

**RISE AND DECLINE OF CUBA'S SUGAR INDUSTRY UNDER SOCIALIST RULE:  
IMPLICATIONS FOR THE U.S. SWEETENERS MARKET**

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**ABSTRACT**

After being one of the world's leading producers of sugarcane and the main sugar exporter for many years, Cuba's sugar industry began to decline in 1992. This paper studies the path of Cuba's sugar industry during the last 50 years, starting in the decade that preceded the triumph of the revolution in 1959. The period 1959-79 was one of growth despite the disruptions brought about by the radical change from capitalism to collectivization and the constant search for a form of organization parallel to the new ideology. The state extensive growth model that was applied during the 1980s was capable of maintaining the previous growth but inflicted several negative impacts. The decline of the sugar industry was the result of three main factors: the inefficiency of the socialist system, the demise of the Soviet Union and of the Council for Mutual Economic Assistance (CMEA), and the reinforcement of the US economic sanctions against Cuba. The economic reforms enacted in 1993 were not enough to avoid the drastic decline in all sugarcane and sugar indicators. The restructuring plan implemented since March 2002 has also failed. After Fidel Castro pronounced the requiescat in 2005, a revival effort was initiated in March 2006, responding to rising world sugar prices. Each period is evaluated with average statistics and simple linear regression analysis. The paper considers the implications that this late development in Cuba's sugar industry may have for the U.S. sweeteners industry, especially for Florida's sugar industry, and discusses how to reinvent a 400-year old industry that could regain its former competitive position.

**INTRODUCTION**

For many years, Cuba was among the leading producers of sugarcane and the first sugar exporter of the world. The triumph of the revolution in 1959 changed that situation during its first few years when the emphasis was placed on diversification. However, when Cuba was admitted to the Council for Mutual Economic Assistance (CMEA), composed by Bulgaria, Cuba, Czechoslovakia, East Germany, Hungary, Mongolia, Poland, the Soviet Union and Vietnam the preferential commercial agreements pushed sugar again to the top of the economic agenda. The demise of the CMEA and of the Soviet Union in 1991 signaled the beginning of the decline of Cuba's sugar agroindustry. The purpose of this paper is to analyze the changing performance of the industry under socialist rule and to pinpoint potential alternatives for its revival, and the implications for the U.S. sweetener market, especially Florida's sugar industry.

Most of the data used in this paper originated in Cuba's National Statistical Office

(ONE). Despite serious concerns raised from time to time about the reliability of the country's official data, sugarcane and sugar statistics are considered to be the most reliable for three reasons. First, as the main supplier of sugar to the member countries of the CMEA, Cuba was obliged to keep detailed records. Second, as member of several international sugar organizations and because it was a major player in the international market, Cuba was subjected to constant scrutiny. Third, the dismal figures after the demise of the CMEA, the beginning of the Special Period, and the decline of the industry, seem as real and reliable as they can be.

## HISTORICAL BACKGROUND

Cuba's relationship with sugarcane dates back to colonial times. Although subject to debate, the first cane seeds appear to have been introduced in the island on May 13, 1516, or 490 years ago. In March, 1576 Spain authorized the establishment of the first *ingenio* (early grinding facility operated by wind, water or animal), and some authors place the actual date of construction twenty years later (Martín Oria et al., 1987). That would give Cuba four centuries of sugar tradition.

From that moment on, the sugar industry began to develop in a parallel fashion to the island's population (Scarpaci and Portela, 2005). More and more land was brought into cultivation and, with the passage of time, the old *ingenios* were replaced by modern *centrales* (established after the success of the first machine in 1790 and experiencing constant innovations throughout the entire operation). Land, climate, and proximity to the United States market were little by little making sugar the main engine of Cuba's economic development.

### Up to 1959

There is no doubt that sugar played the most important role in Cuba's economy during the five decades preceding the revolution. It was its main source of income, employment, and foreign exchange. As a result, the agricultural economy was characterized by monoculture of sugarcane grown on large plantations with one main export commodity (sugar) and one main trading partner (the United States).

Table 1. Average selected indicators of Cuba's sugar agroindustry, 1950s, 1960s, 1970s, and 1980-92†.

Decade	Sugar	Sugarcane	Agric. yield	Industrial yield
	Mg sugar/year x 10 <sup>6</sup>	Mg cane/year x 10 <sup>6</sup>	Mg cane/ha	%
1950s	5.63	43.9	39.84	12.85
1960s	5.52	46.1	40.94	12.1
1970s	6.24	55.3	47.22	11.3
1980-92	7.45	69.9	50.8	10.81

†Calculated from Alvarez and Peña Castellanos (2001, p. 3).

The performance of the industry during the decade that preceded the revolution was more or less representative of previous times. Annual average yields during the 1950s were 39.84 metric tons per hectare, total sugarcane production was almost 44 million metric tons, the industrial yield averaged 12.85 percent, and sugar output was 5.63 million metric tons (Table 1). The results of a simple linear regression (crop seasons 1950-51 through 1958-59) analysis show a stable sugar output, with a average rate of decline of around 40,000 metric tons per year (Table 2), which is minimal when compared with the average for the decade.

Table 2. Results of the simple linear regression analysis for the four periods analyzed for Cuba's raw sugar production, 1950-51 through 2005-06.

Period	Intercept	Coefficient	P-value	R <sup>2</sup>
	----- Mg sugar/year -----			
1950/51 - 1958/59	5.807	- 0.042 ± 0.112	0.716	0.02
1959/60 - 1978/79	4.891	0.091 ± 0.045	0.059	0.18
1979/80 - 1989/90	7.233	0.060 ± 0.050	0.265	0.14
1990/91 - 2005/06	6.394	- 0.308 ± 0.049	0.000	0.74

### **1959-79**

When Castro and his rebel army took power on January 1, 1959, agrarian reform was on the top of their agricultural economic agenda. Castro had promised a vast land distribution program but by the time the law was signed on May 17 of that same year, he had already changed his mind. They did distribute some land but cooperatives were established in the expropriated *latifundia* (defined as estates larger than 402 hectares) that by 1961 were converted into state farms.

The following years were devoted to a constant search for a form of agricultural organization that would help advance socialism on the island. In July 1960, President Eisenhower suspended the U.S. Cuban sugar quota, and immediately the Soviet Union announced its willingness to purchase that sugar from Cuba. President Dorticós and Premier Castro responded on August 6, signing a resolution expropriating most U.S. enterprises in Cuba, including 21 sugar mills and their lands. On October 13, Law No. 890 responded to the U.S. embargo by expropriating, among others, the remaining 105 sugar mills and 16 rice mills with their lands. On October 24, the Cuban government nationalized the remaining U.S. enterprises (Alvarez, 1990, pp. 103, 121). Therefore, less than two years after assuming power, the revolutionary government was in possession of most agricultural and industrial rural properties. Since collectivization is the central goal of socialism, it was always Castro's ultimate objective (Hagelberg and Alvarez, 2006). The task ahead was huge in terms of organization to maintain and increase production.

The search by trial and error continued: 1962 (sugarcane farms or people's farms); 1963 (state farms; second agrarian reform law enacted in October 1963 with maximum ownership decreasing to 67 hectares); 1968 (sugarcane plans: District); 1969 (joint chiefs of

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harvest). Despite the shock experienced by the industry during the 1960 decade, agricultural and industrial performance did not show drastic changes. Two of the four selected parameters (total sugarcane and agricultural yield) increased slightly, while the opposite was true for industrial yield and production (Table 1)

The beginning of the 1970 decade saw a new change in the organization of sugarcane agriculture. The sugarcane sector was implemented in 1971. The following year, Cuba joined the Council for Mutual Economic Assistance (CMEA) and as a result had to implement structural changes in its economy. Sugar regained its pivotal role in the country's development plans since its membership in the CMEA made Cuba its main sugar supplier. As a result of the implementation of the System of Economic Management and Planning of the Economy (SDPE), the organization of production changed again during 1976-79 and the production unit chosen for sugarcane was again the grouping of several units known as "sugarcane enterprise" (District).

The performance of the sugar industry during the 1970s increased slightly. Except for industrial yield, the three remaining indicators experienced some improvements (Table 1). Despite the failure in the 1969-70 sugar season to reach the 10-million-ton goal, average performance in the entire decade was impressive. When a linear regression analysis was applied to sugar output generated from the first season after the triumph of the revolution through the season preceding the implementation of the state extensive growth model (1959-60 through 1978-79) the results showed an average rate of increase of more than 90,000 Mg sugar/year, which represents a big jump during two decades (Table 2). The question at the end of the 1970s was if the industry would be capable of maintaining that level of output when the facing the challenge of a radical change in its agricultural organization.

### **THE RISE OF THE INDUSTRY: 1980-92**

The 1980s was the decade of the implementation of the state extensive growth model (Peña Castellanos and Alvarez, 1996; Alvarez and Peña Castellanos, 2001). Agricultural, industrial and transportation activities were joined under the so-called Agro-Industrial Complex (CAI), with a single management for all three types of activities. The state farm returned as the main unit of agricultural organization.

This model had the following characteristics:

- Expansion of agricultural areas,
- Heavy capital investment,
- High use of modern inputs.

This was the typical expression of what has been called "gigantism" (titanic objectives of unrealistic goals with complete centralization). The positive results in production (highest average performance parameters of the pre- and post-revolutionary period (Table 1), came at a cost. The negative impacts of this model included:

- Rising levels of production costs,
- Irregular timing of the harvest,
- Production increases did not parallel the high levels of investment,

- Depopulation of cane areas,
- Great negative ecological impact.

Despite its many mistakes and negative resulting impacts, the 1980-92 period represented the highest production results of the revolutionary period. Average sugar output reached 7.45 million Mg, total sugarcane production was almost 70 million Mg, agricultural cane yields averaged 50.8 Mg/ha, but industrial yields, at 10.81 percent, were the lowest of the study period (Table 1). A simple linear regression analysis corroborated the hypothesis that the industry was able to sustain the growth achieved during the previous two decades, by increasing sugar output at the average annual rate of 60,000 additional Mg (Table 2). Needless to say, the tremendous increase in sugarcane production was the result of higher yields from intensive input use and the extensive plantings that covered even marginal areas. Cane yields and sugar production were also positively affected by the titanic effort of the 1970 season when, despite the unfulfilled target of 10 million Mg sugar, Cuba produced 8.5 Mg sugar.

### **THE DECLINE OF THE INDUSTRY: 1993-**

#### **Three Concurrent Factors**

At the end of the 1980 decade, the world watched in disbelief the crumbling of the Berlin Wall on November 9, 1989. The end of the Cold War was to start a chain of events that would reach Cuba also. One after the other, the countries under the U.S.S.R. became independent again and started the process of implementing market-oriented reforms. As a result, the Council for Mutual Economic Assistance (CMEA) established in 1949 to facilitate commerce between socialist economies under centralized planning was no longer a useful tool for trade and was dissolved in January 1991. In December of that year, the Soviet Union did the same. Two years after the fall of the Berlin Wall, Cuba was without the CMEA's preferential agreements and the huge subsidies from the U.S.S.R.

Anticipating what was to come, the Cuban government established in September 1990 a so-called "Special Period in Time of Peace". They were on target. The loss of markets was by no means trivial. Cuban economists estimated that 81 percent of Cuba's external commerce was conducted with CMEA countries. The breakdown of Cuba's exports to them was: 63 percent of its sugar; 73 percent of its nickel; and 95 percent of its citrus. The 85 percent of Cuba's total imports that came from the CMEA included: 63 percent of its food; 86 percent of its raw materials; 98 percent of its fuels and lubricants; 80 percent of its machinery and equipment; and 57 percent of its chemical products (Alvarez González and Fernández Mayo, 1992, pp. 4-5).

The demise of the Soviet Union and the CMEA did not show its devastating effects on Cuba's sugar industry until the 1992-1993 season. The 1992-93 sugar campaign showed drastic declines in all sugarcane and sugar indicators: 35.3 Mg cane/ha, less than 43 million Mg of sugarcane, an industrial yield of 9.85 percent resulted in a sugar output of 4.30 million Mg (Table 2).

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Two other events were going to reinforce the previous impact. One was the implicit recognition by the Cuban leadership that the failure of the state extensive growth model applied in agriculture, and especially in sugarcane, was representative of the rest of the economy. In agriculture, foreign and domestic researchers had been documenting the differences in production and productivity between the state and non-state sectors, especially in sugarcane (Puerta and Alvarez, 1993; Nova González, 1994; Alvarez and Puerta, 1994). The other event was the increasing influence of the most conservative sectors of the United States that began a campaign to reinforce the economic sanctions against Cuba as a means to overthrow the Cuban government. The most important result was the enactment of the so-called "Cuban Democracy Act" in October 1992 (i.e., Torricelli Bill).

It was obvious that the Cuban leadership needed either a miracle or a change away from collectivization. In a country that proclaims its atheist nature, they had no choice but to select the latter rather than the former, but in a very timid manner. Right after the end of the 1993 harvest, Fidel Castro made his famous speech of July 26, 1993 in Santiago de Cuba heralding the implementation of economic reforms intended to save the Cuban economy from the chaos that was threatening the government's stability. That process would assess a devastating blow to Cuba's first industry.

### **Reforming: 1993-95 and Beyond to 2002**

For the three reasons explained in the preceding section (production inefficiency, demise of Soviet Union and CMEA, and reinforcement of U.S. economic embargo), the Cuban government was forced to experiment with market-oriented reforms to keep it afloat (Alvarez, 2004, pp. 73-130). The sugar industry's previous temporary ups and downs (see Hagelberg and Alvarez, 2006) seemed to have reached their final phase; tourism was to replace sugar as the pivotal sector of the economy. For the first time in its history, it was certain that this was the beginning of the end.

The main policy reform was carried out in the agricultural sector (see Alvarez, 2004, pp. 73-130). It consisted in the breakup of the state monopoly on land to establish a new type of cooperative called "Basic Unit of Cooperative Production (UBPC)". In addition, free agricultural markets and foreign investment were allowed. The latter two had little effect on agriculture. Sugarcane production units had nothing to sell in the markets since their raw product needs to be processed and the state is the owner of all sugar mills, and the sugarcane farms were not allowed to sell the produce from their self-sufficiency plots. In addition, foreign capitals went to Cuba in quantities much smaller than anticipated. This fact had a very damaging impact on the sugar sector since the government's enthusiasm for tourism translated into allocating most of the foreign exchange generated by the exports (including sugar) to the expansion of the tourist sector and not one penny to the sugar industry.

The economic reforms carried out in the countryside, especially in the sugar sector, did not produce the expected results. (Alvarez, 2005, contains an evaluation of the UBPCs' performance during their first 10 years). From 1993 until 2002, the sugar agroindustry showed the lowest average performance of its entire history: agricultural yields, total sugarcane production, industrial yields, and total sugar output declined to levels never seen before for so

many continuous years (Table 3). It became obvious that new changes were necessary.

Table 3. Average selected indicators of Cuba's sugar agroindustry, 1992-93 through 2001-02†.

Crop year	Sugar	Sugarcane	Agric. yield	Industrial yield
	Mg sugar x 10 <sup>6</sup>	Mg cane x 10 <sup>6</sup>	Mg cane /ha	%
1992-93	4.30	42.9	35.3	9.85
1993-94	4.00	43.2	34.6	9.20
1994-95	3.33	33.6	28.5	9.90
1995-96	4.45	41.3	33.2	10.80
1996-97	4.25	38.9	31.2	10.90
1997-98	3.23	32.8	31.3	9.90
1998-99	3.78	34.0	34.1	11.10
1999-00	4.06	36.3	35.6	11.70
2000-01	3.53	32.1	31.4	11.00
2001-02	3.60	34.7	33.3	10.40

†Alvarez and Peña Castellanos (2001, p. 3). ONE (1999–2002).

### **Restructuring: 2002-06**

In April 2002, the Cuban government announced a drastic restructuring program (see Alvarez and Pérez-López, 2005, pp. 145-169, or visit <http://edis.uf.edu/FE472>) called “Tarea Alvaro Reynoso (The Alvaro Reynoso Task),” based on three stated reasons:

1. Depressed world market sugar prices.
2. Negative outlook for the world sugar market.
3. Excess capacity of its sugar industry, well above current and future needs.

The objectives of the restructuring plan were:

- To achieve efficiency and competitiveness in sugarcane and sugar production,
- To increase food production through agricultural and industrial diversification,
- To develop a sustainable agricultural sector, supported by knowledge and human capital.

This argument is hard to understand. It is true that, for a long time, the world sugar price remained extremely low. However, the New York Board of Trade ([www.nybot.com](http://www.nybot.com)) show an average world raw sugar price (Contract No. 11) of 8.51cts/lb in calendar 2000 and of 9.12 cts/lb in 2001, the two years that preceded the restructuring announcement, during which studies were being conducted.

The tasks assigned to the Ministry of Sugar were:

1. In the industrial sector a reduction and redirection of the existing 156 mills:
  - 71 would continue to produce sugar;
  - 14 would produce sugar and molasses for animal feed;
  - 71 would be deactivated:
    - 5 would be converted into museums for tourists,
    - 5 would remain in stand-by to meet future needs,
    - 61 would be dismantled.

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2. In the agricultural sector:

- Sugarcane production: 700,000 ha (from 2.2 million ha),
- Yield objective: 54 Mg cane/ha,
- Length of harvest season: 90-100 days,
- 127,344 ha for molasses.

3. Sugar production target: 4 million Mg sugar/year:

- 700,000 Mg sugar for domestic consumption,
- 3.3 million Mg sugar to satisfy export commitments, but it allows sales in the world market when profitable.

4. Depending on soil testing results, land shifted out of sugarcane (1,378,000 ha) will be devoted to produce mixed food crops, livestock, fruit trees, and forestry.

Some Restructuring Impacts:

- Smaller, less-efficient mills are out of production,
- Daily grinding capacity is up 15 percent,
- Most municipalities have been adversely affected,
- Most of the 100,000 displaced workers were given the opportunity to go back to school,
- Foreign investment was only allowed in by-products and derivatives, but not on sugarcane production or processing.

Almost every important parameter in the four seasons after implementing the restructuring plan have performed so negatively that total sugar output has descended to the lowest levels since the beginning of the revolution in 1959: 2.25 million Mg in 2002-03, 2.45 million Mg in 2003-04, 1.30 million Mg in 2004-05, and 1.2 million Mg in 2005-06 (Figure 1). The extreme of the situation portrayed in Figure 1 is made more obvious since the first year of the times series is the beginning of the Special Period and also of the descending trend in sugar production. When the simple regression analysis was applied to the 1990-91 through the 2005-06 period, the coefficient representing the average annual rate of decline translated into 308,000 Mg sugar/year (Table 2).

The main result, however, was that the restructuring plan had put an end to decades of national debate about the role of sugar in the Cuban economy. The leadership of the current regime has blamed the sugar industry for all the problems of the country: monoculture, slavery, foreign dependence, and many more. For many years, most of those people tried to convince Castro of the historical need to eliminate Cuba's first industry. It appeared that those voices found receptive ears.

Castro himself made public he had ordered the restructuring process. In a speech at the University of Havana in November 17, 2005, to celebrate the 60<sup>th</sup> anniversary of his entrance to Law School, he stated:

I called the Minister and told him: "Tell me, please, how many hectares are ploughed?" The answer: "Eighty thousand". My response was: "Not one hectare more." That wasn't really up to me, but I had no option; you just can't let the country

go down the tubes, and in April I was looking at 20,000 caballerías [280,000 hectares] of land being ploughed” (Castro Ruz, 2005).

Sugar is no longer the engine of the economy, and it is almost impossible to return to high levels of output under current conditions.

The final blow occurred only three years after the restructuring announcement. The requiescat was pronounced by Fidel Castro himself in March 2005. He affirmed that Cuba “will never return to living off sugar, [which] belongs to the era of slavery.” He also added that, because of its high fuel consumption, what was before Cuba’s first industry “today is its ruin” (EFE, March 17, 2005). To corroborate his statements, he ordered the closing of 43 additional mills three months later, decreasing the total number to 42.

### **Revival Attempt: 2006-?**

Coincidentally, the requiescat pronounced in March 2005 took place in the month that the world price reached its highest point (10.57 cts/lb) of a price surge initiated a year - earlier. Many commodity traders believe that higher oil prices will make ethanol from sugar more attractive and want to take advantage of this upward price trend in sugar (Barta, 2006). It is obvious that depressed world sugar prices were an invalid excuse for Castro. Raw sugar prices continued the increasing trend during 2005 reaching an average of 11.35 cts/lb for the year.

Less than one year later, on February 14, 2006, after the price hit 17.27 cts/lb in January, Fidel Castro made an attempt at revitalizing his agonizing sugar industry, wielding the same excuse he had used to justify its partial demise. He summoned most people working with sugar at the Ministry, research centers, other public institutions throughout the country, to a meeting under the leadership of the Cuban Communist Party to analyze the situation and develop plans for at least a partial revival of the industry to take advantage of rising world prices. A second meeting followed a month later (Varela Pérez, 2006). More pressure was put on the sugar scientists, technicians, and workers who now must work a miracle with a devastated industry they had worked to dismantle four years earlier.

## **IMPLICATIONS FOR THE U.S. SUGAR INDUSTRY**

The suspension of the U.S. Cuban sugar quota in 1960, along with a few other concurrent events, helped in the development of Florida’s sugar industry during that decade. Since the quota was distributed among domestic and foreign suppliers, and because fructose corn syrup and artificial sweeteners have captured a large share of the U.S. sweeteners market, there has always been the concern of what would happen if Cuban sugar were to regain its place in the U.S. sugar program.

The international sugar market, however, has changed tremendously since 1960. Today, the issue is not the fate of the Cuban quota, which has practically disappeared. A potential free world sugar market makes competitiveness the real issue. Because of their geographical proximity and historical trading tradition, Florida would have more to lose than the rest of the U.S. sugar producing states if Cuba were to regain its competitive position.

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At present, Cuba's sugar industry does not appear to pose a competitive threat to the U.S. industry for two main reasons. First, the political environment of escalating confrontation between the two governments casts no doubts about the continuation of the status quo. Second, Cuba is in no position for exporting sugar beyond its current trade commitments. Production has been so low in the last few years that Cuba has been forced to purchase sugar in the international market to satisfy domestic demand. Sugar has been imported from Brazil and Colombia, among other countries, in recent years. Unrealistic as it may sound, the Associated Press reported that Cuba's state food import company (Alimport) announced during the celebration of Havana's annual trade fair in November 2003, that "it was negotiating a possible purchase of US sugar turning on its head Cuba's historic role as a sugar supplier to the United States." Wayne Carrick, of PS International of Chapel Hill, NC, confirmed negotiating between 5,000 to 15,000 tons (Associated Press, November 10, 2003). The negotiation was unsuccessful because of the strong opposition of some sectors of the Cuban exile community in the United States.

How does the deterioration of Cuba's former main industry compare to the performance of Florida sugar industry during the same time period? From the 2002-03 season, the first campaign after restructuring, through the 2005-06 campaign, Florida's performance has been far superior compared to Cuba's. The average of the four seasons shows that Florida's six raw sugar mills produced 1.836 million Mg sugar per year, while to produce slightly less (1.808 million Mg sugar/year) Cuba utilized an average of 64 sugar mills per season (Table 4). Despite the differences in mill capacity, that fact may be an indicator of existing differences in production costs.

The cost of producing sugarcane and processing it into sugar is another variable that could reveal differences in economic efficiency between the two producing areas (see Hagelberg and Alvarez, 2005, pp. 171-188). Cost figures are very hard to find, especially for Cuba. However, scattered information can provide some rough estimates for comparison purposes. In his analysis using LMC International's famous survey of sugar and high fructose corn syrup production costs for the 1998-99 season, Haley (2001) presents information from which one can derive a few conclusions:

- The cost in the four cane-producing areas of the United States (Florida, Louisiana, Texas, and Hawaii), range from an average low cost of 11 cts/lb to an average high cost of 22.93 cts/lb,
- Florida shows the lowest field and factory costs of the four regions,
- Florida's factory costs averaged 36 percent lower than the weighted-world average.

Therefore, it is obvious that Florida's cost per pound must be closer to the lower than to the higher end of the cost range estimated for the four U.S. cane-producing regions.

Cuba is included in a group of seven major exporting countries, in the company of Australia, Brazil, Colombia, Guatemala, South Africa, and Thailand. The average cost for this group is set at 9.73 cts/lb of raw cane sugar. Since the group includes a few of the very low cost producers, headed by Brazil, it is obvious that Cuba's cost has to be much higher than the average portrayed. In 1997, the international sugar specialist James Fry stated that Cuba's costs of production were "over US\$0.20/pound" (General, 1997).

Table 4. Total raw sugar production and number of mills grinding, Cuba and Florida, seasons 2002-03 through 2005-06†.

Crop year	Florida		Cuba	
	Mills number	Production Mg sugar x 10 <sup>6</sup>	Mills number	Production Mg sugar x 10 <sup>6</sup>
2002-03	6	2.129	79	2.205
2003-04	6	2.154	79	2.529
2004-05	6	1.693	56	1.300
2005-06	6	1.368	42	1.200
Average	6	1.836	64	1.808

†<http://www.ers.usda.gov/briefing/sugar/data.htm>; and ONE (2003-2006).

Therefore, there is not a competitive threat under the current situation. In the medium term, a true international free trade agreement in sugar could generate the conditions for a potential danger because of the geographical proximity of the two producing regions. However, for the threat to materialize Cuba's industry would have to undertake a painful and costly process that some authors (Pérez-López and Alvarez, 2005) have called "reinventing." The next section briefly explains some of the steps to be taken for Cuba to regain its former competitiveness.

### REINVENTING CUBA'S SUGAR INDUSTRY

First, we need to clarify the difference between "restructuring" and "reinventing." Pérez-López (2005, p. 297) states that restructuring entails a re-dimensioning (shrinking) of the industry to reduce capacity and costs. It leaves intact the land tenure system and state control over agroindustry resources and decision making because it is predicated on the socialist principles of state ownership of the nation's resources and centralized decision making.

Reinventing, on the other hand, aims to create a competitive and profitable industry on the historical foundation, but it would contemplate systematic structural changes such as private ownership, privatization, independent production units, and freely operating labor and input markets.

The process, explained in detailed in Pérez-López and Alvarez (2005), entails:

- Establishing a free market economy,
- Learning the lessons from other countries' experiences,
- Allowing foreign investment in production and processing,
- Implementing a true diversification plan in sugarcane, sugar derivatives and by-products,
- Implementing the concept of sugarcane "biorefinery": sugar, ethanol, and bio-products.

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The two previous paragraphs define the scope of a reinventing program for Cuba's sugar industry but does not mention explicitly who is likely to implement it. Obviously, since it has to be done under a free enterprise system, the current leadership must be excluded from the list of potential actors. Past experience indicates that Fidel Castro and his brother Raúl, despite recent claims by the international press that he is a reformer, are truly committed to socialism.

Could the so-called "Chinese model" be an option for the current Cuban leadership? A recent article by Marangos (2006) has concluded that "the strategy was only rendered workable in China, as the governments of transition economies neither had the mandate nor wanted to reimpose tight state direction of the policies, ideology and economy" (p. 221). Although Cuba is not in a transition to a free-market economic system, the Chinese strategy is not applicable either at present for two reasons. First, it requires massive influx of foreign capital. The Cuban leadership is minimizing foreign investment and many investors of the 1990s are leaving the island. Second, the mentality of the Cuban people, and their proximity to the United States (with a potential tightening of the embargo), would not allow the process to develop as smooth as it has in China.

Since the succession in process is expected to continue with the same policies, the reinventing can only take place under an administration resulting from a true transition to democracy, under the free enterprise system and the rule of law. What remains unknown is the make-up of that future new government.

An industry of modest size enough to fulfill domestic demand and foreign commitments, based on agricultural and industrial diversification, is in Cuba's future. Although the slogan of the Cuban republic ("without sugar, there is no country") should not be true in the future, no one can wipe out (on ideological grounds) 400 years of history based on a commodity for which the island has demonstrated the capability to achieve a solid competitive advantage.

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