

CUBAN CITRUS PRODUCTION IN A POST-TRANSITION ECONOMY

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When the transition from a centrally-planned economy to a market system finally occurs in Cuba, a number of important industries whose growth has been slowed or depressed will face conditions more favorable to expansion. Once the U.S. embargo is lifted, institutional change occurs, and foreign capital flows into the reviving system, market alignments for major export crops may be altered. The Cuban citrus industry provides a prime example. Expanded significantly as a part of the agricultural diversification program of the Castro regime, the citrus sector has suffered a slowdown in recent years. It should have the capacity, after transition, to supply at least 2 percent of the world output of citrus products. Although this market share is not a dominant one, it still places Cuba in the top dozen citrus producing countries around the world (Perry, Woods and Steagall, 1993 and 1994).

Given the emerging effects of NAFTA on the Mexican economy, the development of workable regional trade blocs in this hemisphere, and the continuing inefficiency of many smaller citrus producers in the Caribbean, the re-emergence of Cuba as a major player in hemispheric citrus markets would suggest changes in market shares and export earnings for some countries (Woods, 1987; Woods and Perry, 1991). It is possible that the market position of citrus producers in the United States could be affected, if only marginally. This paper briefly delineates the world citrus market, and examines production and marketing conditions in selected major producing nations. It describes the Cuban citrus industry, with-

in the limits of available information, and concludes with observations about the potential impact of expanded participation by Cuba in hemispheric citrus markets.

THE WORLD CITRUS MARKET

Citrus fruits originated in the Orient. They were introduced commercially to other nations when European trade began to expand after the Middle Ages. Ultimately, citrus plantings were made all around the Mediterranean, in those countries having an appropriate climate. When the New World was opened up by Spanish and Portuguese exploration, citrus cultivation followed. Plantings were made in most of the circum-Caribbean countries, including the Spanish territory that was later to become the State of Florida.

During the seventeenth and eighteenth centuries, the mercantilistic thinking of the time emphasized cash crops that could contribute to a colonizing country's self-sufficiency and could help to generate a favorable balance of trade. As a result, crops such as sugar, coffee, indigo, and tobacco were emphasized and supported. Citrus remained a minor item of commerce, primarily in the so-called "triangular trade" patterns around the Atlantic Ocean (Blouet and Blouet, 1993, pp. 136-137; Callender, 1965, pp. 50-54, 85-121; Nova González, 1994, p. 1).

Larger-scale commercial production of citrus and trade in both fresh and processed fruit began during the nineteenth century. As common sense suggests, a burgeoning world market for an agricultural com-

modity requires adequate production technology, efficient transportation, well-developed financial institutions and instruments, an international economy stable enough to support continued exchange, and markets large and affluent enough to absorb the product. This complex of requirements took shape as the nineteenth century wore on.

Today, citrus fruits are grown and traded around the world. Table 1 presents basic estimates for world production of citrus during the 1992-1993 season, generated by the Food and Agriculture Organization of the United Nations (FAO). Total world citrus output was estimated at 75.6 million metric tons, the highest level to date. As the data indicate, oranges dominated the world production of citrus fruits, accounting for 73.2 percent of total production volume in 1992-1993. Tangerines made up 11.0 percent of the total, lemons 9.1 percent, and grapefruit 6.6 percent.

FAO estimates are periodically revised, as better market information is acquired, so that annual comparability is not always assured. Nevertheless, the following FAO estimates for world citrus output suggest a growth trend over the recent past:

Crop Season	Output in 000 Tons
1992/1993	75,607
1991/1992	70,519
1990/1991	66,185
1989/1990	68,343
1988/1989	64,483
1987/1988	60,714

Since the average annual world output for 1978-1980 was 53.465 million metric tons, the output level shown for 1992/1993 suggests an average annual growth rate for citrus output of 2.7 percent, computed over a thirteen year period (FAO, *Commodity Review and Outlook*, various issues).

Much of the world output of citrus is destined for domestic consumption in the producing countries. Nevertheless, international trade in citrus fruit and products has become substantial. FAO estimates in

Table 2 show the levels of citrus fruit exports for 1991, 1992, and 1993. Slightly different figures are presented in the 1993-1994 *FAO Commodity Review and Outlook*. Total world citrus exports for 1991/1992 are estimated at 7.8 million metric tons, and for 1992/1993 at 7.6 million metric tons. In spite of these differences, it is clear that approximately ten percent of the annual world output is exported in the form of fresh fruit. Substantial amounts of the annual output are also processed, and exported as concentrate, segments, frozen concentrated orange juice (FCOJ), and similar products.

It is worth pointing out that the level of citrus production in a given country exerts a two-dimensional impact on trade in that commodity. The higher the level of citrus output relative to domestic consumption, generally the smaller the reliance on imported citrus products (apart from distributional effects, when consumers prefer a type of citrus or citrus product that is not produced domestically). And the higher the level of output relative to domestic production, the greater the probability that there will be a surplus for export.

The share of major producing countries in world citrus output has shifted in recent years, responding to significant changes in the international political and economic environment, as well as to resource limitations in specific countries. Table 3 compares the ranking of leading citrus-producing countries for three recent time periods. The countries are ranked by the volume of citrus output, measured in metric tons.

Note that Brazil and the United States have been the two primary world producers over the past decade, although Brazil assumed first ranking only recently. China, however, has moved up rapidly to a position that now challenges Spain and Mexico. Israel has dropped in the rankings since the 1970's, while Cuba has finally achieved a position among the top twelve citrus producers with the 1992-1993 crop. These rankings suggest a market that is not only open to entry, but that permits fairly rapid changes in market shares among competing producers.

Table 1. World Production of Citrus Fruits—Major Producing Countries, 1992-1993 Season (000 Metric Tons)

Country or Area	Total Citrus Production	Oranges	Tangerines	Lemons	Grapefruit
World	75,607	55,379	8,322	6,880	5,026
Developing Countries	46,488	36,737	3,641	4,224	1,885
Developed Countries	29,119	18,642	4,680	2,656	3,141
Brazil	16,062	14,974		803	
United States	12,976	9,249	352	834	2,541
China	6,103	5,350	260		340
Spain	5,290	3,002	1,521	737	
Mexico	4,026	2,852		845	
Italy	3,524	2,218	515	785	
Japan	2,180	194	1,986		
Argentina	1,620	650		560	180
Greece	1,316	1,061		169	
Morocco	1,151	831	316		
Israel	894	377	116		383
Cuba	777	428			307
Australia	620	509			
Uruguay	246	135			

Note: Normal crop year is October-September. For southern hemisphere countries, data refer to crops harvested in 1993.

Source: FAO (1994a).

PROFILES OF CITRUS PRODUCTION IN MAJOR PRODUCING COUNTRIES

A brief review of the production characteristics of selected citrus-producing countries and regions will emphasize some of the factors leading to dominance or change. Note that the coverage below is not comprehensive or exhaustive, but should provide a representative sample of production arrangements and institutions.

The United States: Citrus plantings in the United States date from the earliest Spanish explorations and settlements. By the time William Bartram made his famous trips through the Southeast, both cultivated and wild groves of citrus could be found along the major Florida waterways and in the settled areas. Today, citrus production is concentrated in the states of

Table 2. Annual World Exports of Citrus Fruit, 1991-1993, Metric Tons

Category	1991	1992	1993
Oranges, Tangerines, Mandarins	5,521,003	5,864,228	6,356,218
Lemons and Limes	1,020,404	1,089,440	1,133,507
Other Citrus Fruit	1,100,363	994,422	1,008,237
Total of the Above	7,643,761	7,950,082	8,499,955

Source: FAO (1994b).

Florida, California, Texas, and Arizona. Florida dominates the industry, with 71 percent of the annual orange output and 69 percent of the grapefruit output (1989 percentages). California produces 27 percent of the oranges, while Texas accounts for 19

Table 3. The World's Major Citrus-Producing Countries

Rank	Ranked by 1985-1987 Average Production Levels	Ranked by Production for 1989-1990 Crop Season	Ranked by Production for 1992-1993 Crop Season
1	Brazil	Brazil	Brazil
2	United States	United States	United States
3	Spain	Spain	China
4	Japan	China	Spain
5	Italy	Italy	Mexico
6	Mexico	Mexico	Italy
7	Egypt	Japan	Japan
8	Morocco	Egypt	Argentina
9	Israel	Argentina	Morocco
10	Argentina	Turkey	Israel
11	Turkey		Greece
12	Greece		Cuba
13	South Africa		Australia

Sources: FAO (1994a); Ward and Kilmer (1989); and Behr and Bedigian (1991).

percent of the grapefruit. Lemons are a California and Arizona specialty (Ward and Kilmer, 1989, p. 7).

The U. S. citrus industry is characterized as “self-regulated with little government involvement in the daily marketing transactions” (Ward and Kilmer, 1989, p. 150). Citrus production is highly competitive, with more than 20,000 producers serving the market. They may sell their output directly, on the spot or by contract, or they may operate through a cooperative. As in a number of other countries, processing is more concentrated. The top 5 Florida processors, for example, controlled 50 percent of production in 1989, qualifying this stratum of the market as oligopolistic.

Governmental policies to protect the domestic citrus industry are of long standing. In 1790, for example, the first national tariff act was amended to include import duties on plums, prunes, oranges, and lem-

ons. In 1922, California lemon interests exerted enough political pressure to raise import duties on competing fruit. In 1929, the Federal government provided aid to the State of Florida in its fight against the Mediterranean fruit fly. And during both the Hoover Administration and the succeeding Roosevelt Administration, Federal aid to the industry was extensive (Benedict, 1953, pp. 45, 204, 260-265).

The citrus industry was a prominent player in early New Deal attempts to revive the economy. Under the Agricultural Adjustment Act of 1933, for example, agreements among citrus owners were aimed at coordinating shipments so as to stabilize the national industry. National coordination proved unworkable, soon devolving into regional programs. Marketing orders, both Federal and state, have been fairly common since the 1930's. Between December 1993 and June 1955, for example, 14 major Federal marketing orders or licenses were issued, variously affecting citrus activities in Florida, California, Arizona, and Texas (Benedict and Stine, 1956, pp. 381-394). The Florida Department of Citrus is sanctioned by a marketing order. The Florida Citrus Commission thus can exert its influence to control citrus grades and standards, and to provide support for market development (Ward and Kilmer, 1989, pp. 150-151).

The success of the U. S citrus industry rests upon a number of favorable characteristics: the availability of regionally limited but spatially adequate land for citrus plantings; competitive conditions at the producing level, contributing to more efficient production; access to the latest technology; access to adequate financing; access to markets; and a favorable governmental climate in which to operate.

Brazil: The Brazilian citrus industry expanded rapidly in recent years, bringing Brazil to the top position among citrus producers world-wide. The industry is competitive at the production level, with at least 5,000 grower-owned groves. The situation at the processing level is quite different, suffering from substantial governmental control through taxes, subsidies, licensing procedures, and credit programs. Processing qualifies as an oligopolistic market organization. The government also issues export li-

censes, and influences export prices through the Foreign Trade Department of the Bank of Brazil (Ward and Kilmer, 1989, pp. 152-154).

The production of citrus juice concentrates has assumed increasing economic importance since 1965. The industry is concentrated in and around São Paulo, and was originally financed by domestic capital. Recent inflows of foreign capital have supported its continued expansion. Seven of the eight major producers of concentrate were located in the São Paulo area in 1978. Three of those firms controlled over two-thirds of concentrate output. The concentrate industry absorbed about two-thirds of national orange production in 1976, and planned to export ninety percent of its output (Dickenson, 1978, p. 71).

The Florida citrus industry experienced severe freezes in 1981, 1982, 1983, and 1985, substantially reducing field production capacity. Brazilian citrus products filled the gap. By 1983, Brazil's annual output of oranges equaled that of the United States. In subsequent years, Brazilian production became dominant in the world market. Today, Brazil and the United States normally supply over 50 percent of the world's annual commercial supply of oranges. They also supply a high percentage of the world's processed citrus juices (Ward and Kilmer, 1989, pp. 130, 144, 147).

In spite of hyperinflation and other recent economic and political problems, Brazil has maintained its leading position as an exporter of coffee, orange juice, soybean oil, and soybean meal. It has also enjoyed a large positive balance of trade with the United States. In 1990, Brazil also benefited from the Florida crop freeze, which held the price of FCOJ above production costs (USDOC, ITA, 1992, p. 5).

Brazil's recent rise to citrus dominance is documented in Table 4. Since the 1979-1980 growing season, both orange and FCOJ output have doubled, while exports of FCOJ have more than doubled. It is clear that extensive governmental control of the processing and marketing levels of the industry have not eliminated the advantages Brazil enjoys: extensive landholdings, some of them well suited to citrus culture; a large and relatively low-paid labor force; adequate

access to both domestic and foreign financing of the industry; a growing market for the primary product; and access to the latest production technology.

Mexico: The Mexican citrus industry offers a major success story. Beginning commercial production in the late nineteenth century, Mexican citrus growers gradually expanded acreage under cultivation to 915,000 acres in 1990. In terms of physical volume of output, Mexico ranked sixth among world producers from 1985 to 1991, and moved up to fifth place during the 1992/1993 crop season (see Table 2). It is anticipated that the trade-enhancing effects of NAFTA, the availability of suitable citrus land, abundant supplies of relatively cheap labor, and access to current technology will spur additional growth in the industry (Perry, Woods and Steagall, 1993 and 1994; Behr and Bedigian, 1991, pp. 1-2, 14).

Citrus plantations are located throughout Mexico, where land availability and climate support production. The highest concentration of groves is found in the river basins in the eastern part of the country. The state of Veracruz typically produces about 35 percent of annual citrus output. Other important citrus centers are found in San Luís Potosí, Tamaulipas, and Nuevo León (Behr and Bedigian, 1991, p. 2).

The productivity of the citrus industry has been limited in part by the system of land tenure in Mexico. Ejidatarios control some of the smaller, poorly maintained groves, with little opportunity for improvement. Private grove owners normally have larger, more productive holdings, but even these are limited in size by government regulations. It is not unusual to see members of an extended family pooling their ownership rights to obtain larger contiguous parcels of land. Until very recently, foreign ownership of Mexican assets was also severely limited, discouraging the flow of venture capital into many agricultural pursuits (Behr and Bedigian, 1991, pp. 5-7).

The number of processing plants in Mexico has risen from 9 in 1981 to 22 in 1991. Increasing amounts of frozen concentrated orange juice are being produced, but the plants still reportedly have unused capacity,

Table 4. Brazilian Production and Utilization of Oranges and FCOJ, 1979-1980 to 1994-1995

Season	Orange Production and Utilization, São Paulo Millions of 90-pound Boxes			Brazilian FCOJ Production and Utilization Millions 42° Brix Gallons		
	Fresh	Processed	Total	Production	Domestic Consumption	Exports
1979-1980	31	124	155	150.0	3.8	132.1
1980-1981	32	138	170	170.0	4.1	171.4
1981-1982	25	155	180	207.6	4.5	204.8
1982-1983	34	161	195	195.8	4.5	174.8
1983-1984	35	165	200	214.1	3.4	231.4
1984-1985	20	185	205	270.3	5.2	263.8
1985-1986	19	220	239	301.7	6.9	242.0
1986-1987	50	170	220	207.9	6.9	241.0
1987-1988	40	180	220	244.8	6.9	254.5
1988-1989	35	175	210	245.8	6.9	243.8
1989-1990	40	255	295	362.0	6.9	330.7
1990-1991	40	202	242	297.6	6.9	280.0
1991-1992	38	212	250	327.2	6.2	341.0
1992-1993	40	274	314	394.8	6.2	375.8
1993-1994	55	247	302	358.6	6.2	351.7
1994-1995	55	245	300	353.4	6.9	353.4

Note: Fresh orange figures include fresh orange exports. 1994-1995 level is forecast.

Source: Agricultural Officer, Sao Paulo, as reported in Behr, *The 1994-1995 Situation and Outlook for the Brazilian Citrus Industry*.

being able to process 20 to 30 million boxes per season (Behr and Bedigian, 1991, pp. 9-10).

Table 5 delineates the growth of the Mexican citrus industry from 1980 to 1990. Total citrus output increased by about a million metric tons over the decade, with the strongest increases in oranges and tangerines. The average level of output during the 1970-1980 period was slightly less than 2 million metric tons, which confirms an earlier beginning for the growth trend.

In spite of the constraints placed upon the Mexican citrus industry by landholding patterns and government policies, it has grown and, certainly compared with the industries of many other citrus-producing

countries, has prospered. The market-expanding effects of NAFTA have yet to be realized.

China: English-language source materials concerning the citrus industry of the People's Republic of China are scarce. Standard Chinese histories and economic geography texts emphasize other major cash and export crops, and refer to citrus production in a peripheral manner, if at all. Some aggregate information has been provided in recent years by the Chinese State Statistical Bureau, but no details are readily available to permit disaggregation into citrus types or varieties.

Some fragmentary data suggest regional specialization of the industry. In 1985, citrus production was reported for 16 separate provinces in China. Six provinces accounted for about 90 percent of output:

Table 5. Citrus Production in Mexico, 1980/1981 to 1990/1991, 000 Metric Tons

Year	Oranges	Grapefruit	Tangerines	Other*	Total
1980-81	1,600	163	120	530	2,413
1981-82	1,650	115	130	632	2,527
1982-83	1,380	100	110	623	2,213
1983-84	1,220	85	110	603	2,018
1984-85	865	55	60	603	1,583
1985-86	1,410	82	123	509	2,124
1986-87	1,683	91	131	609	2,514
1987-88	1,942	105	151	681	2,879
1988-89	2,268	75	157	689	3,189
1989-90	2,200	100	169	709	3,178
1990-91	2,400	118	198	713	3,429

*Includes lemons and limes. 1990-1991 figures are forecast.

Source: USDA, FAS, AAO, Mexico City, cited in Behr and Bedigian (1991).

Sichuan, Guangdong, Zhejiang, Hunan, Guangxi, and Fujian. Sichuan province ranked first, with 574,729 metric tons. Estimated export figures for 1993 show 103,491 tons of oranges, 250 tons of lemons and limes, and 7,541 tons of other citrus fruit (PRC, 1990, p. 147; FAO, 1994b, Tables 54-56). The salutary effects of Nixon-administration diplomacy are in evidence here, as the opening of mainland China to other world markets stimulated much diversification and increasing interest in export markets.

SMALL CITRUS-PRODUCING COUNTRIES IN THE CARIBBEAN BASIN

A number of small nations in and around the Caribbean (in addition to Cuba) produce citrus fruit for the world market. The list of such island nations includes the Bahamas, Barbados, Dominica, the Dominican Republic, Jamaica, Martinique, Saint Lucia, St. Vincent, and Trinidad and Tobago. On the periphery of the Caribbean, Belize and Guyana are also citrus producers. Many of these nations are members of CARICOM, and most of them are accorded preferential access to the U. S. market by the Caribbean Basin Initiative, to Canada through Caribcan, and to European markets through the Lomé IV agreement.

The Caribbean Basin Initiative (CBI) and Caribcan: The CBI began operation on January 1, 1984, with an anticipated 12-year initial life span. Its basic purpose was "to promote private sector-led economic growth, stability, and diversification in the CBI region . . . through the provision of duty-free access to the large and lucrative U. S. market" (USDOC, ITA, 1988; Woods, 1987). CBI represented the response of the U. S. government to deteriorating economic conditions in the Caribbean Basin, recently worsened by the effects of the 1981-1982 recession.

Reconsideration of CBI by Congress led to passage of the Caribbean Basin Economic Recovery Expansion Act of 1990 (CBERA). This revision of the 1983 legislation made CBI a permanent program of the U. S. Government, with no termination date; it also targeted some developing countries (Belize and the Eastern Caribbean islands) for special efforts to encourage wider use of CBI preferences (USDOC, ITA, 1990). Currently, 23 countries qualify under CBI for exemptions from U. S. customs duties, Belize among them. Four other countries are eligible, but have chosen not to participate at this time. Panama was suspended from the program in April, 1988, and was reinstated on March 17, 1990.

CBI does not provide blanket access to U.S. markets. The law specifically excludes a variety of items from duty-free entry, including most textiles and apparel, canned tuna, petroleum and petroleum products, most footwear and gloves, some leather goods, and watches and watch parts originating in communist countries. In addition, any goods entering the United States from CBI countries must meet all relevant laws and regulations for consumer safety and protection. Two specific screening requirements are that the imported goods must show at least 35 percent value added by the producing country (prohibiting a simple “pass-through”), and that goods produced from materials originating outside the CBI must show a “substantial transformation” in the CBI manufacturing process (USDOC, ITA, 1990, pp. 7-10).

Caribbean is a similar preferential access program, covering most of the same Caribbean countries, established and maintained by the Canadian government. Many of the same provisions are found in Caribbean, including restrictions on the domestic content of Caribbean exports entering Canada.

The Caribbean Basin Initiative has generated uneven results. As the figures in Table 6 show, exports to countries covered under the latest version of the legislation (CBERA 1990) have just about doubled since 1984. In contrast, imports actually dropped from 1984 to 1986 (in spite of a strong dollar that peaked in 1985), and then recovered through 1993. According to these figures, the CBERA countries still suffer an aggregate balance of trade deficit with the United States.

Not insensitive to this imbalance, policy-makers in Washington have attempted to encourage the development of non-traditional exports, including citrus fruit and citrus products. Some success has been observed. In 1993, for example, frozen concentrated orange juice exports valued at US\$12.9 million (c.i.f.) entered the United States from CBERA countries. Leading items that have benefited from CBERA since 1984 include beef, pineapples, frozen concentrated orange juice, tobacco leaf, and rum. As a result of U.S. lending, 17 export-enhancing projects received \$103 million in financing in 1993, among them fruit processing and juice processing facilities.

Table 6. U. S. Exports to and Imports from CBERA Countries, Selected Years, US\$000

Year	Value of Exports	Value of Imports
1984	5,952,884.00	8,649,235.00
1986	6,064,644.00	6,064,745.00
1988	7,421,840.00	6,061,054.00
1990	9,307,140.00	7,525,208.00
1992	10,901,693.00	9,425,616.00
1993	11,941,917.00	10,094,033.00

Source: U.S. International Trade Commission, *Impact of the Caribbean Basin Economic Recovery Act*. National Trade Data Bank (NTDB), ITEM TC LCARIB, April 7, 1995, Tables B-3 and B-4.

The countries that have benefitted include the Dominican Republic, Dominica, and Belize (USITC, 1995, Chapter 3, Table 3-2).

The Lomé Convention: The Lomé Convention was signed in Lomé, Togo, in 1975, by representatives of the European Economic Community (EEC) and some 50 low-income countries in Africa, the Caribbean, and Oceania (ACP). It replaced and broadened a prior preferential treaty between France, Belgium, and 18 former African colonies. Following the provisions established by the General Agreement on Tariffs and Trade (GATT), the EEC provided indirect aid to the low-income countries through lower tariffs for specified trade commodities. It has been renewed three times. In its latest negotiated version, Lomé IV currently provides free entry into EEC countries for manufactured goods and some agricultural products from the more than 60 ACP members, and the entry of primary commodities at stable prices. The EEC also provides development assistance and food aid to ACP countries (Grennes, 1984, pp. 202-214; USDOC, ITA, 1994, Appendix C).

The export data in Table 7 confirm that citrus exports from major Caribbean countries have increased over the past decade, perhaps five-fold, while the dollar value of these exports has trebled. Although citrus exports do not constitute a large percentage of the value of exports from these countries, citrus never-

Table 7. Citrus Fruit Exports from Selected Caribbean Countries, 1980 and 1991-1993

Country	Total Citrus Fruit Exports in Metric Tons				Value of	Value of
	1980	1991	1992	1993	Exports, 1980, US\$000	Exports, 1993, US\$000
Bahamas	0	2,226	696	1,970	0	745
Barbados	0	4	3	1	0	1
Dominica	1,040	2,344	1,780	1,880	249	790
Dominican Republic	191	10,336	9,300	9,750	28	2144
Grenada	0	66	60	60	0	30
Guadeloupe	17	0	1	0	15	0
Jamaica	3,188	9,999	11,106	12,073	1818	3585
Martinique	1	72	11	3	1	4
Saint Lucia	31	46	48	49	13	45
St. Vincent	0	200	202	170	0	40
Trinidad and Tobago	479	57	62	122	208	52
All Countries Listed Above	4,947	25,350	23,269	26,078	\$2,332	\$7,409

Note: Some of the figures for later years are estimated or forecast by the FAO, and may be revised as better information becomes available. Zero entries indicate either no production, negligible commercial production, or unrecorded production.

Source: FAO, Trade Yearbook, 1981 and 1993.

theless is an effective producer of foreign exchange. The economies of these countries are best described as fragile, with limited land resources and opportunities for diversification. Some of them have developed petroleum resources (Aruba, the Bahamas, the Netherlands Antilles, Trinidad and Tobago) to compensate for the debilitating effects of sugar quotas. Tourism has also become an effective generator of foreign exchange, creating dual monetary systems in some areas (Perry, Woods, and Steagall, 1994).

World Bank analysts conclude that the future of preferential trade agreements, such as those in the Caribbean, is uncertain. Sugar preferences will probably continue for the immediate future, they argue. However, a "banana shock" is quite possible, since the banana market is more vulnerable (The World Bank, 1993, *passim*).

THE CUBAN CITRUS INDUSTRY

The first plantings of citrus trees in Cuba were accomplished in the early 16th century. Strong commercial development of citrus waited until the beginning of the 19th century, long after the mercantilistic

drive for trade surpluses emphasized the production of sugarcane, tobacco, and coffee. Expansion continued over the decades, emphasizing grapefruit. By the end of the Second World War, Cuba had over 3,200 acres of citrus plantings, concentrated in the provinces of La Habana, Pinar del Río, and Oriente.

At the time of the Cuban Revolution, in 1959, the island economy had approximately 30,000 acres of citrus plantings, which produced about 60,000 metric tons of fruit per year. This output equalled 1.5 million 90-pound boxes. About 3,000 metric tons were exported mainly to the United States. The U. S. market was closed to Cuban citrus exports by 1961 (Nova González, 1994; pp. 1-3; Behr and Albrigo, 1991, p. 2).

The drive to diversify the Cuban economy, reducing its dependence upon export crops such as sugar, included significant expansion of citrus plantings, the encouragement of domestic citrus consumption, and the support of better agricultural practices. New annual plantings of citrus gradually increased after 1959 (when 40,928 acres were planted) and 1974

(when 84,407 acres were planted). During the 1980's, 10,000 to 18,000 acres per year were routinely planted to citrus, much of it replacing or supplementing less productive plots (Nova González, 1994, pp. 3-5, Table 6).

By 1990, Cuba had 355,700 acres in citrus, 281,600 acres of which were bearing (79.2 percent of the total). The remaining 74,100 acres, about 21 percent of the total, were devoted to non-bearing uses such as roads and schools. The plantings are concentrated in the central and western portions of the island, with the largest individual groves situated in Jagüey Grande, Matanzas Province, and on Isle of Youth (Behr and Albrigo, 1991, pp. 1-3, Figure 2).

In order to compensate for the vagaries of the weather, irrigation systems were installed to service most of the plantings. By 1989, approximately 81 percent of the acreage was served by some kind of irrigation system, portable, semi-static, or permanent. In addition, dams were built to provide a reliable water supply in areas where underground water supplies are undependable. (Nova González, 1994, pp. 10-11). Álvarez lists 19 dams built from 1966 to 1989, whose primary or partial purpose was for citrus cultivation. Another six new or expanded dams were reported to be under construction in 1989 for the same purposes. Government data indicated that the physical area of citrus plantings irrigated in 1989 was 164,500 hectares. (Álvarez, 1994, pp. 39-47).

The organization of the citrus industry leaves no doubt that it is part of a centrally-planned economy. Thirteen government "enterprises" are responsible for about 90 percent of citrus output. The enterprises are, in turn, subject to control by the Junta Central de Planificación (JUCEPLAN). Private interests control the remaining 10 percent of output. In 1990, 20 packinghouses packaged fresh fruit for the market. Three new processing plants came on line from 1975 to 1990, supplementing an older and probably obsolescent plant. Hard data are lacking, but it appeared that only about 200,000 tons of citrus were being processed in 1990. The fresh market still was dominant (Behr and Albrigo, 1991, pp. 4-8).

From 1959 to 1990, Cuban citrus production increased about fourteen-fold (Nova González, 1994, pp. 6-7). Reliable, consistent, and comparable data tracking this growth are difficult to access. The general expansionary trend may be documented by linking three partially overlapping sets of estimates. Table 8 reports the levels of citrus production in Cuba that Pérez-López computes for the 1965-1982 period. Table 9 shows the levels of citrus output for Cuba reported by CUBAFRUTAS for the period from 1984 to 1990. Finally, Table 10 presents the estimates prepared by the Food and Agriculture Organization of the United Nations for Cuban citrus output, from the 1987-1988 through the 1992-1993 growing season.

A clear expansionary trend emerges from these figures, even allowing for data defects. Citrus output apparently peaked in 1989-1991, and has declined since that time, as the constricting effects of the U.S. embargo have been felt in the lack of fuel, fertilizer, tools, replacement parts, and new equipment. The Cuban government established a goal of 1.6 million tons of citrus output by 1995. Conditions in Russia and Eastern Europe, combined with the U. S. embargo, have rendered that goal impossible of realization in the immediate future (Behr and Albrigo, 1991, pp. 5-7).

Outside investment has been a key factor in the growth of the Cuban citrus industry. In 1981, the communist nations, members of the Council for Mutual Economic Assistance (CMEA), pledged \$350 million in investment funds for Cuban citrus. Some of these funds were used to provide irrigation equipment and to improve cultural practices. With the breakup of the Communist Bloc, and the resulting decline in both export markets and foreign support, Cuba has successfully moved to encourage investment flows from other nations.

The AFL-CIO reports that foreign investment has been used to support several citrus operations in Cuba. Israel has invested US\$22 million in a large plantation in Jagüey Grande, with a size variously reported at 96,000 to 115,000 acres. The investment began in the 1960's, stopped when diplomatic relations worsened, then resumed in 1990. The grove uses Is-

Table 8. Citrus Production in Cuba, 1965-1982 (metric tons)

Year	Oranges	Grapefruit	Lemons	Tangerines	Total
1965	85,880.6	10,541.7	9,377.5	4,306.7	110,106.5
1966	117,615.3	12,504.8	7,257.8	12,718.0	150,095.9
1967	109,790.9	13,197.9	8,127.6	4,316.2	135,432.6
1968	120,365.4	14,690.5	11,715.7	11,662.8	158,434.4
1969	108,142.8	12,579.8	12,348.2	11,360.6	144,431.4
1970	122,278.5	16,859.1	8,046.3	9,184.6	156,368.5
1971	84,842.6	14,266.6	11,348.4	8,115.0	118,572.6
1972	110,449.6	19,459.1	11,914.7	10,875.9	152,699.3
1973	117,047.7	25,475.2	15,504.6	9,891.7	167,919.2
1974	109,381.1	30,685.6	16,630.5	11,651.6	168,348.8
1975	126,519.4	25,128.1	14,028.6	10,154.7	175,830.8
1976	123,987.7	33,797.3	14,633.6	17,792.1	190,210.7
1977	131,748.9	11,389.7	13,899.7	12,817.6	169,855.9
1978	141,418.3	14,251.8	12,068.9	22,661.7	190,400.7
1979	136,093.9	12,990.6	15,014.9	20,665.7	184,765.1
1980	193,716.2	19,483.8	21,537.6	25,980.0	260,717.6
1981	250,617.5	53,703.3	35,070.5	33,833.1	373,224.4
1982	347,065.4	46,869.1	47,826.2	20,055.7	461,816.4

Source: Pérez-López (1987, Table A-2).

Table 9. Citrus Production in Cuba, 1984-1990 (000 Metric Tons)

Year	Oranges	Grapefruit	Tangerines	Other*	Total
1984	371	155	20	53	599
1985	408	237	32	70	747
1986	441	250	25	64	780
1987	496	285	25	80	886
1988	508	385	26	62	981
1989	474	264	17	69	824
1990	604	332	15	66	1017

*Includes mostly limes.

Source: CUBAFRUTAS, as cited in Behr and Albrigo (1991).

raeli and Brazilian irrigation technology, and is under the management of GBM and Union Nacional de Cítricos. Greek funds support 25,000 hectares of

plantations producing oranges and grapefruits for export to countries such as France and the Netherlands. A related processing plant in Ciego de Ávila Province

Table 10. Citrus Production in Cuba: Total, Oranges, and Grapefruit 1987/1988 to 1992/1993 (000 Metric Tons)

Period	Total Citrus	Oranges	Grapefruit
1992/1993	777	428	307
1991/1992	823	493	271
1990/1991	1,013	600	332
1989/1990	1,020	520	400
1988/1989	993	520	385
1987/1988	881	n/a	285

Source: FAO (1994a).

is intended to produce concentrate for export to Great Britain. The Greek investment is in conjunction with Lola Fruits and the Corporación Nacional de Cítricos. Chilean investors are involved in a partnership on the Isle of Pines, involving 11,000 hectares, to produce fruit for export to Europe and the newly independent Russian states. The partnership has been in effect for about four years. It is also reported that the Cuban government is contracting to use the marketing expertise of other governments, such as Chile to market its citrus products (AFL-CIO, 1995, p. 1; Behr and Albrigo, 1991, pp. 3, 9-10).

Interestingly, Israeli investments in Cuba and other Latin American countries come at a time when the country's own citrus industry has suffered a period of understandable decline. Citrus acreage in Israel reached a peak of 113,000 acres in 1966, and gradually declined thereafter to its current level of about 75,000 acres. Undependable water supplies, high production costs, and the lack of suitable additional citrus acreage drove the Israelis to the rational decision of downsizing. Israel still produces about a million tons of citrus per year, and exports significant amounts of fresh fruit to Europe. Their investors are now increasingly seeking foreign opportunities (Behr, 1992, pp. 2-5).

The planned growth of the Cuban citrus industry has thus achieved only conditional success. Acreage and

output increased dramatically over three decades, only to be contained by international market changes, foreign political upheavals, and a tightened embargo. In addition, the agricultural diversification movement that stimulated citrus expansion never generated reliable and substantial alternative sources of foreign exchange. In their best year, citrus exports accounted for only 3.1 percent of the value of all Cuban exports. Cuba remains primarily dependent on its sugar industry—which is now in a state of decline (Nova González, 1994, p. 9; and Álvarez, 1992, *Adendum*).

CUBA'S TRANSITION AND POST-TRANSITION CHANGES

The method and timing of the Cuban transition are now and will continue to be the subjects of hot debate. What is virtually certain is that there will be significant alterations in the governmental structure, the legal system, the complex of domestic financial institutions, the structure of landholding, the types of business organizations, and the occupational structure of the labor force. The movement toward a market system may be gradual, given the thirty years of central economic control and the lack of legal small-scale private enterprise in the country. Discussions of the timing among Cuban analysts often produce the consensus view of a transition that will last two decades.

Regardless of the timing, the transition will be supported by large inflows of capital from foreign countries. With the U. S. embargo just a memory, with U. S. tourists and U. S. investors able once more to exercise their interests, and with formal governmental approval of such interchange, financial pressures on the system may speed up the transition. It can be expected that the key industries generating foreign exchange will be quickly refurbished and expanded: sugar, tobacco, and tourism. Similarly, the expanded citrus industry should receive the resources it needs to move back to full production (Perry, Woods, and Steagall, 1993 and 1994).

How the newly revived Cuban economy will affect its potential competitors in this hemisphere depends to a high degree on the trade alignments and agreements in force. CBI, Lomé, and Caribbean were dis-

cussed above. The newest addition to the concerns of developing nations is the North American Free Trade Agreement (NAFTA), which links Canada, the United States, and Mexico in a grouping that will move toward a free trade area over the next 10 years.

Bernal (1994) argues that NAFTA will affect Caribbean countries adversely (and Mexico positively) if it is not expanded to include them. "NAFTA's most detrimental effects on the Caribbean will come through inevitable trade diversion, investment diversion, relocation of productive capacity, and contraction of economic activity as products and services that once were supplied by the Caribbean to the United States are now exported from Mexico" (p. 23). The clear implication is that Mexico stands to gain much more in the future from the full implementation of NAFTA, and that the process is one of economic transmission. Barton concurs with Bernal, arguing for strong negotiations to maintain and increase preferential access to U. S. markets (Barton, 1992).

Bernal points out that 50 to 70 percent of the exports of individual CBI countries go to the three NAFTA countries. NAFTA therefore could result in trade diversion for these countries, rather than trade creation. Using the apparel industry as an example, he projects the impacts of NAFTA after 10 years, as follows:

- **Trade Diversion:** The advantage enjoyed by CBI apparel producers is lessened as Mexican apparel faces a duty-free market. The World Bank estimates that 36 percent of CBI exports to the United States are subject to displacement. For St. Lucia, the figure may be as high as 79 percent.
- **Investment Diversion:** Declining trade prospects in Caribbean countries will cause investors to shift their funds to Mexico.
- **Relocation of Production Capacity:** Firms may move entire plants from the CBI countries to Mexico, to take advantage of the more favorable trade conditions.

- **Contraction of Economic Activity:** The losses noted above could lead to a contraction of economic activity, or at least to a slowdown.
- **Job Losses:** Jobs would be lost as a result of relocation of productive capacity and contraction of economic activity.

It is likely that a revived Cuba would return to a position of favor relative to the United States, with renewed and expanded trade ties. Given that relationship and the potential market strength of the Cuban economy, some of the same trade-diverting effects on Cuba's Caribbean neighbors might be expected after the transition. The combined effects of the two phenomena on the Caribbean could be substantial indeed.

As indicated above, much depends on the kinds of regional trade arrangements that are in force. Hallett and Primo Braga argue that regional integration arrangements (RIAs) have not materially hindered the growth of overall international integration in the past. They have doubts about the future, however, based partly on the limited ability of GATT to discipline cheaters. RIAs, in contrast, may establish a credible commitment mechanism, although they probably will not contribute to a better GATT. The authors conclude that the best alternative for developing countries is still a multilateral trading system, with the ability to identify larger trading partners who may take advantage of them. The burgeoning World Trade Organization (WTO), they point out, may be able to restrain large RIAs (Hallett and Primo Braga, 1994, pp. 29-31).

SUMMARY AND CONCLUSIONS

The world citrus market is a highly-developed, competitive, and growing market, dominated by a dozen or so major producers. Over the past two decades, the list of major producers has changed, as countries such as Israel have downsized citrus operations, and countries such as the People's Republic of China and Cuba have risen in importance. The latest available figures indicate that Cuba is the twelfth largest producer of citrus products, based upon volume of output.

A combination of factors appears to be present in those countries that are most successful in citrus production: appropriate climate, adequate amounts of suitable land, access to modern technology, a plentiful supply of labor, adequate financing, and access to markets. Some countries, such as Brazil and Mexico, have become major producers of citrus products in spite of some internal or governmental factors tending to reduce productivity in the industry. Market concentration at the processing level also appears not to be a major hindrance to effective operation of the industry. In a free market setting, Cuba should possess and be able to exploit all of the desirable characteristics noted above.

The government of Cuba has expanded citrus plantings from about 30,000 acres in 1959 to over 355,000 acres today. Foreign funds have helped with parts of the expansion. Output apparently peaked between 1989 and 1991 at around one million metric tons per year. Since then, annual output has dropped by perhaps 20 percent, most probably because of the constricting effects of the U. S. embargo and the reduction in Soviet subsidization.

Once the transition occurs, market changes and an inflow of funds will permit the Cuban citrus industry to operate at its most efficient level. A projected output level of 1.6 million tons per year, the original target for crop year 1995, appears to be a reasonable post-transition, short-term target.

The impact of the revived Cuban citrus industry on other citrus-producing countries in the western hemisphere will depend critically upon the trade alignments that exist and the trade alignments that Cuba can negotiate. It is likely that Cuba will be able to return to the favored trading position it occupied relative to the United States before 1959. That being so, access to U.S. markets by Cuban citrus producers should be assured.

Given the putative level of output of Cuban citrus after the transition, which will be a relatively small percentage of world and U.S. output, a major and dam-

aging impact on the U.S. citrus industry appears unlikely, although fresh fruit sales could be affected. In other words, the Cuban citrus industry by itself does not appear to be a significant threat, especially if domestic consumption of citrus products in Cuba remains high.

It is more likely that other, smaller, and less efficient Caribbean producers of citrus will be affected adversely by renewed Cuban competition. The damage will not be created by citrus alone, however, but by a revived complex of major Cuban industries. Post-transition Cuba should enjoy a strong sugar industry, expanded tobacco sales, and a tourism industry of major proportions—in addition to efficient citrus production. Since most of Cuba's Caribbean neighbors are engaged in producing essentially the same export products, Cuba will clearly cut into their markets.

Many Caribbean countries have been encouraged by preferential access programs such as CBI, Caribcan, and Lomé, to expand citrus production. This has given them an additional option for the generation of foreign exchange, during a period when sugar quotas have fallen and the competition for tourists has increased. As Cuba revives, it has the potential to attract tourists who normally would visit other Caribbean locations. And a revived Cuban sugar industry threatens those countries that have enjoyed the absence of Cuba in the U. S. sugar quota system.

If the Cuban citrus industry revives along with other segments of the Cuban economy, post-transition Cuba will have the potential to reduce or, in some cases, eliminate one of the most recent options developed by its neighbors to generate foreign exchange. From that point of view, Cuban citrus will be a threat to at least a dozen Caribbean nations.

These possibilities will certainly be taken into account by Caribbean trade negotiators as the transition occurs. The recent inability of CARICOM nations to impress on the U. S. government the threat to them posed by NAFTA is not a favorable omen.

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