the Zimbalist-Brundenius series shows growth of 8.6 percent (it is interesting to note that for 1977, the official Cuban series shows a much more modest growth rate of 3.1 percent). For 1981, a year whose anomalous growth rates have already been discussed, my index shows real growth of 6.2 percent, while the Zimbalist-Brundenius estimates suggest growth of 11.5 percent and the official data posits 14.8 percent.

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report using a combination of Cuban and Chilean prices to calculate the measures of industrial growth reported in table 4, despite their earlier criticism of proxy prices because of differences between Cuba and proxy countries in economic structure, resource endowment, foreign trade regime, and so on (see Zimbalist and Brundenius 1989, 26–27). The criticism regarding the limited product sample is well taken. Indeed, the relatively small number of products for which Cuba publishes physical output data and the unavailability of price data for many of these products are limitations that I acknowledged. Zimbalist has addressed this problem in his estimates by relying on unpublished Cuban price data, made available to him by officials of Cuban statistical agencies. But the literature on the bottom-up method (such as Bergson 1961, chap. 8; and Hodgman 1950) makes it clear that irrational prices (like prevailing prices in Cuba) are not suitable for valuing output to construct growth rate estimates. Thus in solving the problem of small sample size, Zimbalist introduces into his indexes another conceptual problem. The allegations regarding conceptual and computational errors have largely been addressed in Mesa-Lago and Pérez-López (1985c, 1985d).

31. For example, commenting on two alternative estimates of Soviet industrial growth constructed by Western scholars, Maurice Dobb observed: "A valuation in 1926–27 ruble prices yields one set of weights, and valuation in the prices of another country or date yields another set, with correspondingly different totals in the result. But there is no ground upon which the one can be regarded as more 'true' than the other" (Dobb 1948, 35).

32. In an important contribution, Zimbalist and Brundenius explored the sources of differentials in growth estimates and concluded that most of the differences were related to choice of the base year (1989, 33–34).

Estimates in Dollars

To be able to compare Cuban economic statistics with those of other countries, they must be converted to a common currency. Most frequently, the common currency used for international comparisons is the U.S. dollar.

Since 1961, when the link with the U.S. dollar was severed, the Cuban peso has not been freely exchanged in international markets. From 1914 to 1971, the Cuban peso was exchanged at par with the dollar. When the U.S. dollar was allowed to float in 1971, the value of the Cuban peso appreciated vis-à-vis the dollar. The Banco Nacional de Cuba publishes a set of exchange rates for the peso in relation to the U.S. dollar and other Western currencies, but it is widely accepted that these exchange rates overstate the purchasing power of the peso. Exchange rates based on comparisons of purchasing power parity are not available for Cuba.[33]

A methodology for estimating levels of gross domestic product per capita that obviates the need for estimating this ratio in domestic currency and converting to another currency (like dollars) is the approach based on physical indicators. The basis for this approach is the empirically observable relationship between levels of physical (nonmonetary) indicators of consumption or production and overall levels of output, consumption, or income, between countries as well as over time.

Mesa-Lago and I experimented with the physical indicators method and estimated Cuban GDP per capita in dollars for 1965, 1970, 1975, and 1977 (Mesa-Lago and Pérez-López 1985a). The estimates were derived from the calculated statistical relationship between GDP per capita in dollars and levels of consumption or production for twenty-four physical indicators in twenty-eight reference countries for each of the four years. The dollar estimates of GDP per capita and implied growth rates obtained are shown in table 5.

Generally, the growth rates based on physical indicators suggest more sluggish economic growth in Cuba than those obtained from official (GSP) data. In evaluating the tenability of the estimates based on physical indicators, Mesa-Lago and I found the very rapid economic expansion in 1975–1977 to be anomalous, a growth spurt unsupported by official data. We therefore questioned the applicability of this method (developed for estimating GDP per capita for industrialized economies, which are not affected by wide year-to-year economic swings associated with fluctua-

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33. Exchange rates based on purchasing-power parity are derived from detailed price and expenditure comparisons across countries. The most important source of these kinds of exchange rates is the UN's International Comparisons Project (ICP). For examples, see Kravis, Heston, and Summers (1982). Cuba has not been one of the countries selected for inclusion in the several phases of the ICP.

TABLE 5 *Estimates of Cuban Gross Domestic Product per Capita Based on Physical Indicators, 1965–1977, in Dollars*

Year	Current Prices	Constant Prices (1965)
1965	480	480
1970	638	519
1975	1128	667
1977	1355	721

Note: The following annual average growth rates were also calculated: for 1965–1970, 5.9 percent in current prices and 1.6 in constant (1965) prices; for 1970–1975, 12.1 percent in current prices and 5.1 in constant prices; and for 1975–1977, 9.6 percent in current prices and 4.0 in constant prices.

tions in primary commodity prices) to a monoculture type of economy like that of Cuba.

More recently, physical indicators estimates of Cuban GDP per capita in dollars in 1980 have been made by Gitanjali Joglekar and Zimbalist (1989), using an approach much like the one that Mesa-Lago and I employed. They estimate Cuban GDP per capita in 1980 at 2,325 or 2,691 dollars. Comparing these figures with their estimate of Cuban GDP per capita in 1958, Joglekar and Zimbalist posit an implicit economic growth rate of 3.7 percent or 4.4 percent per year, lower than the 5.1 percent annual rate of growth of the gross material product obtained from official data (Joglekar and Zimbalist 1989, 112).[34]

ECONOMIC RELATIONS WITH THE SOVIET UNION

Cuba's international economic relations are dominated by the Soviet Union. Since 1960, the Soviet Union has been the destination for the majority of Cuba's exports and the source of the bulk of Cuba's imports (including virtually all imported energy products), bilateral credits, grants and other forms of economic assistance, and technical and scientific aid. Few doubt that revolutionary Cuba's economic reliance on the Soviet Union is quantitatively as high, if not higher, than its reliance on the

34. The estimate for 1980 is not comparable with the physical indicators estimates for 1965, 1970, 1975, and 1977 that Mesa-Lago and I calculated because Joglekar and Zimbalist made several changes in the methodology we used. The main difference (but not the only one) is the set of physical indicators used. Joglekar and Zimbalist dropped two indicators from our list (domestic mail traffic and rooms per capita) because of lack of data and added seven others (splitting one of the indicators in the earlier study in two). Four out of the seven independent variables added (percentage of the labor force in industry, school enrollment in secondary level, percentage of the labor force in services, and population per nurse) yield GDP per capita estimates that exceed the mean estimate, while three others (radios per thousand population, commercial vehicles in use per thousand population, and population per dentist) fall below the mean. The arithmetic mean of estimates from the seven added variables is 2,503 dollars.

United States prior to 1960 (see Packenham 1986).[35] Some analysts suggest, however, that the Cuban economic relationship with the Soviet Union is qualitatively different from the former one with the United States in that neither the Soviet Union nor Soviet citizens actually own Cuban resources (through direct investment).[36]

Central to the economic relationship between Cuba and the Soviet Union is sugar trade. Since 1961, the Soviet Union has been Cuba's most important market for sugar exports. Between 1982 and 1987, for example, the Soviet Union bought 55 percent of Cuba's physical exports of sugar, while sugar accounted for 82.4 percent of the value of total Cuban exports to the USSR.[37]

In addition to purchasing large quantities of Cuban sugar, in the mid-1960s the Soviet Union began to pay preferential or concessional prices (exceeding world-market prices) for Cuban sugar deliveries. While preferential prices are common in international sugar trade, the unprecedentedly high margins of preference granted by the Soviet Union to Cuban sugar constitute a substantial transfer of resources from the Soviet Union to Cuba. In 1986, for example, the contract price for Cuban sugar sales to the Soviet Union was reported to be about 51 cents per pound, compared with a world-market price of about 6 cents per pound; for 1987, the corresponding figures were less than 7 cents per pound on the world market and about 42 cents per pound for sugar sales to the Soviet Union (ECLAC 1988, 18).[38] The sugar subsidies paid by the Soviet Union have distorted Cuban investment priorities and retarded economic diversification efforts. On a different level, sugar subsidies have affected trade statistics and masked longer-term changes in the export basket.

Sugar Price Subsidies[39]

The Soviet Union provided implicit trade subsidies when it exported commodities (such as oil) to its allies in the Council for Mutual

35. For example, Zimbalist comments, "In a quantitative sense, Cuba is certainly as dependent on the Soviet Union in the 1980s as it was on the United States in the 1950s" (1988a, 23). See also Roca (1988c).

36. For example, José Luis Rodríguez observes, "Really, the proposition that Cuba's current economic relations with the Soviet Union are similar to the ones it had with the United States before the revolution is untenable. How to compare an exploitative relationship, based on the plunder of the resources of the nation and on the deformation of its economic structure, with relations based on fraternal cooperation that promote an authentic development process? Economic relations with the Soviet Union have contributed importantly to the creation of the economic conditions required for Cuba to successfully implement its economic and social development program" (Rodríguez 1988, 48). See also LeoGrande (1979) and Zimbalist (1988a).

37. Calculated from the *Anuario Estadístico de Cuba 1987*, 423, 470–71.

38. The world-market price was taken from *International Financial Statistics*. Presumably, the conversion from Cuban currency to dollars has been effected by using official exchange rates. In the following discussion, sugar prices in pesos or rubles have been converted to dollars at official exchange rates.

39. This section draws heavily on Pérez-López (1988a).

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Economic Assistance (CMEA) at prices below world-market prices and when it imported commodities (like East German or Czechoslovakian machinery or Cuban sugar and nickel) from these same countries at prices exceeding those prevailing in world markets. In the 1980s, an empirically based literature emerged that attempted to explain and measure this phenomenon of implicit trade subsidies in Soviet trade with its Eastern European allies. To explain why the Soviet Union engaged in trade at terms that seemed unfavorable, Michael Marrese and Jan Vanous coined the term *unconventional gains from trade* to refer to military, political, ideological, and economic nonmarket benefits of bilateral agreements that are secured through preferential treatment in trade (Marrese and Vanous 1983a, 1983b).

The Subsidy Issue / Not all analysts accept the proposition that the Soviet Union's purchase of Cuban sugar at above-market prices constitutes an implicit trade subsidy. For example, Cuban economists dismiss this argument, countering that the favorable treatment of developing countries within the CMEA merely demonstrates the principles of internationalist socialism and the socialist division of labor at work (Torres Pérez and Carballosa Pérez 1985, 209–10). Along the same line, Cuban economists argue that Cuba's preferential prices from the Soviet Union reflect the type of arrangement—"just" commodity export prices, linked to the price of imported products—that developing countries have been demanding as part of the New International Economic Order (NIEO) (Rodríguez 1985, 91; 1986, 14; Martínez Salsamendi 1984, 142).

President Fidel Castro addressed the issue of preferential pricing of Cuban sugar by the Soviet Union in an interview with Italian journalist Gianni Mina in June 1987. When asked to explain the importance to the Cuban economy of the reported million-dollar-a-day sugar price transfer received from the Soviet Union, Castro responded:

Not a million. The United States calculates the difference between the price in the marginal world market—not the price in Europe or the price the United States pays for sugar imports—and the price the Soviet Union and socialist countries pay to us for sugar and calls that difference a subsidy. That is, the fact that we have been able to establish the kind of just and fair trading relations that should exist between developing and developed countries, something that we propose for all developing countries in their relations with the developed capitalist world—an objective that is part of the principles of the New International Economic Order that we have achieved with the socialist countries—is used to make erroneous, arbitrary, and manipulated calculations. Sugar is generally sold at prices much higher than the marginal prices of the world market, where prices are depressed because of dumping by the European Community and protectionist measures by the United States. They make this kind of calculations and then talk of subsidies. (Mina 1988, 149)[40]

    40. President Castro's point is well taken that different margins of sugar price subsidy can

If the price the Soviet Union has paid for Cuban sugar were actually a reflection of "just" commodity prices, pursuant to the NIEO, it would be reasonable to expect that the Soviet Union would have treated other developing countries in the same fashion. This has not been the case, however. In 1984, for instance, Soviet official trade statistics show that the price paid for Cuban sugar was nearly seven times that paid to the developing nations of Brazil and the Philippines; in 1985 the Soviet Union purchased Cuban sugar at a price eleven times as high as that paid to Brazil (Pérez-López 1988b, 135). The point has also been made that the steep prices the Soviet Union pays for Cuban sugar have created friction between Cuba and other sugar exporters in the developing world who are not able to ship their product to the Soviet Union on such advantageous terms (MacDonald and Demetrius 1986, 43).

Other authors argue that the high prices paid by the Soviet Union for Cuban sugar represents "tied aid," in the form of restricted ruble credits that the Soviet Union automatically extends to Cuba to cover bilateral trade imbalances (Zimbalist 1982, 139–43; Zimbalist and Eckstein 1987, 17; Turits 1987, 173–74). According to these authors, Cuba "pays" for the high prices received for its sugar through prices exceeding world-market prices for goods imported from the Soviet Union with the rubles received for sugar exports and other hidden costs.

Many disadvantages certainly arise for Cuba from the nature of its trade relations with the Soviet Union, but they do not invalidate the existence of the sugar subsidy. A number of disadvantages associated with trading with the Soviet Union have been discussed in the literature: Cuba has very little bargaining power in determining the mix of imported products that it receives from the Soviet Union; Cuba may pay higher prices for imports from the Soviet Union; Soviet goods and services shipped to Cuba are often deficient in quality and not sellable in international markets; shipments of Soviet goods often fail to meet delivery schedules, thereby disrupting Cuban economic activity; and finally, improper loading of ships in the Soviet Union translates into longer unloading time and higher costs in Cuban ports.[41]

Measuring the Subsidy / Calculating the subsidy Cuba receives from sugar sales to the Soviet Union hinges on the difference between the price the Soviet Union paid for Cuban sugar and the price Cuban sugar could have commanded in alternative markets (the opportunity price). While consen-

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be estimated on the basis of assumptions regarding the alternative price at which Cuba could sell its sugar. But as will be shown, the Soviet sugar subsidy in recent years has far exceeded the million-dollar-per-day mark, regardless of which alternative price measure is used.

41. For elaboration of the disadvantages for Cuba in trade with the Soviet Union, see Castro (1979), Mesa-Lago and Gil (1989), Gouré and Winkle (1972), Domínguez (1978), Zimbalist (1982), and Zimbalist (1988a).

sus exists among researchers about the price paid by the Soviet Union (either contract prices or average unit values), no consensus has emerged as to which of several opportunity prices should be used.

Depending on which opportunity price is selected, subsidy estimates can vary substantially (see table 6). When the world-market price is used, the implicit assumption is that this price is the standard against which the opportunity cost incurred by the Soviet Union in purchasing Cuban sugar (rather than sugar available in the world market) should be measured. This method has been employed extensively to make subsidy estimates (U.S. Central Intelligence Agency 1975, 1976, 1981, 1984). It yields huge subsidy estimates, particularly for time periods (like the 1980s) when world-market sugar prices were depressed. In 1987, for example, the Soviet sugar price subsidy estimated on the basis of the world-market price totaled 2.7 billion dollars, down from about 3.7 or 3.8 billion in 1985–86.

Some analysts have argued that sugar subsidy estimates based on the world-market price tend to overstate the size of the subsidy (Radell 1983, 366–67; Zimbalist 1982, 141; Turits 1987, 178; Zimbalist and Eckstein, 1987, 17). In their view, a more meaningful comparison emerges from using another preferential price, such as the U.S. import price (import unit value), the U.S. preferential price, or the preferential price at which the European Economic Community (EEC) purchases sugar from African, Caribbean, and Pacific nations. Generally speaking, subsidy estimates using a preferential price as the opportunity price are lower than those obtained by using world-market prices. In 1987 the estimated Soviet sugar subsidy came to 3.5 billion dollars when using the U.S. import unit value and 1.7 billion when using either the U.S. preferential price or the EEC preferential price.

According to another analyst, a more realistic barometer of prices at which Cuba could have disposed of sugar not sold to the Soviet Union is the price at which Cuba actually sold sugar to market economies (Japan, Canada, and Spain) (Domínguez 1989, app. B, 290–91). Over certain periods, Cuba had long-term contracts with these market economies that offered a higher price than the world-market price. This practice, however, seems to have been severely restricted in the 1980s, with market economies preferring to purchase Cuban sugar at or near world-market prices. Subsidy estimates using the average price (unit value) at which Cuba sold sugar to market economies tend to fall between the subsidies calculated using the world-market price and those obtained using preferential prices, but close to the former. In 1987 the Soviet subsidy calculated on the basis of the average price Cuba received from sugar sales to market economies was 2.8 billion dollars.

Yet another way in which the Soviet sugar subsidy paid to Cuba can be inferred is by focusing on the opportunity cost incurred by the Soviet

TABLE 6   Estimates of Soviet Sugar Price Subsidies Based on Various Comparisons (in Millions of Dollars)

Year	World-Market Price	U.S. Import Unit Value	Preferential Prices		Cuban Exports to Market Economies		Soviet Import Unit Value Differentials
			U.S.	EEC	Unit Value	Construction Price	
1960	−1	−77					
1961	77	−97	−161	−111			
1962	54	−68	−110	−71			
1963	−49	−12	−44	8			
1964	15	−15	−34	15			
1965	211	11	−35	16			
1966	169	11	−35	7			
1967	218	−9	−64	14			
1968	164	−15	−57	41			
1969	77	−17	−49	30			
1970	150	−61	−134	70			
1971	48	−34	−84	33	43	43	
1972	−23	−44	−72	−16	−10	−19	7
1973	76	130	63	196	117	116	98
1974	−463	9	−429	391	15	14	0
1975	420	294	557	324	−229	−11	−1,689
1976	1,076	1,024	1,181	1,080	693	865	1,003
1977	1,662	1,596	2,066	1,944	1,356	1,377	1,707
1978	2,457	2,458	2,330	2,228	2,477	2,430	2,430
1979	2,305	2,376	2,409	2,093	2,378	2,249	2,036
1980	1,133	1,606	1,042	1,524	1,411	1,146	1,862
1981	1,289	1,131	1,086	1,143	1,343	1,506	632
1982	2,501	2,088	1,862	2,037	2,483	2,518	2,319
1983	2,739	2,347	1,751	2,078	2,834		2,712
1984	3,162	2,594	1,791	2,250	3,171		3,552
1985	3,582	2,938	2,016	2,380	3,616		3,649
1986	3,679	3,135	2,627	2,835	3,615		3,875
1987	2,718	3,503	1,709	1,742	2,833		4,201
1960–1987	29,446	26,802	21,182[a]	24,281[a]			
1975–1987	28,723	27,090	22,427	23,658	27,981		28,289

Source: Pérez-López (1988b, 144), updated by the author.

[a]Total for 1961–1987.

Union in purchasing sugar from Cuba rather than from other nations. Because the Soviet Union appears to purchase sugar from developing countries at or near world-market prices, the subsidy estimates that use the average price (unit value) of Soviet sugar imports from developing countries as the alternative price approximate those obtained when world-market prices are used. The subsidy estimate for 1987 using this approach was 4.2 billion dollars.

It should be noted that the comparisons of sugar prices in different markets that underlie the foregoing subsidy estimates require converting price (or unit value) quotes to a common currency, in this case U.S. dollars. These currency conversions have been made using the official peso or ruble exchange rate. To the extent that the official peso and ruble exchange rates vis-à-vis the U.S. dollar are overvalued, subsidy levels may be overestimated.

As can be seen in table 6, the estimated levels of Soviet subsidization are highest when the world-market price is used as the opportunity price and lowest when preferential prices in either the United States or the EEC are used. But in any scenario, subsidies are substantial, ranging from 1.7 to 4.2 billion dollars in 1987 (when total Cuban exports were about 5.4 billion pesos or 5.4 billion dollars).[42] Over the period from 1975 to 1987, estimates of cumulative sugar subsidies range from 22.4 to 28.7 billion dollars.

Heretofore, official figures on Soviet assistance to Cuba have not been available from either Cuban or Soviet sources. In December 1989, Yuri Maslyukov, a member of the Soviet Politburo, revealed a first-time estimate of Soviet economic assistance to Cuba (presumably including the sugar price subsidies): 3.0 billion transferable rubles (or 3.7 to 4.8 billion dollars) per year.[43] Given that sugar trade is one of the main mechanisms used by the Soviet Union to transfer resources to Cuba, the sugar subsidy estimates in table 6 are not inconsistent with the level of overall economic assistance disclosed by this Soviet official.

Resources Devoted to Sugar Production

Soviet reliance on the price of sugar as the main mechanism for transferring aid has distorted Cuban production and investment pat-

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42. *Anuario Estadístico de Cuba 1987*, 414. Conversion to dollars is based on the official exchange rate for 1987 of one peso equaling one dollar.
43. "Cubanos y soviéticos analizan sus vínculos," *El Nuevo Herald* (Miami), 15 Dec. 1989, p. 3A. This source reports the assistance level in dollars at 4.8 billion dollars per year. Another source reports the assistance level at 3.7 billion dollars. See "Castro's Coming Crisis," *Foreign Report,* 21 Dec. 1989, p. 1 (published by the Economist Newspaper Limited). The difference in the two figures in dollars appears to arise from the use of different exchange rates to convert from transferable rubles to dollars.

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terns. Artificially high returns in the sugar industry (due to inflated Soviet prices) have drawn scarce investment resources into sugar production and away from alternative uses. These returns have also tended to perpetuate commodity specialization and prevent restructuring of the Cuban economy away from sugar.

Statistics on investment in sugar-production activities and on the amount of land devoted to cultivating sugarcane demonstrate the high (and still growing) level of resources being devoted to sugar production. During the period from 1975 to 1985, the sugar industrial sector was the largest recipient of investment resources, averaging around one-fifth of total industrial investment. In May 1980, Cuba brought on line a new sugar mill named Victoria de las Guásimas, the first green-field sugar-manufacturing capacity built in Cuba since 1927. By 1986 seven new mills were operating, and construction of eight more was anticipated by the year 2000 (Vázquez 1981, 41). In 1986–87, however, investment in sugar production fell to about 16 percent of total industrial investment, as resources devoted to generating electricity skyrocketed (presumably related to the construction of the Juraguá nuclear power plant).

Similarly, investments in sugarcane agriculture have been high, absorbing about one-third of total agricultural investment. Area under sugarcane cultivation increased through the 1970s and 1980s, and by 1987 some 1.78 million hectares of land were devoted to cultivating sugarcane. This total slightly exceeded the 1.75 million hectares being cultivated in 1982 (when Cuba reached an all-time sugar production record) and was nearly 25 percent higher than in 1952 (when the prerevolutionary sugar production record was set).

Expanding the amount of land devoted to sugarcane cultivation has encroached on other crops and has thus intensified Cuban dependency on imported food products. The impact of Soviet sugar price subsidies on food production and imports has been assessed by international experts Pedro Sánchez and Grant Scobie:

The distortion in terms of trade [the very high prices paid by the Soviet Union for Cuban sugar] facing Cuban agriculture results in more sugar and less food crops being produced; this results in more imports (especially of rice and beans). At the same time, the food rationing system lowers the price of staples and raises the consumption levels, further adding to import requirements. Finally the emphasis on livestock products and wheat consumption greatly increases food imports. . . . Imports of all major food groups are substantial. (Sánchez and Scobie 1986, 57)

In the face of a worldwide oversupply of sugar and generally weak market prices, Cuba has justified expanding sugar production (from the average 7.3 million tons per year produced in 1985–1987 to a planned 11 million tons in 1990 and to 13 or 14 million tons by the year 2000) on the basis of its special trading relationship with the Soviet Union and Eastern European nations. President Castro provided the following rationale:

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Cuba's situation is different because we have an enormous market in the socialist countries. All our sugar is already sold. The sugar we will produce in the next five-year period as well as in the next fifteen years has already been sold to the socialist countries. When the Cuban Revolution triumphed, these countries (the socialist countries) had plans to increase their sugar output. They moderated their expansionary plans, directed investments to other areas of their economies, and reserved an important part of their markets for Cuban sugar exports. . . . Cuba has already sold to the socialist countries all the sugar it can produce—above its world-market quota—in the next fifteen years. Thus we are expanding sugar production and even building new sugar mills. (Castro 1985, 20)

Considering the worldwide excess supply of sugar and the frailties of special trading relationships, I share Zimbalist's judgment that "Cuba is putting too many eggs in the cane basket" (1988a, 24).

The Influence of Price Subsidies on Trade Data

The steep price that the Soviet Union pays for certain Cuban imports, such as sugar and nickel, coupled with Cuba's reexporting of Soviet oil distort official trade statistics and limit their usefulness in exploring longer-term changes in the composition of trade.[44] As a result, depending on the time period that is selected, official Cuban trade data can support analyses that show either continuing high (and even growing) concentration of exports on sugar or diversification away from sugar.[45] To transcend these differences, I would argue, it is necessary to make adjustments in the official trade data.

Conceptually, adjusting the trade data to remove the impact of oil reexports is a straightforward procedure.[46] More challenging is the ques-

44. During 1983–1985, reexports of oil products (of Soviet origin) represented Cuba's most significant hard-currency export, accounting for over 40 percent of hard-currency earnings (Pérez-López 1987a, 1988a). The value and relative importance of oil in the mix of hard-currency exports have declined since 1986 as a result of low world-market prices for oil and possibly some supply restrictions by the Soviet Union. In 1988, the most recent year for which data are available, Cuban oil reexports amounted to 184.9 million pesos (in convertible currency), about 17 percent of total hard-currency export earnings in that year. See Banco Nacional de Cuba, *Economic Report,* May 1989, 14.

45. Among the studies that use official trade data to conclude that sugar export concentration remains high are the following by economists associated with the Cuban government: Díaz-Vázquez (1981, 141–42), Fernández Arner and Plá García (1982, 42), and Valdés (1984, 132). See also Mesa-Lago (1986, 301–2) and Roca (1988c, 103–5). Among the studies that have also used raw official trade data to conclude that substantial export diversification has occurred are LeoGrande (1979), Brundenius and Zimbalist (1988, 60–61), and Zimbalist and Eckstein (1987, 16).

46. Even this "straightforward" adjustment has occasioned disagreement among analysts. I have suggested that the impact of oil reexports could be expunged from Cuban export data by subtracting from official data on total value of exports the official value of oil and oil reexports (Pérez-López 1987c, 88). Zimbalist suggests that this method overstates the importance of oil reexports and understates the decline in sugar's share of exports by "assuming that certain petroleum by-products exported by Cuba are from the Soviet Union, when, in fact, they are produced in Cuba (e.g., naphtha)" (Zimbalist 1988a, 24). The issue, it seems to me, is not

tion of how to adjust trade data to factor out the subsidy element from the prices paid by the Soviet Union for Cuban imports. In my view, doing so requires decomposing the price at which Cuba sells products (like sugar and nickel) to the Soviet Union into two components: a "normal" price at which the products are traded, and the subsidy granted by the Soviet Union to Cuba via price premiums.[47] Another approach that has been suggested is to calculate trade shares of different commodities at constant prices.[48]

To illustrate the effect of the Soviet sugar price subsidies on trade statistics, table 7 presents estimates of sugar's share of total Cuban non-fuel exports, derived from official trade statistics adjusted to extract the subsidies in table 6. These hypothetical estimates, however, are subject to numerous caveats and should be treated as merely illustrative.

Column 1 of table 7 presents sugar's share of nonfuel exports as computed from the official (actual) trade data. Columns 2 through 7 contain estimates of sugar's share based on adjusted trade data, in which the adjustment has been to assume that the sugar sold to the Soviet Union each year was traded at some hypothetical price differing from the actual price. That is to say, the estimated value of the Soviet sugar subsidy has been extracted. For example, column 2 presents estimates of sugar's share assuming that Cuban sugar exports to the Soviet Union during each year were made at world-market prices, while columns 4 and 5 do the same under the assumption that sales were effected at the prices paid by the United States and the EEC to preferred exporters.

The estimates of sugar's share of nonfuel exports are similar for the period from 1962 to 1975, regardless of which alternative price is used to value sugar exports to the Soviet Union. In fact, for some years (1963 and 1974), sugar shares derived using the world-market price or the U.S. or EEC preferential prices are higher than those derived from actual data. The reason for this outcome is that actual prices for Cuban sugar sales to the Soviet Union in those years were below prices in other markets, which

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where the product is made but rather what conditions give rise to its trade. In 1986, the most recent year for which data are available, Cuba's oil production reached a record-high 938,000 metric tons. In that same year, imports of oil and oil products from the Soviet Union amounted to 13.2 million metric tons, for a ratio of domestic production to apparent consumption of 6.6 percent. See *Anuario Estadístico de Cuba 1987*, 251, 490. Cuba's ability to sell naphtha—whether distilled from domestic or imported Soviet crude, but probably from the latter (considering the low quality of domestic crude)—is conditioned on supplies of oil and oil products being received from the Soviet Union. That is to say, if the supply of Soviet oil and oil products were cut back, Cuba would have to use naphtha domestically or modify its refineries to yield other more desirable products.

47. This is the approach employed in Pérez-López (1989). The discussion that follows is based substantially on this work. Subsidies for nickel and possibly for other Cuban export products are ignored.

48. This method has been suggested, for example, by Brundenius (1984, 62–63) and by Zimbalist (1988a, 24–28).

is to say that Cuba subsidized the Soviet Union through sugar sales. The estimates suggest a dip in sugar's export share toward the end of the 1960s, but by the mid-1970s, Cuba's dependence on sugar for generating export revenues probably peaked.

In 1976 a new pricing mechanism for Cuban sugar sales to the Soviet Union began to operate, one setting a very high floor price that was to be indexed annually proportionally to increases in the prices of Soviet exports to Cuba relative to the prices they commanded in 1975.[49] After 1976, when Soviet aid to Cuba via sugar price subsidies began to escalate, estimates of sugar's share of exports differ significantly depending on which hypothetical price is used, particularly for the 1980s. While the official data (including the subsidies) show sugar's share of exports at above 80 percent for 1981–1987 (column 1), this share would have been around 62 percent had Cuba sold its exports to the Soviet Union at prevailing world-market prices (column 2). But if the U.S. preferential price were used as the hypothetical price for exports to the Soviet Union, sugar's share of exports for 1981–1987 would have been about 74 percent (column 4).

Even after adjusting in order to extract Soviet sugar price sub-sidies, the statistical record strongly indicates that sugar continues to play a predominant role in the Cuban export basket. Using the U.S. preferential price as the hypothetical price for valuing exports to the Soviet Union (and there is some logic in using this method as it presumably yields estimates comparable with those for prerevolutionary Cuba, a period when Cuba sold the bulk of its sugar exports to the United States at preferential prices), the data in table 7 suggest that in revolutionary Cuba, sugar's share of the value of exports Cuba has tended to behave cyclically, varying from 66 to 88 percent. Sugar's share of the value of exports exceeded four-fifths in 1962–1966, dipped in 1967–1973 to about three-quarters, recovered in 1974–1976, and then dropped again to around three-quarters after 1977 (with the exceptions of 1980, when it climbed to nearly 85 percent, and 1986–87, when it dipped to 68 percent).

Proponents of converting export trade data to constant prices in order to obtain meaningful indicators of the importance of sugar in Cuba's export basket claim that this procedure would "adjust for the manifold increase in sugar prices paid by the Soviet Union after the mid-seventies" (Zimbalist 1988a, 25). Both analysts who have followed this approach have chosen 1965 as the base year for their calculations and have derived constant-price shares for principal export products. According to Zimbalist's calculations, constant-price sugar export shares (based on the 1965 distribution of trade) were 84.5 percent in 1965, 86.7 in 1970, 82.2 in 1975,

49. On this arrangement, see Pino-Santos and Martínez (1979, 70) and Rodríguez (1982, 121).

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TABLE 7 Sugar Exports as a Share of Nonfuel Exports, 1962–1987

Year	Actual Price (%)	World Price (%)	U.S. Import Unit Value (%)	Preferential Prices		Cuban Export Unit Value[a] (%)	Soviet Import Unit Value (%)
				U.S. (%)	EEC (%)		
1962	82.8	80.8	84.7	85.8	84.8		
1963	86.8	87.9	87.1	87.8	86.6		
1964	85.9	85.6	86.2	86.5	85.6		
1965	85.8	79.6	85.6	86.5	85.5		
1966	84.3	78.1	84.0	85.2	84.1		
1967	71.1	60.2	71.4	73.5	70.5		
1968	76.8	69.0	77.3	78.7	75.2		
1969	75.6	72.4	76.2	77.2	74.4		
1970	76.9	73.0	78.1	79.5	75.2		
1971	76.4	75.0	77.3	78.5	75.5	75.2	
1972	72.8	73.5	74.1	74.9	73.3	73.1	72.5
1973	75.4	73.9	72.8	74.2	71.3	73.1	73.5
1974	86.5	88.5	86.5	88.4	84.2	86.4	86.5
1975	90.0	88.7	89.2	88.2	89.0	90.6	93.2
1976	88.1	82.1	82.6	81.2	82.1	84.8	82.7
1977	85.5	73.0	73.9	65.9	68.4	76.7	72.4
1978	87.8	73.3	73.3	74.9	76.0	73.0	73.6
1979	87.5	75.6	74.9	74.5	77.6	74.9	78.0
1980	87.6	84.3	82.3	84.6	82.7	83.2	81.0
1981	82.7	77.0	77.9	78.1	77.8	76.7	80.3
1982	83.0	68.9	72.6	74.3	73.0	69.0	70.6
1983	82.9	67.3	71.1	75.4	73.2	66.2	67.6
1984	84.3	63.3	70.4	76.7	73.5	63.2	56.1
1985	83.2	55.3	65.6	74.1	71.3	54.6	53.9
1986	81.3	46.7	61.5	67.1	65.1	54.2	48.9
1987	79.8	56.1	33.7	69.4	69.1	53.9	[b]

Source: Pérez-López (1989, 1638), updated by the author.

Note: Percentages in all columns except actual prices are based on alternative valuations of sugar sales to the Soviet Union.
[a]Exports to Canada, Spain, and Japan.
[b]Estimated subsidy exceeds value of sugar exports.

and about 88 percent in 1980; in the 1980s, sugar's share declined gradually to the 68 to 75 percent range in 1985 (Zimbalist 1988a, 27). Brundenius's estimates of sugar's share of Cuban exports at constant prices of 1965 were 88.3 percent in 1965, 83.1 percent in 1970, and 70.0 percent in 1980 (Brundenius 1984, 75).

Trends in constant-price sugar shares generally coincide with the adjusted sugar export shares described previously, derived by adjusting

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trade data to subtract the sugar subsidy (table 7). Conceptually, the constant-price approach, which freezes prices of products in the export basket at the levels they commanded in 1965, appears to be more appropriate for addressing the impact of fluctuations in world-market prices on the structure of output and exports than that of the high prices paid by the Soviet Union.

THE CUBAN ECONOMIC MODEL: ESSENCE, PERFORMANCE, AND TRANSFERABILITY

Cuba's economic policies during the last three decades have undergone significant changes as priorities and methods of implementation have shifted. In the early years of the revolution (roughly 1959–1963), policies sought to upset the status quo (by such means as redistribution and collectivization) and to introduce central planning. The second half of the 1960s proved to be a period of experimentation with various socialist economic models, incorporating such radical ideas as gradually eliminating material incentives and eventually doing away with money altogether. After the failure of the ten-million-ton sugar crop in 1970, however, Cuba shifted to a more conventional socialist development strategy, based substantially on the 1965 Soviet reform model.[50]

A constant in development strategies of socialist Cuba has been the emphasis on social concerns. High priorities of the revolutionary regime have been income redistribution, full employment, social security, reductions in urban-rural differentials, and access to public health, education, and recreation.[51] Ideology and economic growth have taken secondary roles, with ideology overtaking (and, I would argue, hindering) economic growth during certain periods, like the second half of the 1960s[52] and the current "rectification" campaign, which began around 1986.

Several key questions arise at this point. What is the essence of the economic development model pursued by the Cuban leadership? How has the Cuban model performed in a broader socioeconomic context? Has Cuba indeed been able to avoid the turmoil—in terms of debt and austerity—that has characterized Latin America in the last two decades? Is the Cuban model transferable to other countries?

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50. The discussion of Cuban development strategies, priorities, and outcomes draws heavily on Mesa-Lago (1981), chap. 2.

51. For a thorough treatment of Cuban socioeconomic priorities, see CEPAL (1980).

52. Official Cuban macroeconomic data (see table 1) and the Brundenius-Zimbalist bottom-up industrial growth estimates (see table 4) for the second half of the 1960s through the early 1970s fail to reflect the severe dip in economic performance that resulted from the low priority assigned to economic growth during this period.

The Economic Model of the 1970s

A relatively stable Cuban economic development model emerged in the 1970s, within a broader process of "institutionalization" of the revolution.[53] In December 1975, the Cuban Communist party adopted the Sistema de Dirección y Planificación de la Economía (SDPE),[54] which began to be implemented shortly after. Generally speaking, the SDPE constituted a series of gradual changes in the economic management and planning apparatus aimed at increasing economic efficiency. Among the principles recognized by the SDPE were five salient ones: profitability as the key criterion of enterprise performance; material incentives for rewarding performance, including the linkage between wages and output levels; acknowledgment of the role of fiscal-monetary variables (prices, taxes, interest rates) as instruments of economic management; self-financing of enterprises; and overall decentralization of decision making.

In late 1982, Humberto Pérez, who was then president of the Junta Central de Planificación (JUCEPLAN) and the chief official in charge of SDPE implementation, delivered a generally upbeat progress report, citing many of the tasks already performed and highlighting the continuing need to promote policy coordination and coherence.[55] Meanwhile, according to official figures (see table 1), the Cuban economy had grown at the extraordinary rate of 7.2 percent per year (GSP at constant 1981 prices) during 1980–1985, the best growth performance during any five-year period in revolutionary Cuba.

Yet only two years later, in a public address in December 1984 on Cuba's economic performance that year and the plan for 1985, Pérez revealed that since November 1984, a new *grupo central*, answerable to the central committee of the Communist party, had essentially taken control of the planning functions.[56] In his *Informe central* to the third congress of

53. Both issues of the journal *Cuban Studies/Estudios Cubanos* for 1976 (vol. 6, nos. 1 and 2) were devoted to scholarly analyses of different aspects of the "institutionalization" process; see also Fernández-Rubio Legra (1985).

54. See Partido Comunista de Cuba (1976, 125–39). By now, the literature on the SDPE is extensive. A good overview can be found in ILPES (1988); see also Acosta Santana (1982).

55. Closing remarks by Humberto Pérez at the Tercera Plenaria de Chequeo de la Implementación del SDPE were printed in *Granma*, 5 Oct. 1982, p. 2. Among the accomplishments Pérez cited were seven major ones: significant advances in standardizing accounting methods in enterprises and establishing auditing programs; improvements in the national statistical system; reform of wholesale prices (in 1981); progress in using the state arbitration system to settle disputes among enterprises; establishment of work norms for 72.3 percent of workers, and tying of pay to performance for 1.2 out of 2.9 million workers in the state sector; stricter financial controls over units financed from the state budget; and progress in introducing a system of financial controls, operated by the Banco Nacional, and in using credit as an instrument to promote enterprise autonomy and efficiency. For a Soviet view of the SDPE and its implementation, see Bekarevich and Keino (1986).

56. See "Intervención de Humberto Pérez sobre el proyecto de ley del plan único de desarrollo económico y social para 1985," *Granma*, 29 Dec. 1984, p. 2. Pérez was subsequently dismissed as the head of JUCEPLAN and stripped of other responsibilities.

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the Cuban Communist party in February 1986, President Castro lashed out at the SDPE, criticizing its implementors for slavishly following foreign experiences (those of the Soviet Union) and lacking creativity in adapting the system to domestic conditions. He also criticized SDPE's results, which he thought reflected a preoccupation with profits and the emergence of capitalism (Castro 1986b). In mid-1986, JUCEPLAN was formally stripped of its economic management functions, which devolved on the newly established Comisión Nacional del Sistema de Dirección de la Economía (SDE).

Analysts have come to varying conclusions about the SDPE on several points: the extent to which central planning has been permitted to operate without undue political influence; the role and effect of material incentives within the SDPE; and the contribution of the SDPE to economic growth. For the sake of brevity, only the first of these areas of disagreement will be explored briefly here.

Central Planning and Politics / Each central plan links output objectives and available productive resources, which are subject to a set of national economic priorities. Because the plans tend to be taut (with resources allocated fully), changes in priorities in midstream give rise to bottlenecks and shortages that result in inefficiency and low productivity.

Sergio Roca has argued that SDPE implementation was hindered by interference by President Castro and the Communist party in the planning and management processes (1986b).[57] He cites numerous instances of changes made in the central plan or established planning procedures by the planning authorities at the behest of Castro or the party, along with their adverse impact on economic activity. Zimbalist, however, has taken issue with this view, commenting that anecdotes "hardly establish regular or pervasive interference or systematic control over the plan by Castro" (1987b, 164).

From a rigorous methodological standpoint, Zimbalist is correct: the anecdotal information on political tinkering with the SDPE cannot support the proposition that Castro (or the party) exercised systematic control over the plan, nor can anecdotes be used to estimate the adverse impact of such tinkering on economic performance. Nevertheless, Roca's work shows that tension existed between the SDPE implementors (the "technocrats") and the party, and it became most acute in the early 1980s. In my judgment, the conflict was basically resolved after 1984, when the Grupo Central, which answered to the party, essentially took over the planning functions. One

57. Roca's conclusions were based on a review of the literature plus interviews with former managers, professionals, and technicians at Cuban state enterprises who were residing outside the island. Castro's interference in the planning process in the 1960s has been well documented. The projects he personally championed were incorporated into the national planning scheme as "special plans." See Mesa-Lago and Zephirin (1971, 157–60).

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of Castro's continuing themes during the "rectification" campaign has been the preeminence of the party over the technocrats.[58]

Socioeconomic Performance

The toolbox of economists (and social scientists at large) contains two methods of assessing the performance of a socioeconomic model: longitudinal or time-series analysis, in which changes in certain variables are observed over time, generally with reference to a base period; and comparative or cross-sectional analysis, in which levels at a given point in time of certain variables are compared with levels of the same variable in other countries during the same period.

Both these approaches have been used to assess the performance of revolutionary Cuba's socioeconomic development model. In my judgment, however, two significant methodological problems have hindered the usefulness of some of the evaluations that have been made. The first is the tendency on the part of some analysts to ignore or present a subjective picture of starting conditions, particularly when comparing revolutionary and prerevolutionary Cuba. In analyses dealing with social variables, this tendency manifests itself in either ignoring or exalting previous social development or in discussing levels in specific social indicators in a vacuum, without regard to levels achieved by other countries at the same level of development.[59] In economic analyses, this tendency manifests

58. For example, see Castro (1987), an anthology of his pronouncements on rectification, particularly the chapter titled "En ninguna parte se puede hacer nada si no está presente el partido." The central role of the party in the rectification process comes across most clearly in his speech to the nation on 26 July 1988: "Our Party knows that it cannot commit errors that will weaken it ideologically. This is why, in our rectification process, the role of the Party is not weakened, the role of the Party is strengthened. In our rectification process, the role of our Party becomes more and more essential. . . . Without the Party, revolution is not possible, without the Party it is not possible to build socialism!" (Castro 1988, 57). Anecdotes abound regarding Castro's "micromanagement," particularly during rectification. Regarding the allocation of labor resources for the construction of the Juraguá nuclear power plant, Castro said: "Some key construction brigades, such as the one building the Cienfuegos nuclear power plant, also must maximize productivity. We sent a *compañero* [comrade] there because we began to hear that as many as sixteen thousand workers were needed for that project, and I sent them a message saying, no, they had to make do with the number that had been agreed to, twelve thousand workers" (Castro 1986a, 28).

59. See, for example, Rodríguez and Carriazo Moreno (1987). Brundenius described social conditions in prerevolutionary Cuba in his 1984 book on satisfaction of basic needs in Cuba thus: "Cuba in the 1950s was also characterized by large differences in income and the standard of living. The standard of living of the *guajiro* ('rural worker') was extremely low. He lived in a *bohío*, a small house with an earthen floor and a roof made of palm thatch. For 90 percent of the *guajiros*, a kerosene lamp was the only form of lighting, and 44 percent of them had never attended school. Only 11 percent of them drank milk, only 4 percent ate meat, and only 2 percent ate eggs. The daily diet, which had a deficiency of 1,000 calories, was the main reason for a constant increase in the number of cases of tuberculosis, anemia, parasitic diseases, and other illnesses" (Brundenius 1984, 14). A *guajiro*, however, is not a "rural worker," a distinction that has a bearing on the size of the population to which the statistics cited by Brundenius apply. Moreover, the results of the 1957 survey of agricultural workers conducted

itself in unrealistic assessments of the economy of prerevolutionary Cuba.[60] The second problematic tendency is to concentrate on global levels or averages, ignoring issues related to quality of products or services, the allocation mechanisms, urban-rural consumption differentials, and other relevant factors.[61]

Because of space constraints, this discussion will focus only on longitudinal analyses, leaving comparative assessments aside.[62]

Longitudinal Analyses / Few analysts would disagree over some of the successes of revolutionary Cuba's socioeconomic development model. Whether approached in the context of provision of basic needs (as in Brundenius 1984), elimination of poverty (as in Rodríguez and Carriazo Moreno 1987), or a more conventional analysis of social objectives and

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by the Agrupación Católica Universitaria (the basis for his assessment) appear to have been misused, given the explanations of the survey provided by one survey author, Echevarría Salvat: "According to the basic definitions . . . , the universe of our research study was restricted to the poorest sector within the agricultural population. Our sample was limited to *jornaleros* [day laborers or journeymen] living in rural communities with fewer than 150 dwellings. Thus it is not justifiable, based on the results of the survey, to draw inferences about the rural population at large and even less so about the standard of living of the entire Cuban population" (Echevarría Salvat 1971, 81). This same point is made in Pollitt (1967). Echevarría Salvat further states that the objective of the survey in the area of food consumption was to explore variety within the diet of rural day laborers and therefore the results could not be used to infer individual food consumption patterns (Echevarría Salvat 1971, 28), as has been done by Brundenius and others. For one perspective on how social conditions in prerevolutionary Cuba have been treated by some analysts, see Luxenburg (1984).

60. Contributions presenting a gloomy view of the economy of prerevolutionary Cuba and positing that the economy was stagnant include Seers (1964) and Nolff (1964), both in Seers, ed. (1964), as well as O'Connor (1970) and Zuaznábar (1986). For a competing view, see the work of the Grupo Cubano de Investigaciones Económicas, especially their 1963 study, and Marrero (1987). Cuba's economy was certainly not buoyant in the 1950s, nor had prerevolutionary Cuba been able to manage well a host of structural economic problems. For a careful and balanced treatment of the structural economic problems faced by prerevolutionary Cuba, see Mesa-Lago (1971) and Roca and Hernández (1972). In my judgment, proponents of the economic stagnation hypothesis probably go too far. My own (1977) work suggests that Cuban industrial output (other than sugar) grew briskly between 1946 and 1958, calling into question the validity of the stagnation hypothesis, at least with regard to the industrial sector.

61. I am aware of the difficulties in measuring and adjusting for quality of output, even in fairly trivial cases (such as quality adjustments for automobiles calculating price indexes). See, for example, Griliches (1961) and Fisher, Griliches, and Kaysen (1962). The problems are much more acute in service sectors like education and housing. On the issue of measuring quality change more generally, see Lancaster (1977). I am not suggesting that analysts of the Cuban economy should necessarily make quality adjustments to all Cuban official data but rather that specialists should investigate the existence of specific areas where such adjustments would be particularly relevant and at least acknowledge that quality adjustments have not been made. A similar caveat would be appropriate when using national averages to refer to standard of living of the population. The literature exploring urban-rural differentials is thin, but important contributions have been made by Roca (1984), Díaz-Briquets (1988), and Luzón (1988).

62. The literature on comparative assessments of Cuban economic and social development include Eckstein (1986), Boodhoo (1989), Mesa-Lago and Díaz-Briquets (1988), and Zimbalist and Brundenius (1989, chap. 10).

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performance (Mesa-Lago 1981), the evidence points to a fairly equitable income distribution and substantial achievements in the fields of education, provision of health services and pensions, elimination (or reduction) in unemployment, and access to basic foods. The majority view also holds that housing has not performed as well as other service sectors, with the supply of new housing not having kept pace with demand.

The differences regarding economic performance and the implications of the economic relationship with the Soviet Union, which were touched on earlier in this essay, carry over into overall evaluations of the Cuban socioeconomic model. Relying on official data and on his own estimates of economic growth, Brundenius has argued that revolutionary Cuba has achieved sustained economic growth while attending to the basic needs of its citizens, the "growth with equity" paradigm (Brundenius 1981, 1984). Along the same line, José Luis Rodríguez and George Carriazo Moreno have concluded that "The Cuban experience after 1959 has demonstrated how it is possible to eradicate poverty in a developing country. . . . [A]chievements of the Cuban Revolution in eradicating poverty have been based, in the first instance, on the economic potential developed over the last twenty-four years, to which a proper social policy has been attached" (Rodríguez and Carriazo Moreno 1987, 185–86).

Yet Mesa-Lago's assessment of Cuba's success in achieving economic growth, diversification, external economic independence, full employment, and equality in distribution over the first two decades of revolutionary government suggests that performance was less satisfactory in the "economic" goals (growth, diversification, and external economic independence) than in the "social" objectives (full employment and more equitable distribution, including access to social and health services and education) (Mesa-Lago 1986, chap. 8). More recently, Mesa-Lago has made a compelling case supporting the hypothesis that revolutionary Cuba has traded off equity for growth: "[T]he Cuban state has utilized, with varying success, its great economic power to achieve most social goals such as more equal income distribution, less unemployment, price stability (at least until the 1980s), and better social services (with the exception of housing). Conversely, the state has failed to reach most economic goals such as self-sustained and stable economic growth, sufficient capital accumulation and its efficient use, export promotion, and diversification of trade partners" (Mesa-Lago 1986, 312).

Transferability of the Cuban Model

A final topic that merits reflection is the extent to which the Cuban socioeconomic model has been—or can be—replicated elsewhere. In a sense, this issue can be approached from two different perspectives. From the supply side, the question is, what does the Cuban experience

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have to offer to prospective emulators of the Cuban model? From the demand side, the question is, how does the Cuban model match up with the vision of socioeconomic development that policymakers elsewhere are seeking to attain?

Essence of the Cuban Model / Stripped of ideological baggage and idiosyncratic elements, revolutionary Cuba's economic development strategy has essentially been import substitution. This finding is hardly surprising considering the influence of the import-substitution model on thinking about Latin American development since the 1950s and the key role played by some economists at the Economic Commission for Latin America (ECLA), at least in the early years of revolutionary government.[63] Moreover, although the socialist development strategies pursued by Cuba since the mid-1960s may exhibit some special characteristics (like emphasis on the rapid growth of heavy industry), they too are basically variants of import-substitution schemes.

The practice of import-substitution development strategies in Latin America, for example, has generally incorporated a public planning function and an active role for the state in economic activities, typically through the operation of state-owned enterprises. These elements form an integral part of the Cuban model, but the intensity with which they are practiced in Cuba (command versus indicative planning, state ownership of essentially all capital and land versus ownership of selected firms) goes far beyond what has transpired in other Latin American countries.

What sets the Cuban experience apart from that of other Latin American countries, in my view, are two factors: the redistribution of wealth that took place in the early years of the revolution (partly through nationalization of private property); and the steady and pervasive economic assistance from the Soviet Union. Reproducing these factors elsewhere would have to transcend the economic arena and would require deep transformations in domestic politics and international alliances that other countries might not be willing to undertake. Arguably, then, the Cuban experience is sui generis in nature, making transferability a non-issue.[64]

Archibald Ritter concluded in an essay on the transferability of the Cuban experience that the Cuban economic model of the 1970s (the one that would have the most appeal for other countries because it empha-

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63. A perceptive essay that places Cuban development thought in a Latin American perspective is Sanguinetty (1990). Regino Boti, who coauthored the first economic program of the 26th of July movement (published in 1956) and later became the first president of revolutionary Cuba's central planning board (JUCEPLAN), had previously worked for ECLA. So did Mexican-born economist Juan F. Noyola, who held a series of influential positions in the Cuban government in the early 1960s.

64. Some of the sui generis characteristics of the Cuban model are explored in Jorge (1983), which emphasizes cultural issues.

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sized economic growth) would be "highly inappropriate for many other developing countries in which redistribution of opportunity, assets, and income should constitute the major priority in designing development strategies" (Ritter 1979, 330). That is, the Cuban model of the 1970s presupposed that a certain pattern of property relations was already in place. Absent this precondition, the applicability of the Cuban model is questionable.

The critical importance to revolutionary Cuba's development of a steady flow of external resources from the Soviet Union cannot be overemphasized. In April 1989, President Castro paid public testimony to Soviet assistance to Cuba:

We are proud of many things, of our level of education, which is higher than that of any Third World nations; of our level of health care, which is higher than any other Third World nation and even many developed countries. We are proud of the mechanization of our agriculture . . . , of our scientific advancement, of our industrial advancement in all fields, and I say in all honesty, I say once again, that although I feel that our people would have been capable of any sacrifice to defend the Revolution, that it would have been able to uphold and defend it, we would have never achieved the gains of which our people are so proud without the generous, sustained and firm cooperation of the Soviet Union.[65]

Economic Development in the 1990s / A recent survey of Latin American development thinking suggests that the 1990s will differ substantially from the "lost decade" of the 1980s (Williamson 1990). First of all, a remarkable transformation has taken place in the attitudes of Latin American development economists and policymakers, with views converging on the imperative for policy reforms that will result in obtaining macroeconomic control, opening the economy, reducing the role of the state, and stimulating the private sector. Second, democracy has not only survived the difficult 1980s in Latin America but has actually spread. Moreover, democratically elected leaders in the region have begun to show a willingness to accept short-term risks in order to implement policies they believe are needed for long-term economic revival. Third, evidence has emerged of flexibility among developed countries in reducing the debt overhang of countries that are willing to implement policy reforms (Williamson 1990, 1–2, 59–60). What do these changes in Latin America (which are taking place in other regions as well)[66]

65. See "Introduction by President Castro of Mikhail Gorbachev to the National Assembly of People's Power, on April 4, 1989," *Granma Weekly Review,* 16 Apr. 1989, p. 2.
66. The changes currently taking place in Eastern Europe and the Soviet Union are consistent with trends in Latin America. In Africa, Mozambique has eliminated Marxist rhetoric and embraced economic reform. See William Claiborne, "Mozambique Shifts from Marxism," *Washington Post,* 29 July 1989, pp. A11–A14. Benin has dropped the reference to being a "popular republic" from its official name. Even Nicaragua, probably the country that came closest to adopting the Cuban model, was reportedly moving toward more flexible economic policies even before the electoral victory of Violeta Chamorro, to the dismay of the Cuban leadership. See Mark A. Uhlig, "Cuba Loses Allure for Nicaraguans," *New York Times,* 18 Jan. 1990, pp. A1–A10.

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portend for the transferability of the Cuban approach?

Although this essay is not the place to contrast Cuban and emerging Latin American views on economic development, two important areas bear highlighting: external-sector policies and the role of the state in the economy. Although not totally discredited, the import-substitution approach once pursued by Latin America, and still an integral part of the Cuban model, has lost much of its appeal.[67] Current Latin American thinking emphasizes trade liberalization, competitive exchange rates, and openness to foreign investment (Williamson 1990, 21–28), which are all inconsistent with the Cuban approach.[68] While Cuba steadfastly continues to espouse state ownership of all capital and land resources (with the possible exception of foreign joint ventures in the tourism industry), the prevailing mood in Latin America favors privatization and stimulation of the private sector (Williamson 1990, 28–31; Hanke 1987).

CONCLUDING OBSERVATIONS

The objective of this article has been to explore some of the conceptual and empirical problems that have plagued analysis of the Cuban economy, highlighting the difficulty of making categorical statements about the Cuban economy. In addition to confronting severe problems with availability, consistency, and reliability of data, analysts must also grapple with frequent shifts in policy. In my view, Zimbalist's metaphor regarding the economic management system also applies to the Cuban economy at large: "Imagine parenting two sons: a four-year-old and a six-year-old. The four-year-old has taken to hiding and losing puzzle pieces. Further suppose that your younger son has a friend who comes to visit and paints over several of the remaining pieces, creating a different image. Completing such a puzzle is a bit like analyzing Cuba's system of economic planning" (Zimbalist 1985, 213).

The persistence of so many uncertainties regarding the Cuban economy argues for all analysts—including this one—to step back and consider couching assertions in more tentative terms. Similarly, in view of the highly imperfect information base on which all analysts must operate, the decibel level of discourse needs to be toned down considerably. While scholarly disagreement and criticism on methodology or interpretations are stimulating and can be constructive, ad hominem arguments lead nowhere. Such bickering appeals only to the uninitiated and distracts attention from serious scholarly pursuits.

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67. For examples, see Bhagwati (1986) and other essays in Lewis and Kallab (1986).
68. In 1982 Cuba passed legislation permitting foreign investment for the first time in the form of joint ventures. The legislation has had limited success in attracting foreign capital, however, partly because of the restrictive controls it established. See Pérez-López (1985, 1986a).

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