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**International Agricultural Trade and Policy Center**

**A DESCRIPTIVE ANALYSIS OF SEVERAL CARIBBEAN  
COUNTRIES THAT IMPORT UNITED STATES DAIRY  
PRODUCTS**

By

Xumin Zhang, Richard L. Kilmer, & Andrew Muhammad

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# A DESCRIPTIVE ANALYSIS OF SELECTED CARIBBEAN COUNTRIES THAT IMPORT UNITED STATES DAIRY PRODUCTS

By

Xumin Zhang, Richard L. Kilmer and Andrew Muhammad<sup>1</sup>

## INTRODUCTION

World dairy production and trade have experienced increases during the last decade. World trade liberalization, elimination of non-tariff trade barriers, and reduction in dairy export subsidies have increased the United States (US) interest in world dairy markets. The US is in a good position to gain greater access to international dairy markets.

Information by country, which is considered to be a potential importer of U.S. dairy products, and by individual dairy products in the international markets is needed. The information is useful to individuals interested in developing export dairy markets and direct foreign investment in dairy industries in those countries. In the study, 25 dairy import countries were selected from around the world (Table 1). Five countries in Caribbean, the Bahamas, Bermuda, the Dominican Republic, Jamaica, and Trinidad and Tobago, are covered in this paper.

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Table 1. Major importers of U.S. dairy products.

Canada Mexico	Central America	South America	Caribbean	European Union	East Asia	Southeast Asia	North Africa & Middle East
Canada	Guatemala	Chile	Bahamas	Netherlands	Hong Kong	Indonesia	Egypt
Mexico	Honduras	Colombia	Bermuda	United Kingdom	Japan	Malaysia	Saudi Arabia
	Panama	Venezuela	Dominican Republic		South Korea	Philippines	
			Jamaica			Thailand	
			Trinidad & Tobago			Vietnam	

The following paper covers an descriptive analysis for each individual country about the macroeconomic conditions, milk and dairy production, consumption, imports, the US share of the dairy imports, dairy trade policies, and how these factors have changed overtime. The information in this report can provide a starting point for individuals interested in exploring exports to and direct investment opportunities in the Bahamas, Bermuda, the Dominican Republic, Jamaica, and Trinidad and Tobago.

## **OVERVIEW**

### **World Dairy Production**

World production of cow milk increased in the period 1991 to 2001 at an average annual rate of 0.5 percent. In the period 1991 to 1993, world production of milk trended downward from 469,969,290 metric tons in 1991 to 460,185,174 metric tons in 1993 (Table 1). Since then, world production of fresh milk has experienced continuous increases through 2001. In 2001, the world production of cow milk totaled 494,074,772 metric tons, a 1.4 percent increase, compared to 2000 (487,216,313 metric tons) (Table 1). Selected Caribbean countries, including the Bahamas, Bermuda, the Dominican Republic, Jamaican, and Trinidad and Tobago, produced 461,056 metric tons of cow milk in 2001 (Table 2), and it was 0.09 percent of the world cow milk production (Table 1).

Overall, in the period 1991 to 2001, world butter production increased at an average annual rate of 0.6 percent. Significant decreases occurred in the period 1991 to 1994 when world butter production decreased from 7,230,211 metric tons in 1991 to 6,626,853 metric tons in 1994, for an average annual decrease of -2.9 percent. Since then, world butter production trended upward through 2001, increasing at an average annual rate of 2.1 percent. World butter production in 2001 was about 7,639,830 metric tons, which was up 3.8 percent from butter production in 2000 (7,361,928 metric tons) (Table 1). Of the selected Caribbean countries, only the Dominican Republic produced butter in the amount of 1,500 metric tons in 2001 (Table 2). This was 0.02 percent of world butter production in 2001 (Table 1).

Table 1. World milk and selected dairy products production, 1991 through 2001.

Year	Cow Milk, Whole, Fresh	Butter and Ghee	Cheese (All Kinds)	Whole Milk, Dry	Skim Milk, Dry	Dry Whey
Metric Tons						
1991	469,969,290	7,230,211	14,273,176	2,278,421	3,790,059	1,591,469
1992	460,815,550	7,069,007	13,924,948	2,223,634	3,383,613	1,719,527
1993	460,185,174	6,949,108	14,092,319	2,190,812	3,435,523	1,704,052
1994	461,308,188	6,626,853	14,413,909	2,299,879	3,469,588	1,721,392
1995	463,742,780	6,654,099	14,534,298	2,297,568	3,471,565	1,808,545
1996	465,750,719	6,728,324	14,895,164	2,256,240	3,359,823	1,825,342
1997	468,198,514	6,824,872	15,182,338	2,347,216	3,390,716	1,797,683
1998	475,397,193	6,931,101	15,531,190	2,424,612	3,260,097	1,875,487
1999	480,762,511	7,140,653	15,874,743	2,425,512	3,400,623	1,876,269
2000	487,216,313	7,361,928	16,451,548	2,509,210	3,401,153	1,927,189
2001	494,074,772	7,639,830	16,821,541	2,633,776	3,374,176	1,960,928

Average  
Annual  
Growth(%)

Gro23,624,17.20.0001cn84.6 645.9 267.12 -0.72 re3re42352.5 688.8 57.3 ref43 re42388.8 117.6 -1.5 ref3

Dominican Republic and totaled 2,500 metric tons in 2001 (Table 2). This was 0.01 percent of world cheese production in 2001 (Table 1).

Table 2. Selected Caribbean countries milk and dairy products production in 2001.

	Cow Milk, Whole, Fresh	Butter and Ghee	Cheese (All Kinds)	Whole Milk, Dry	Skim Milk, Dry	Dry Whey <sup>a</sup>
Metric Tons						
CARIBBEAN						
Bahamas	550	---	---	---	---	---
Bermuda	1,350	---	---	---	---	---
Dominican Republic	420,303	1,500	2,500	---	---	---
Jamaica	28,500	---	---	---	---	---
Trinidad & Tobago	10,353	---	---	---	---	---
TOTAL	461,056	1,500	2,500	---	---	---

<sup>a</sup> Whey production in milk equivalent metric tons was not available.

Source: FAO Statistical Databases, 2002.

World production of dry whole milk increased in the period 1991 to 2001 at an average annual rate of 1.5 percent (Table 1). World dry whole milk production fluctuated in the period 1991 to 1996, ranging from a high of 2,299,879 metric tons in 1994 to a low of 2,190,812 metric tons in 1993 (Table 1). Since then, world dry whole milk production has trended upward through 2001. In the period 1996 to 2001, world dry whole milk production increased at an average annual rate of 3.2 percent. In 2001, world dry whole milk production totaled 2,633,776 metric tons, which was up 5.0 percent from 2000 (Table 1). However, selected Caribbean countries (the Bahamas, Bermuda, the



Dominican Republic, Jamaican, and Trinidad and Tobago) did not produce dry whole milk in 2001.

World dry skim milk production (nonfat dry milk or skim milk powder) has exceeded dry whole milk production during the period 1991 through 2001 (Table 1). However, in the period 1991 to 2001, world dry skim milk production trended downward, for an average annual decrease rate of -1.1 percent (Table 1). World dry skim milk production experienced fluctuations in the period 1991 to 2001, ranging from a high of 3,790,059 metric tons in 1991 to a low of 3,260,097 metric tons in 1998 (Table 1). Overall, between 1991 and 2001, world dry skim milk production decreased 415,883 metric tons. In 2001, world dry skim milk production totaled 3,374,176 metric tons, which was down 0.8 percent from 2000 (Table 1). There was no dry skim milk production in the selected Caribbean countries in 2001 (the Bahamas, Bermuda, the Dominican Republic, Jamaican, and Trinidad and Tobago).

The most growth in the production of milk and its products has occurred in the dry whey market. From 1991 to 2001, the average annual growth in world dry whey production has been 2.2 percent, with periods of increases and decreases (Table 1). World dry whey production trended upward through 2001, from 1,591,469 metric tons in 1991 to 1,960,928 metric tons in 2001, for an overall increase of 369,459 metric tons (Table 1). There was no dry whey production in the selected Caribbean countries in 2001.

## **World Imports of Dairy Products**

World imports of dairy products in milk equivalent metric tons increased at an average annual growth rate about 2.6 percent in the period 1991 to 2001. In the period 1991 to 1995, world imports of dairy products increased continuously from 52,405,310 metric tons in 1991 to 62,616,493 metric tons in 1995 (Table 3). Although decreases occurred in 1996, 1998, and 2001, world imports of dairy products trended upward through 2001, peaking at 68,138,509 metric tons in 2000 (Table 3). Between 1991 and 2001, world imports of dairy products increased 14,715,220 metric tons, from 52,405,310 metric tons in 1991 to 67,120,530 metric tons in 2001 (Table 3), for an overall increase of 28.1 percent. Dairy imports (in milk equivalent metric tons) into selected Caribbean countries (the Bahamas, Bermuda, the Dominican Republic, Jamaica, and Trinidad and Tobago) totaled 378,731 metric tons (Table 4), which was 0.6 percent of world total dairy imports in 2001 (67,120,530 metric tons, Table 3).

In the period 1991 to 2001, world butter imports decreased at an average annual rate of -0.1 percent. Between 1991 and 2001, world butter imports decreased 52,311 metric tons, reaching a low in 1996 of 1,203,892 metric tons (Table 3). A significant decrease occurred in 1994 when world butter imports decreased from 1,454,129 metric tons in 1993 to 1,288,247 metric tons in 1994, for an annual decrease of -11.4 percent. Since then, world butter imports fluctuated through 2001, ranging from a high of 1,368,933 metric tons in 1995 to a low of 1,203,892 metric tons in 1996 (Table 3). World butter imports in 2001 were 1,280,750 metric tons, which was up 1.5 percent from total world

butter imports in 2000 (1,261,586 metric tons) (Table 3). Butter imports into selected Caribbean countries (the Bahamas, Bermuda, the Dominican Republic, Jamaica, and Trinidad and Tobago) totaled 9,407 metric tons (Table 4), or 0.7 percent of world total butter imports in 2001 (Table 3).

Table 3. World dairy imports, 1991 through 2000.

Year	Milk Equivalent	Butter	Cheese	Dry Whole Milk	Dry Skim Milk	Dry Whey
Metric Tons						
1991	52,405,310	1,333,061	2,127,089	1,115,052	1,664,905	627,884
1992	55,385,703	1,376,590	2,230,616	1,073,993	1,821,565	657,822
1993	55,463,235	1,454,129	2,222,401	1,059,341	1,843,592	645,911
1994	57,759,324	1,288,247	2,461,275	1,161,280	1,773,160	713,385
1995	62,616,493	1,368,933	2,468,786	1,525,707	1,890,674	783,249
1996	59,844,367	1,203,892	2,688,552	1,281,604	1,716,935	838,526
1997	62,626,024	1,321,235	2,843,580	1,357,158	1,727,457	862,943
1998	62,478,356	1,213,138	2,786,286	1,401,542	1,607,154	915,807
1999	66,593,229	1,217,796	2,887,650	1,439,868	1,879,505	998,073
2000	68,138,509	1,261,586	3,093,644	1,418,968	1,805,896	1,067,210
2001	67,120,530	1,280,750	3,354,503	1,351,083	1,577,319	1,165,912
Average Annual Growth (%)						
1991-2001	2.6	-0.1	4.7	2.6	-0.2	6.5

Source: FAO Statistical Databases, 2002.

In the period 1991 to 2001, world cheese imports increased at an average annual rate of 4.7 percent (Table 3). Except for 1993 and 1998, world cheese imports experienced continuous increases, from 2,127,089 metric tons in 1991 to 3,354,503 metric tons in 2001 (Table 3), for an overall increase of 57.9 percent from 1991. In 2001, world cheese imports were up 8.4 percent from 2000 (Table 3). Total cheese imports into selected Caribbean countries (the Bahamas, Bermuda, the Dominican Republic, Jamaica, and Trinidad and Tobago) were 19,723 metric tons in 2001 (Table 4), accounting for 0.6 percent of the world total cheese imports in 2001.

Table 4. Selected Caribbean countries dairy imports in 2001.

	Milk Equivalent	Butter	Cheese	Dry Whole Milk	Dry Skim Milk	Dry Whey
Metric Tons						
CARIBBEAN						
Bahamas	77,639	2,837	4,890	95	439	74
Bermuda	7,146	240	420	---	360	---
Dominican Republic	60,953	2,500	3,000	---	4,000	---
Jamaica	102,273	2,400	5,800	3,200	4,300	290
Trinidad & Tobago	130,720	1,430	5,613	8,500	2,438	391
TOTAL	378,731	9,407	19,723	11,795	11,537	755

Source: FAO Statistical Databases, 2002.

World imports of dry whole milk increased in the period 1991 to 2001 at an average annual rate of 2.6 percent. World dry whole milk imports fluctuated in the period 1991 to 2001, ranging from a high of 1,525,707 metric tons in 1995 to a low of 1,059,341 metric tons in 1993 (Table 3). World dry whole milk imports trended downward in the period

1995 to 2001, for an average annual rate of  $-1.7$  percent. In 2001, world dry whole milk imports totaled 1,351,083 metric tons, down from 1,418,968 metric tons in 2000 (Table 3). Dry whole milk imports into selected Caribbean countries (the Bahamas, Bermuda, the Dominican Republic, Jamaican, and Trinidad and Tobago) totaled 11,795 metric tons in 2001 (Table 4), accounting for 0.9 percent of the world total dry whole milk imports (1,351,083 metric tons, Table 3).

World dry skim milk imports (nonfat dry milk or skim milk powder) have exceeded dry whole milk imports in the last decade (Table 3). However, in the period 1991 to 2001, world dry skim milk imports trended downward, for an average annual decrease rate of  $-0.2$  percent (Table 3). World dry skim milk imports fluctuated, ranging from a high of 1,890,674 metric tons in 1995 to a low of 1,577,319 metric tons in 2001 (Table 3). Overall, between 1991 and 2001, world dry skim milk imports decreased 87,586 metric tons. In 2001, world dry skim milk imports totaled 1,577,319 metric tons, which was down 12.7 percent from 2000 (Table 3). Dry skim milk imports into the selected Caribbean countries (the Bahamas, Bermuda, the Dominican Republic, Jamaican, and Trinidad and Tobago) totaled 11,537 metric tons (Table 4), accounting for about 0.7 percent of the world total dry skim milk imports in 2001 (1,577,319 metric tons, Table 3).

The most growth in world dairy imports has occurred in the dry whey market. From 1991 to 2001, average annual growth in world dry whey imports was 6.5 percent (Table 3). Except for 1993, world dry whey imports increased continuously from 627,884 metric tons in 1991 to 1,165,912 metric tons in 2001 (Table 3). Dry whey imports into

the selected Caribbean countries (the Bahamas, Bermuda, the Dominican Republic, Jamaican, and Trinidad and Tobago) totaled 755 metric tons (Table 4), accounting for about 0.06 percent of the world total dry whey imports in 2001.

The rest of this paper covers the following information for the Bahamas, Bermuda, the Dominican Republic, Jamaican, and Trinidad and Tobago: macroeconomic conditions, milk and dairy production, consumption, imports, the US share of the dairy imports, dairy trade policies, and how these factors have changed overtime.

# **THE BAHAMAS**

## **Overview of the Bahamas**

The Bahamas is located in the Caribbean, where it is a chain of islands in the North Atlantic Ocean, southeast of Florida. The total area of the country is 13,940 square kilometers, slightly smaller than the size of Connecticut. The population of the Bahamas in 2001 was about 0.3 million, with a 0.86 percent population growth rate (CIA World Factbook, 2002).

The Bahamas is a stable, developing country. Its economy is dependent on tourism and financial services, which account for 60 percent and 15 percent of the gross domestic product (GDP), respectively, in 2001 (US Department of State, 2002). Steady growth in tourism has led to economic growth in recent years. However, since the September 11, 2001, terrorist attacks in the US, the Bahamian economy has been affected. The real GDP growth rate declined from six percent in 1999 to 3.5 percent in 2001 (US Department of State, 2002). In 2001, the Bahamas' GDP was \$5 billion (purchasing power parity), with per-capita purchasing power parity of \$16,800, and agriculture accounted for only three percent of the country's total GDP (CIA World Factbook, 2002).

The Bahamas' total exports in 2001 were \$535.8 million, of which the US received 28.2 percent. Its total imports in 2001 were \$1.88 billion, of which the US shipped 31.6 percent. The US is the Bahamas' major trading partner, and its economy depends heavily on the growth in the US. Other trading partners include the European Union, Japan, and South Korea (CIA World Factbook, 2002).

## **Dairy Industry in the Bahamas**

### **Production of Dairy Products**

In Bahamas, the government owns 90 percent of the agricultural land. The government has implemented a policy since 1993 to utilize these lands to aid the growth of agriculture and to foster less dependence on the tourism sector (Geographia, 2003).

The government policy was to encourage farmers in the northern Bahamas. Abacos, Grand Bahama Island, and northern Andros are the three areas that are being targeted because these islands are endowed with adequate water resources and fertile soil. In addition, under the Agricultural manufacturing Act, subsidies in the form of interest-free loans are available for farmers to purchase supplies, including building supplies, processing materials, and farm trucks (Geographia, 2003).

The Agricultural Land Policy also aims to expand livestock production to encourage each major island to become self-sufficient in pork and poultry. Chicken is the Bahamas' most popular meat dish, with a per-capita consumption of over 100 pounds every year (Washington Times, 2000). In order to foster the development of its poultry industry, the government placed a ban on poultry importation several years ago. The Bahamas has achieved self-sufficiency in poultry, but there is still very limited production of pork and cattle in the country. The country's dairy industry is very small. Although dairy farming has been targeted for government subsidies and programs, it is not as developed as other areas of the agriculture sector (Washington Times, 2000).

On Grand Bahama Island, there was a move to establish a dairy farm. The Bahamas Dairy Farms was established in 1990, and it revived the Bahamas' dairy industry to some



extent. The farm was estimated to have over 300 head of milking cows, and produced 1.4 million liters of milk every year in 1999 (Geographia, 2003).

Between 1991 and 2000, milk production decreased from 650 metric tons in 1991 to 550 metric tons in 2000, for an overall decrease of 100 metric tons (Table 1). Imports of dairy products have increasingly filled the gap between declining domestic supply and the demand for dairy products in the country.

Table 1. The Bahamas milk and selected dairy products production, 1991 through 2000.

Year	Cow Milk, Whole, Fresh	Butter and Ghee	Cheese (All Kinds)	Skim Milk, Dry	Whey
Metric Tons					
1991	650	----	----	----	----
1992	650	----	----	----	----
1993	600	----	----	----	----
1994	550	----	----	----	----
1995	550	----	----	----	----
1996	550	----	----	----	----
1997	550	----	----	----	----
1998	550	----	----	----	----
1999	550	----	----	----	----
2000	550	----	----	----	----

Source: FAO Statistical Databases, 2002.

Milk production in the period 1992 to 1994 decreased from 650 metric tons in 1992 to 550 metric tons in 1994. The decrease was mainly due to economic slowdown, which was caused by a decline in tourism during the late 1980s and early 1990s. However, as the economy of the Bahamas recovered, milk production maintained at 550 metric tons every year during the period 1994 to 2000 (Table 1).

The Bahamas has a very small dairy industry. The country did not produce dairy products other than fluid milk during the last decade. All demand for butter, cheese, milk

powder, and whey were imported from other countries. The Bahamas has high import duties because the Bahamian government raises approximately 60 percent of its revenue from import duties (USDEC, 2000).

### **Demand for Dairy Products**

The Bahamas is a politically stable, developing country. Tourism has experienced a steady growth, which has led to economic growth in recent years. Its economy grew at three to four percent in recent years (CIA World Factbook, 2002). However, economic growth depends largely on economic conditions in the United States, which provides large numbers of tourists to the country every year. The Bahamas attracts three million tourists a year, which accounts for 60 percent of its GDP (USDA-FAS, 2000).

Because of traditional ties, frequent travel to the United States, and exposure to US television advertising and US tourists, American influences on consumer preferences and behavior have caused the Bahamas to have a relatively high milk and dairy consumption. Although Bahamians still cling to their traditional diet of rice, beans, evaporated milk, corned beef, macaroni and cheese, and flour, as incomes rise, it is expected that Bahamians will venture to try new food products, including a variety of dairy products.

Although the living standard and household incomes improved during the last decade, consumption of dairy products has not improved. Because the Bahamian government raises approximately 60 percent of its revenue from import duties, and all demand for butter, cheese, milk powder, and whey are imported from other countries, the Bahamas has high import duties on dairy products. Although there will be a growth in dairy

consumption, its potential will not be realized until there is further liberalization, continued reduction of import duties, and increased purchasing power (USDEC, 2000).

The Bahamas has a very small milk industry. To satisfy its dairy demand, the country has to import a large amount of its dairy products every year. In 2000, its dairy self-sufficiency was less than five percent (FAO Statistics, 2002). However, per-capita dairy consumption is relatively high in the Bahamas, compared with other Caribbean countries. For example, in 2000, per-capita milk consumption in the Bahamas was 121.97 kilograms (Table 2), compared to per-capita milk consumption of 62.87 kilograms and 48.67 kilograms in the Dominican Republic and Jamaica, respectively (FAO Statistics, 2002).

In the 1990s, per-capita all milk consumption decreased at an average annual rate of -0.8 percent (Table 2). High duties and other barriers on dairy imports, together with limited domestic milk production, lack of supply, and increases in domestic dairy prices, hindered dairy consumption among Bahamians. Per-capita milk consumption decreased during the 1990s. Between 1991 and 2000, per-capita milk consumption decreased 13.83 kilograms, from 135.8 kilograms in 1991 to 121.97 kilograms in 2000, troughing in 1999 at 103.78 kilograms (Table 2). However, a significant increase occurred in 2000, when per-capita dairy consumption increased from 103.78 kilograms in 1999 to 121.97 kilograms in 2000, for an annual increase of 18 percent (Table 2). This increase can be mainly attributed to the increase of dairy imports in that year.

Table 2. Per-capita consumption of dairy products in the Bahamas, 1991 through 2000.

Year	All Milk <sup>a</sup>	Butter	Cheese	Skim Milk <sup>a</sup>	Whole Milk <sup>a</sup>	Whey <sup>a</sup>
	Kilograms					
1991	135.80	3.16	6.79	17.43	72.16	---
1992	123.67	2.65	6.24	16.92	64.23	---
1993	124.14	2.57	5.88	25.74	57.83	---
1994	134.75	2.16	6.37	32.37	58.22	---
1995	120.02	2.13	6.36	22.97	53.44	---
1996	124.50	2.40	6.94	24.31	52.62	---
1997	110.79	2.48	7.41	4.66	56.45	0.65
1998	106.86	2.50	7.09	3.38	56.01	0.82
1999	103.78	2.87	6.67	3.33	55.82	1.35
2000	121.97	4.40	7.79	6.75	64.85	2.58
Average Annual Growth (%) 1991-2000	-0.8	5.4	1.9	5.0	-0.9	60.6 <sup>b</sup>

<sup>a</sup> Included food and other uses, such as cattle feed.

<sup>b</sup> Average annual growth rate (%) 1997 through 2000.

Source: FAO Statistical Databases, 2002

In terms of butter consumption, per-capita butter consumption decreased in the first half of 1990s due to health concerns. Per-capita butter consumption decreased from 3.16 kilograms in 1991 to 2.13 kilograms in 1995 (Table 2). However, during the rest of the 1990s, per-capita consumption increased from 2.13 kilograms in 1995 to 4.40 kilograms in 2000 (Table 2), partly due to the recovery of tourism during the late 1980s and early 1990s. The significant increase in 2000 was mainly due to the increase of butter imports.

Cheese is relatively important in the Bahamian diet. Per-capita cheese consumption increased by 1.9 percent, on average, per year in the 1990s (Table 2). However, most of the increase was associated with the growth of tourism. Between 1991 and 2000, per-

capita cheese consumption increased one kilogram, from 6.79 kilograms in 1991 to 7.79 kilograms in 2000 (Table 2).

Skim milk powder is an important dairy product that is imported into the Bahamas every year. Because of its cheap prices, consumers recombine fluid milk from dry skim milk instead of drinking fresh milk. As a result, skim milk consumption increased during the first half of the 1990s. During the period 1991 to 1994, skim milk consumption increased 14.94 kilograms, for an average annual growth of 29 percent. However, a significant decrease occurred in 1997, when per-capita skim milk consumption decreased from 24.31 kilograms in 1996 to 4.66 kilograms in 1997 (Table 2), for an annual decrease of 81 percent. The dramatic decrease was due to increases in the world prices of skim milk powder in late 1996 to 1997, which caused skim milk powder imports to decrease. Whole milk consumption decreased during the first part of the 1990s with a recovery starting in 1997, for an average annual decrease of 0.9 percent in the 1990s (Table 2). In 2000, per-capita whole milk consumption totaled 64.85 kilograms, down from 72.16 kilograms in 1991 (Table 2).

Before 1997, whey was not consumed in the Bahamas. As whey started to be imported during the late 1990s, per-capita whey consumption increased from 0.65 kilogram in 1997 to 2.58 kilograms in 2000, for an average annual increase rate of 60.6 percent (Table 2).

### **Imports of Dairy Products**

The Bahamas is a net importer of dairy products, and its self-sufficiency in dairy products has been historically low, which was less than five percent in 2000 (FAO

Statistics, 2002). However, the volume of dairy imports has never been high. In 2000, the Bahamas ranked out of the top 40 countries in total dairy products imported (in milk equivalent pounds). The country's total dairy imports that year were 89,149 metric tons, accounting for 0.13 percent of the total world imports of dairy products (FAO Statistics, 2002).

The Bahamas also ranked out of the top 40 countries in imports of butter, cheese, dry skim milk, and whey during the 1990s. In 2000, the Bahamas' total butter and cheese imports were 3,339 and 5,460 metrics tons, respectively (Table 3). Its share of world imports of butter and cheese was about 0.26 and 0.18 percent, respectively (FAO Statistics, 2002). In addition, in 2000, the Bahamas imported 203 metric tons of dry skim milk and 129 metric tons of whey (Table 3).

Table 3. The Bahamas dairy imports, 1991 through 2000.

Year	Milk Equivalent	Butter	Cheese	Dry Skim Milk	Dry Whey
	Metric Tons				
1991	36,311	826	1,773	455	---
1992	30,155	704	1,661	450	---
1993	33,230	700	1,600	1,200	---
1994	33,970	601	1,770	900	---
1995	30,467	604	1,800	650	---
1996	29,814	690	2,000	700	---
1997	30,095	775	2,165	116	14
1998	23,952	690	1,100	500	18
1999	23,829	860	1,300	500	18
2000	89,149	3,339	5,460	203	129
Average Annual Growth (%) 1991-1999 <sup>b</sup>	-4.6	1.4	-1.2	46.0	14.5 <sup>a</sup>

<sup>a</sup> Average annual growth rate (%) 1997 through 1999.

<sup>b</sup> 2000 was not included because of the significant changes from 1999.

Source: FAO Statistical Databases, 2002.

The growth of dairy imports was significant in the period 1999 to 2000. Dairy imports decreased at an average annual rate of -4.6 percent in the period 1991 to 1999 and increased 274.1 percent in 1999 to 2000. In the period 1991 to 1999, dairy imports (in milk equivalent pounds) decreased from 36,311 metric tons in 1991 to 23,829 metric tons in 1999 (Table 3), for an average annual decrease of four percent. The significant increase, which occurred in 2000, was mainly due to the Bahamas' trade liberalization and lowered duties in that year, which caused dairy imports to increase from 23,829 metric tons in 1999 to 89,149 metric tons in 2000 (Table 3).

The Bahamas does not produce butter. As a result, all butter consumption is imported. However, the volume of its butter imports has never been high. During the period 1991 to 1999, the Bahamas' butter imports increased at an average annual rate of only 1.4 percent (Table 3). However, during the period 1999 to 2000, butter imports increased significantly, with an annual increase of 288.3 percent (Table 3). As the country lowered its import duties on most dairy products in 2000, butter imports increased from 860 metric tons in 1999 to 3,339 metric tons in 2000 (Table 3).

The Bahamas also does not produce cheese. All cheese consumption is imported. During the period 1991 to 1997, cheese imports increased from 1,773 metric tons in 1991 to 2,165 metric tons in 1997. This growth was associated with the growth in tourism in the country. However, this growth was interrupted in the period 1998 to 1999 when cheese imports declined to 1,100 metric tons in 1998 (Table 3). The Asian crisis caused an overall slowdown of the world's economy during that period, which affected the Bahamas' tourism. Decreased numbers of tourists caused decreases in cheese

consumption and cheese imports. During the period 1991 to 1999, cheese imports decreased at an average annual rate of -1.2 percent (Table 3). The Bahamas' cheese imports increased from 1,300 metric tons in 1999 to 5,460 metric tons in 2000, or an increase of 320.0 percent (Table 3).

Dry skim milk is mainly used to recombine fluid skim milk. During the period 1991 to 1993, the Bahamas' dry skim milk imports increased 745 metric tons, peaking in 1993 at 1,200 metric tons (Table 3). However, dry skim milk imports decreased after the peak in 1993, reaching a low in 1997 of 116 metric tons (Table 3). During the period of late 1996 to 1997, due to increases in world prices, dry skim milk powder imports to the Bahamas decreased rapidly from 700 metric tons in 1996 to 116 metric tons in 1997 (Table 3), for an annual decrease of 83 percent. However, another significant decrease occurred in 2000, which was due to the price fluctuation of importing dry skim milk. In 2000, the Bahamas' skim milk powder imports were 203 metric tons, or a 59.4 percent decrease from 1999 (Table 3).

Dry whey imports started in 1997, when 14 metric tons of whey was imported from the US. During the period 1997 to 1999, whey imports increased four metric tons (Table 3). In 2000, whey imports totaled 129 metric tons, or an increase of 617.7 percent from the 1999 level (Table 3).

### **Exports of Dairy Products from the U.S.**

In the Bahamas, the US supplies most of its dairy products, such as fresh milk, cream, cheese, skim milk powder, and ice cream. The Bahamas has high import duties because the Bahamian government raises approximately 60 percent of its revenue from import



duties (USDEC, 2000). The European Union and New Zealand are also suppliers of dairy products to the Bahamas. Dairy products from the European Union and New Zealand are mainly in the form of whole milk powder, butter, and milk fat.

During the 1990s, the market share of US butter decreased due to competition with New Zealand (Table 4). In 2000, the US exported 39.4 metric tons of butter to the Bahamas, accounting for 1.2 percent of its total butter imports (Table 4). As in other Caribbean countries, Bahamians prefer butter products from New Zealand because of the taste and the melting point (USDEC, 2000).

Table 4. Selected dairy products imported from the US into the Bahamas, 1991 through 2000.

Year	Butter <sup>a</sup> Mt	% of All Butter Imports <sup>b</sup> %	Cheese <sup>a</sup> Mt	% of All Cheese Imports <sup>b</sup> %	Non- Fat Dry Milk <sup>a</sup> Mt	% of all NFDM Imports <sup>b</sup> %	Dry Whey <sup>a</sup> Mt	% of Dry Whey Imports <sup>b</sup> %
1991	96.2	11.6	239.7	13.5	0.0	0.0	0.0	---
1992	143.1	20.3	160.2	9.6	129.7	28.8	0.0	---
1993	184.3	26.3	173.9	10.9	351.3	29.3	0.0	---
1994	88.0	14.6	112.5	6.4	190.1	21.1	0.0	---
1995	143.5	23.8	125.8	7.0	261.8	40.3	0.0	---
1996	158.5	23.0	96.0	4.8	1,142.8	163.3 <sup>c</sup>	0.0	---
1997	88.0	11.4	341.2	15.8	593.3	511.5 <sup>c</sup>	14.8	105.7 <sup>c</sup>
1998	137.8	20.0	323.4	29.4	1,877.0	375.4 <sup>c</sup>	17.5	97.2
1999	41.3	4.8	376.5	29.0	1,240.4	248.1 <sup>c</sup>	0.0	0.0
2000	39.4	1.2	313.8	5.7	221.3	109.0 <sup>c</sup>	0.0	0.0

<sup>a</sup> Source: United States Department of Agriculture Foreign Agricultural Service, 2003.

<sup>b</sup> Data from Table 3.

<sup>c</sup> The reason for the discrepancy is unknown and needs further analysis.

The US is one of the major suppliers of cheese to the Bahamas. During the 1990s, the market share of US cheese increased, starting in 1997 after trending downward since 1991. In 1998, the market share of US cheese imports reached a peak at 29.4 percent, with 323.4 metric tons (Table 4). In 2000, the Bahamas imported a total of 313.8 metric

tons of cheese from the US, and the market share of US cheese imports was 5.7 percent in that year (Table 4). New Zealand is also a major cheese supplier to the Bahamas because of its cost advantages in bulk cheese. However, a strong market still exists in processed cheeses and specialty cheeses for US exporters because US cheese has long been known for high quality and good taste.

The US dominated the Bahamas' nonfat dry milk imports during the 1990s. In 2000, the Bahamas imported 221.3 metric tons of nonfat dry milk from the US, down from 1,877 metric tons in 1998 (Table 4).

The US was also a major supplier of whey to the Bahamas. Beginning in 1997, the Bahamas imported dry whey from the US. However, due to competition, the US did not export whey to the Bahamas in 1999 and 2000 (Table 4).

### **Trade Policy and Tariff**

The Bahamas is a stable developing country, and its economy is mainly dependent on tourism and financial services. The Bahamas received observer status in the World Trade Organization (WTO) in 2001, and declared its intent to pursue full accession (US Department of State, 2002).

Because of its proximity and historical business ties, US exporters have found that Bahamian import policies and procedures are in accordance with US export regulations. For US exporters, the process of exporting is relatively easy because of its familiarity of documentation and procedures. In addition, there are no significant non-tariff barriers to imports of US products.

In terms of tariffs and import taxes, the Bahamian Government raises approximately 60 percent of its revenue from import tariffs (US Department of State, 2000). As a result, substantial duties still apply to most imports. The average tariff rate in the Bahamas was 35 percent in 2002. However, deviations from the average duty rate reflect policies aimed at import substitution. Tariffs on items produced domestically are at a rate designed to protect domestic industries. For example, the government occasionally issues temporary bans on the import of certain agricultural products when it determines that a sufficient supply of domestically grown items exists (US Department of State, 2002).

During the period 1999 to 2000, tariff rates fell on certain types of imports, including dairy products. The average tariff rate in the Bahamas has fallen from 40 to 30 percent and the number of duty rates has been reduced from 123 to 29 over the last decade (US Department of State, 2002). Currently, duties on dairy products vary from 10 to 30 percent. For example, tariffs on milk powder, including skim milk and whole milk powder, are 30 percent; tariffs on whey, butter and milk fat are 30 percent; and tariffs on fresh cheeses and processed cheeses are 10 percent (Hemispheric Database, 2003). However, the government of the Bahamas does not assess duties on dairy products for infant use (US Department of State, 2002; Hemispheric Database, 2003).

# **BERMUDA**

## **Overview of Bermuda**

Bermuda is the UK's last overseas territory in North America. It is a group of islands located in the North Atlantic Ocean, east of North Carolina. The total area of Bermuda is 53.3 square kilometers, about one-third the size of Washington, DC. The population was about 63,960 in 2001, with a 0.69 population growth rate (CIA World Factbook, 2002).

Bermuda is one of the countries with the highest per-capita incomes in the world. Bermuda's economy is primarily based on financial services and tourism. However, in recent years, tourism has suffered, overtaken by international business as Bermuda's principal revenue-earner. Since the September 11, 2001, terrorist attacks in the US, Bermuda's already weakening tourism industry has been further hit as American tourists have chosen not to travel (CIA World Factbook, 2002). In 2001, the gross domestic product (GDP) of British Bermuda was \$2.2 billion (purchasing power parity), with 2.9 percent real GDP growth rate. Per-capita purchasing power parity was about \$34,800 in 2001 (CIA World Factbook, 2002). Tourism, which accounts for an estimated 28 percent of its total GDP, attracts 80 percent of its business from North America, while the agriculture sector accounts for only one percent of its total GDP (CIA World Factbook, 2002).

Bermuda's total exports in 2001 were \$51 million, of which the US received 9.8 percent. Its total imports in 2001 were \$719 million, of which the US shipped 17.8 percent. Most capital equipment and food in Bermuda must be imported, with the US serving as the primary source of goods, followed by the European Union (EU), including the United Kingdom (UK) (CIA World Factbook, 2002).

## **Dairy Industry in Bermuda**

### **Production of Dairy Products**

With only six percent of the land under cultivation, agriculture is limited in Bermuda, and accounts for only one percent of the total GDP (CIA World Factbook, 2002). Since agriculture does not play a significant role in Bermuda's economy, food supplies are mainly imported. For example, fresh meat comes from the US and dairy products come from a variety of countries: the US, Canada, New Zealand, and the European Union, including the United Kingdom.

Bermuda has ideal growing conditions for a large variety of vegetables, which are considered superior in every way to imported varieties. Bermudian farmers provide some of the eggs and grow a variety of fruits and vegetables. In addition, some farms produce milk from herds of cows. However, the dairy industry in Bermuda is very small. Its commercial dairy production was started early in the last century. In 1920, Bermuda imported six purebred Guernsey into Bermuda. The cows came from New Hampshire. Guernsey and Jersey cows produce rich milk (high protein and fat). The introduction of purebred cows increased milk productivity in Bermuda. The first calf born in Bermuda, known as Bermuda Daisy, produced 29 quarts a day. Milk pasteurization became law in 1914, and the first modern farm was established in 1934 by a Canadian (Miles Market, 1993).

As the tourism and international financial service sectors grew in Bermuda. The agriculture sector became less important in Bermuda's economy. For example, at the beginning of the last century, there were more than 2,600 acres of land under cultivation,

but was reduced to about 400 acres during the 1990s (Miles Market, 1993). This trend also affected Bermuda's milk production. Between 1991 and 2000, milk production in Bermuda decreased 100 metric tons, from 1,450 metric tons in 1991 to 1,350 metric tons in 2000, troughing in 1995 at 1,065 metric tons (Table 1). However, in the middle of the 1990s, the government of Bermuda realized the importance of agriculture, and decided to provide supports. For example, when certain domestically produced fruits and vegetables are in season, the government will temporarily embargo the importation of competing produce from abroad to allow farmers to make a decent livelihood. Milk production also has benefited from government support to some extent. Milk production increased to 1,350 metric tons in 1996, and maintained at that level during the rest of the 1990s (Table 1).

Table 1. Bermuda milk and selected dairy products production, 1991 through 2000.

Year	Cow Milk, Whole, Fresh	Butter and Ghee	Cheese (All Kinds)	Skim Milk, Dry	Whey
Metric Tons					
1991	1,450	----	----	----	----
1992	1,400	----	----	----	----
1993	1,380	----	----	----	----
1994	1,320	----	----	----	----
1995	1,065	----	----	----	----
1996	1,350	----	----	----	----
1997	1,350	----	----	----	----
1998	1,350	----	----	----	----
1999	1,350	----	----	----	----
2000	1,350	----	----	----	----

Source: FAO Statistical Databases, 2002.

### **Demand for Dairy Products**

With a per-capita GDP of \$34,800 in 2001 (CIA World Factbook, 2002), Bermuda had the third wealthiest population in the Western Hemisphere. Unemployment was at zero percent; household incomes and living standards were high. Due to its historical ties to the United Kingdom and the dominant presence of the US as the primary trading partner, Bermuda has a relatively high milk and dairy consumption (USDA-FAS, 2000).

Being close to the US coast, US television programs can be seen in virtually every residence and hotel in Bermuda. As a result, dairy promotion campaigns in the US have a direct effect on the islands. Due to its small dairy industry, to satisfy its dairy demand, Bermuda has to import dairy products. The government trade policy and the world prices of dairy prices largely determined dairy consumption on the islands. Although Bermuda's per-capita dairy consumption is relatively high, it fluctuated in the 1990s, peaking in 1993 at 206.43 kilograms (Table 2). The lowest levels of milk consumption, due mainly to an increase in world dairy prices, occurred in 1996 and 1999 when per-capita milk consumption was 137.45 and 125.40 kilograms, respectively (Table 2).

In the 1990s, per-capita all milk consumption decreased at an average annual rate of -0.3 percent (Table 2), mainly because of high duties and other trade barriers on dairy imports and fluctuations in world dairy prices. Bermuda's tourism suffered in the late 1990s, which caused dairy consumption to decrease. Between 1991 and 2000, per-capita milk consumption decreased 17.76 kilograms, from 159.43 kilograms in 1991 to 141.67 kilograms in 2000 (Table 2). Per-capita milk consumption was about one half of that experienced in the US in 2000 (FAO Statistics, 2002).

Table 2. Per-capita consumption of dairy products in Bermuda, 1991 through 2000.

Year	All Milk <sup>a</sup>	Butter	Cheese	Skim Milk <sup>a</sup>	Whole Milk <sup>a</sup>	Whey <sup>a</sup>
	Kilograms					
1991	159.43	5.51	4.44	66.78	59.53	---
1992	173.82	5.05	9.37	51.83	56.81	---
1993	206.43	5.65	12.97	63.17	53.49	---
1994	193.46	5.41	13.11	60.66	42.18	---
1995	139.15	4.92	8.69	49.18	29.45	---
1996	137.45	4.43	10.66	32.79	31.89	---
1997	143.80	4.52	9.52	48.39	29.43	---
1998	143.05	5.00	9.35	48.39	29.75	---
1999	125.40	4.13	8.10	39.68	29.66	---
2000	141.67	2.86	7.46	57.14	31.78	---
Average Annual Growth (%)						
1991-2000	-0.3	-6.1	11.8	1.9	-5.9	---

<sup>a</sup> Included food and other uses, such as cattle feed.

Source: FAO Statistical Databases, 2002

In terms of butter consumption, consumers' increasing health concerns about reducing fat intake caused per-capita butter consumption to decrease during the 1990s. Per-capita butter consumption decreased from 5.51 kilograms in 1991 to 2.86 kilograms in 2000, with an average annual decrease rate of 6.1 percent (Table 2). A significant decrease occurred in 2000, mainly due to decreases in butter imports.

Although Bermudians consume a relatively large amount of cheese every year, per-capita consumption fluctuated. During the 1990s, per-capita cheese consumption increased at an average annual rate of 11.8 percent (Table 2). Most of the increase was associated with growth in tourism. Between 1991 and 2000, per-capita cheese consumption increased 3.02 kilograms, from 4.44 kilograms in 1991 to 7.46 kilograms in 2000, peaking in 1994 at 13.11 kilograms (Table 2).

In Bermuda, skim milk was preferred because of its low fat content. As a result, although per-capita whole milk consumption decreased at an average annual rate of -5.9



percent, the average annual increase rate of skim milk consumption was 1.9 percent (Table 2). However, between 1991 and 2000, skim milk consumption decreased 9.64 kilograms, as opposed to whole milk consumption, which decreased 27.75 kilograms between 1991 and 2000. Whole milk consumption was relatively level from 1995 through 2000. The decrease in whole milk consumption was significant, which was mainly due to increased prices for import fluid milk. In 2000, per-capita whole milk consumption was 31.78 kilograms (Table 2).

### **Imports of Dairy Products**

Bermuda is a net importer of dairy products, and its self-sufficiency in dairy products is relatively low, which was about 15 percent in 2000 (FAO Statistics, 2002). Bermuda has never imported a large amount of dairy products. In 2000, Bermuda ranked out of the top 40 countries in total dairy products imported (in milk equivalent pounds). The country's total dairy imports in that year were 6,970 metric tons, accounting for 0.01 percent of the total world imports of dairy products (FAO Statistics, 2002).

Bermuda ranked out of the top 40 countries in imports of butter, cheese, and dry skim milk in the 1990s. In 2000, the total butter and cheese imports into Bermuda were 180 metric tons and 470 metric tons, respectively (Table 3). In addition, Bermuda imported 360 metric tons of dry skim milk in 2000 (Table 3).

Table 3. Bermuda dairy imports, 1991 through 2000.

Year	Milk Equivalent	Butter	Cheese	Dry Whole Milk <sup>a</sup>	Dry Skim Milk	Dry Whey
1991	8,572	375	262	---	394	---
1992	10,480	253	762	---	311	---
1993	11,018	339	798	---	379	---
1994	9,978	330	700	---	370	---
1995	7,647	300	530	---	300	---
1996	6,559	270	530	---	200	---
1997	7,534	280	590	---	300	---
1998	7,708	310	580	---	300	---
1999	6,712	260	510	---	250	---
2000	6,970	180	470	---	360	---
Average Annual Growth (%) 1991-2000	-1.3	-5.9	16.5	---	2.6	---

<sup>a</sup> Data not available.

Source: FAO Statistical Databases, 2002.

To satisfy its domestic dairy consumption, Bermuda imported 85 percent of its total dairy consumption in 2000. However, the volume of Bermuda's dairy imports has never been high, and dairy imports decreased during the 1990s due to decreases in Bermuda's tourism. The average annual decrease rate of dairy imports was about 1.3 percent in the 1990s. In the period 1993 to 2000, dairy imports (in milk equivalent pounds) decreased from 11,018 metric tons in 1993 to 6,970 metric tons in 2000 (Table 3), for an average annual decrease of six percent.

Bermuda did not produce butter in the 1990s. As a result, all butter consumption was imported. However, the quantity of butter imports was very small. Butter imports decreased at an average annual rate of 5.9 percent during the 1990s. Between 1991 and 2000, butter imports decreased 195 metric tons, from 375 metric tons in 1991 to 180 metric tons in 2000 (Table 3). This decrease was mainly due to the slowdown of tourism on the islands.

Cheese imports increased during the 1990, with an average annual growth rate of 16.5 percent (Table 3). The increase mainly occurred in the first two years of the 1990s when cheese imports increased from 262 metric tons in 1991 to 762 metric tons in 1992 (Table 3). The growth can be associated with the growth in tourism. In the period 1995 to 1999, cheese imports maintained at 500 to 600 metric tons, ranging from 510 metric tons in 1999 to 590 metric tons in 1997 (Table 3). The decrease in cheese imports during that period was due to the slowdown of tourism. During the period of 1998 to 2000, the Asian crisis caused an overall slowdown of the world's economy, tourism on the islands was hit quite hard, and cheese imports declined to 470 metric tons in 2000 (Table 3).

Bermudians prefer skim milk to whole milk. As a result, Bermuda's skim milk powder imports have been greater than whole milk powder imports during the 1990s. Bermuda's dry skim milk imports experienced an average annual increase rate of 2.6 percent during the last decade (Table 3). However, due to world price fluctuations and tourism slowdown on the islands between 1991 and 2000, dry skim milk imports decreased 34 metric tons (Table 3).

### **Exports of Dairy Products from the U.S.**

The US is a main supplier of Bermuda's dairy products, such as fresh milk, cream, cheese, skim milk powder, and ice cream. Bermuda has relatively high import duties because it is the government's main revenue source. The European Union and New Zealand are also suppliers of dairy products to Bermuda. Dairy products from the European Union and New Zealand are mainly in the form of whole milk powder, butter, and milk fat.

During the 1990s, the market share of US butter fluctuated due to competition with New Zealand (Table 4). In 2000, the US exported 20.5 metric tons of butter to Bermuda, which accounted for 11.4 percent of its total butter imports after reaching a high of 18.5 percent in 1999 (Table 4). As in other Caribbean countries, Bermudians prefer butter products from New Zealand because of the taste and the melting point.

Table 4. Selected dairy products exported from the US to Bermuda, 1991 through 2000.

Year	Butter <sup>a</sup>	% of All Butter Imports <sup>b</sup>	Cheese <sup>a</sup>	% of All Cheese Imports <sup>b</sup>	Non-Fat Dry Milk <sup>a</sup>	% of All NFDM Imports <sup>b</sup>	Dry Whey <sup>a</sup>	% of Dry whey imports <sup>b</sup>
	Mt	%	Mt	%	Mt	%	Mt	%
1991	0.0	0.0	457.2	174.5 <sup>c</sup>	0.0	0.0	---	---
1992	6.6	2.6	268.8	35.3	171.7	55.2	---	---
1993	2.2	0.6	263.4	33.0	73.8	19.5	---	---
1994	39.1	11.8	248.4	35.5	51.0	13.8	---	---
1995	5.8	1.9	238.1	44.9	27.3	9.1	---	---
1996	19.8	7.3	234.4	44.2	17.5	8.8	---	---
1997	32.8	11.7	309.3	52.4	132.7	44.2	---	---
1998	56.2	18.1	272.5	47.0	286.5	95.5	---	---
1999	48.0	18.5	248.8	48.8	242.4	97.0	---	---
2000	20.5	11.4	216.4	46.0	293.3	81.5	---	---

<sup>a</sup> Source: United States Department of Agriculture Foreign Agricultural Service, 2003.

<sup>b</sup> Data from Table 3.

<sup>c</sup> The reason for the discrepancy is unknown and needs further analysis.

The US is the major supplier of cheese to Bermuda; US cheeses dominate the Bermuda market. During the 1990s, the market share of US cheese was relatively high. In 2000, Bermuda imported 216.4 metric tons cheese from the US, with a market share of 46 percent after reaching a high of 52.4 percent in 1997 (Table 4). However, in recent years, competition with New Zealand has increased due to its cost advantages in bulk cheese.

The US also dominated the nonfat dry milk imports into Bermuda during most of the 1990s. In 2000, Bermuda imported 293.3 metric tons of nonfat dry milk from the US, when the market share of US nonfat dry milk was 81.5 percent (Table 4). The percentage of US imports ranged from 8.8 percent in 1996 to 97.0 percent in 1999 (Table 4).

### **Trade Policy and Tariff**

Bermuda is one of the countries with the highest per-capita incomes in the world. Bermuda's economy is primarily based on financial services and tourism. Because of the lack of domestic production, almost all manufactured goods and foodstuffs must be imported. Besides the US, the United Kingdom, Canada, and the Caribbean countries are also Bermuda's trading partners.

In Bermuda, there are no income, sale, or profit taxes, and import duties are the main source of the government obtaining revenues. During the 1990s, over 30 percent of its revenue was obtained from import duties (US Department of State, 1996). Heavy import duties were reflected in retail prices, and the cost of living was high in Bermuda. Before 2002, tariffs reached upwards to 22 percent, also due to government protection of local businesses. Tariffs on milk and dairy products were 15 percent. However, because of its proximity and historical business ties, US exporters find that Bermuda's tariff and duty regulations compliment US systems. For US exporters, the process of exporting is relatively easy because of familiarity with documentation and procedures (USDA-FAS, 2000).

In 2002, Bermuda tariffs were extensively revised in line with the worldwide standard of the Harmonized System or "HS". The new Bermuda tariff will provide an easier and

more consistent mechanism for the classification of goods, retaining the concessions provided in the former tariff. In addition, in order to facilitate trading, tariff rates on goods were revised. Currently, tariffs on dairy products are zero to five percent. Tariffs on whey, butter, and cheese are all five percent. However, the government of Bermuda does not assess duties on milk and milk powder, which fall under the tariff code of 0401 and 0402 (Bermuda Customs, 2003).

## **THE DOMINICAN REPUBLIC**

### **Overview of the Dominican Republic**

The Dominican Republic is a Caribbean country that lies in the eastern portion of the island of Hispaniola, with Haiti to the west, between the Caribbean Sea and the North Atlantic Ocean. The total area of the Dominican Republic is 48,370 square kilometers, slightly larger than twice the size of New Hampshire. The population of the Dominican Republic in 2001 was about 8.72 million, with a 1.61 percent growth rate (CIA World Factbook, 2002).

The Dominican Republic is the largest Caribbean economy. Although it is still a middle-income developing country, its economy is much more stable and healthy than other countries in the Latin, Caribbean region. The country has long been viewed as an exporter of agricultural commodities such as sugar, coffee, and tobacco. However, in recent years, the service sector has overtaken agriculture as the economy's largest sector. Free Trade Zone earnings and tourism are the fastest-growing sectors. However, agriculture remains important in terms of domestic consumption and export earnings. In 2001, agriculture accounted for eleven percent of the Dominican Republic's total gross domestic product (GDP) (CIA World Factbook, 2002). After the economic turmoil in the late 1980s and 1990, the Dominican Republic's economy has experienced growth over the last decade. The real GDP grew by eight percent in 1999. However, the Dominican Republic government still faces several difficulties. The non-free trade zone merchandise trade deficit is widening; the interest rate is high and the tax collection rate is poor; and the country suffers from extreme income inequality. In 2001, the real GDP was \$50

billion (purchasing power parity), with 1.5 percent growth rate, and the per-capita real GDP was \$5,800 (CIA World Factbook, 2002).

The Dominican Republic's total exports in 2001 were \$5.5 billion, of which the US received 87.3 percent. Its total imports in 2001 were \$8.7 billion, of which the US shipped 60.3 percent. The main trading partners are the US, Japan, and other Latin, Caribbean countries (CIA World Factbook, 2002).

## **Dairy Industry in the Dominican Republic**

### **Production of Dairy Products**

Livestock and dairy farming are not new to the Dominican Republic. Dairy farming started during colonial times and continues to be popular, despite the country's warm climate and hilly topology. The Dominican Republic is the second biggest milk producer in the Caribbean, following Cuba (USDEC, 2000).

The Dominican Republic has a mixture of dairy farmers, characterized mainly by mostly small- to medium-scale producers. Dual-purpose operations dominate the livestock and dairy industries. In 1998, there were about 59,000 farmers producing milk, of which 17,500 were specialized in milk production, while the rest produce both beef and milk (USDA-FAS, 2001). Milk production has been concentrated in the Southwest region of the county, which also has the biggest portion of specialized milk producers in the country. Specialized milk producers have relatively advanced technology, with highly productive herds. For example, they have cooling tanks to keep fresh milk and use concentrated feed as a complement to pasture (USDA-FAS, 2001).



The major constraints to milk production have been the lack of advanced technology and difficulties in providing adequate nutrient feed. The majority of dairy farms use a traditional grazing system, which is characterized by low-level technology. As a result, milk productivity is very low. However, in the 1990s, more and more dairy farms started to adopt advanced technology and to improve farming systems. For example, concentrated feed and medicine have been used, pastures have been fertilized, and cattle-raisers have started using cut hay. In 1998, there were a total of 1.17 million head of milk cows, including dual-purpose cattle. The average milk production per cow was less than 500 kilograms per year (USDA-FAS, 2001).

The government of the Dominican Republic has concluded that the dairy industry is important to its economy and people. As a result, to keep milk prices low, the government has controlled the prices of milk and intervened in the dairy market throughout the years since 1988. This policy dramatically increased milk imports and milk shortages, which caused many producers to become bankrupt and others to change their economic activities. Many dairy farms, as well as private milk pasteurizers, closed their businesses in the late 1980s. The total dairy cow population has declined as a direct result of years of low government prices for milk. By the late 1980s, only four pasteurizing plants processed domestic milk and reconstituted imported powdered milk (USDA-FAS, 2001).

Milk production in the Dominican Republic increased slightly during the 1990s, at an average annual rate of 1.6 percent (FAO Statistics, 2002). Milk production increased from 348,795 metric tons in 1991 to 397,750 metric tons in 2000. Between 1991 and 2000, milk production increased 48,955 metric tons, peaking at 411,077 metric tons in

1999 (Table 1). In 1998, the Dominican Republic was hit quite hard by Hurricane George. As a result, milk production decreased from 390,198 metric tons in 1997 to 358,352 metric tons in 1998 (Table 1).

Since most of its milk production depends on pasture, milk production has varied seasonally in the country. The months with plenty of rainfall are from April to July, which is when the prices of milk to the producer decreases. The seasonal surpluses of milk are stored as powdered milk or mature cheese. The Dominican Republic only produces whole milk powder.

Table 1. The Dominican Republic milk and selected dairy products production, 1991 through 2000.

Year	Cow Milk, Whole, Fresh	Butter and Ghee	Cheese (All Kinds) Metric Tons	Skim Milk, Dry	Whey <sup>a</sup>
1991	348,795	1,500	2,500	----	13,336
1992	364,490	1,500	2,500	----	13,336
1993	381,621	1,500	2,500	----	13,336
1994	370,659	1,500	2,500	----	13,336
1995	385,486	1,500	2,500	----	13,336
1996	392,810	1,500	2,500	----	13,336
1997	390,198	1,500	2,500	----	13,336
1998	358,352	1,500	2,500	----	13,336
1999	411,077	1,500	2,500	----	13,336
2000	397,750	1,500	2,500	----	13,336

<sup>a</sup> Whey production in milk equivalent pounds.

Source: FAO Statistical Databases, 2002.

Most dairy consumption in the Dominican Republic is associated with fluid milk, cheese, and milk powder. About 20 percent of its total milk production is processed as fluid milk. Relatively large amounts of milk go to cheese production. Cheese manufacturers process 23 percent and candy and ice cream manufacturers three percent.

The rest is consumed raw or at the farm (USDA-FAS, 2001). In addition, there are other companies in the market that recombine imported milk powder into ultra high temperature (UHT) milk. According to the FAO, the production of cheese, butter, and whey has not changed over the 1990s (Table 1).

### **Demand for Dairy Products**

The Dominican Republic's economy experienced growth throughout the 1990s. Although it is still a middle-income developing country, its economy is more stable and healthier than other countries in the Latin, Caribbean region. As a result, the Dominican Republic's income and living standard increased over the 1990s. The Dominican Republic also has a relatively high population growth rate. In 2001, its population growth rate was about 1.61 percent, with nearly 40 percent of its population teenagers (CIA World Factbook, 2003).

In the Dominican Republic, milk is a very important food in homes because it is consumed both by children and the adult population directly through milk by-products as well. The government values the importance of dairy products to people's diet and its economy. As a result, since 1988, the government has controlled dairy prices and kept the prices low. The government of the Dominican Republic has launched several social programs to promote milk and dairy consumption. The most important campaign was the school breakfast program, which directly increased milk consumption among school children.

Even with the population growth, the increase in income and living standard, and the increase in tourism, per-capita milk consumption decreased at 2.8 percent, on average, in

the 1990s (Table 2). The main reason was because the Dominican Republic lowered pasteurized milk consumption in the 1990s. Due to constant electric power supply problems in the country, milk refrigeration was difficult, which lowered pasteurized fresh milk consumption. Pasteurized milk has nearly disappeared from the market. Instead, it has been replaced by ultra high temperature (UHT) milk, which has a long shelf life (USDA-FAS, 2001). At present, only unpasteurized fresh milk is consumed in rural areas and small towns. In addition, another reason for the decrease in per-capita milk consumption might be its high price. Although the government has tried to control the price of fluid milk, the price of pasteurized milk was the highest of all the types of milk sold in the market. Between 1991 and 2000, the overall per-capita milk consumption decreased 18.93 kilograms, peaking in 1992 at 84.86 kilograms (Table 2).

Table 2. Per-capita consumption of dairy products in the Dominican Republic, 1991 through 2000.

Year	All Milk <sup>a</sup>	Butter	Cheese	Skim Milk <sup>a</sup>	Whole Milk <sup>a</sup>	Whey <sup>a</sup>
	Kilograms					
1991	81.80	0.42	0.36	36.38	48.65	1.86
1992	84.86	0.42	0.36	37.84	50.05	1.82
1993	83.13	0.36	0.37	34.44	51.71	1.79
1994	82.37	0.45	0.40	35.83	49.17	1.76
1995	83.19	0.48	0.44	34.77	50.68	1.73
1996	83.91	0.46	0.50	35.20	50.45	1.70
1997	82.25	0.49	0.49	34.65	49.32	1.67
1998	77.37	0.51	0.57	34.09	44.39	1.65
1999	68.73	0.49	0.61	20.17	50.03	1.62
2000	62.87	0.50	0.66	16.50	47.60	1.59
Average Annual Growth (%) 1991-2000	-2.8	2.4	7.1	-7.2	-0.1	-1.7

<sup>a</sup> Included food and other uses, such as cattle feed.

Source: Food and Agricultural Organization of the United Nations Statistical Databases, 2002.

In larger urban centers, especially in the city of Santo Domingo, the distribution system is not as simple as in small towns and rural areas. Lower-income consumers have substituted powdered milk for pasteurized milk, and higher-income consumers consume ultra high temperature (UHT) milk, although raw milk is still sold in some areas.

Besides fluid milk, dairy consumption in the Dominican Republic is also in the form of powdered milk, cheese, yogurt, and ice cream. Little can be said about per-capita butter consumption in the Dominican Republic, which it increased slightly in the 1990s at 2.4 percent, on average, per year, from 0.42 kilogram in 1991 to 0.50 kilogram in 2000 (Table 2).

Dominican Republic cheese production cannot meet demand. Cheese is imported from Holland, the US, Germany, and New Zealand. In 2000, an estimated 75 percent of cheese consumed in the Dominican Republic was domestically produced. Domestic cheese can be bought from convenience stores called colmados, and imported cheese is mainly sold at supermarkets (USDEC, 2000). Cheese is enjoyed in a number of different ways, such as grilled sandwiches, on crackers, with bread, or in pastries and desserts (USDA-FAS, 1999). Per-capita cheese consumption increased in the 1990s from 0.36 kilogram in 1991 to 0.66 kilogram in 2000, for an average annual growth of 7.1 percent (Table 2).

A significant decrease occurred in skim milk consumption. Dominicans do not like skim milk; they prefer whole milk for its full fat content. Per-capita skim milk consumption decreased -7.2 percent annually in the 1990s (Table 2). Between 1991 and 2000, per-capita skim milk consumption decreased 19.88 kilograms, a drop of 13.92

kilograms from 1998 to 1999, for an overall decrease of 55 percent. Per-capita whole milk consumption also decreased. Between 1991 and 2000, per-capita whole milk consumption decreased from 48.65 kilograms to 47.60 kilograms (Table 2). The average annual decrease rate in the 1990s was 0.1 percent (Table 2).

Per-capita consumption of whey decreased continuously in the 1990s at an average annual rate of -1.7 percent (Table 2). Due to the lowered consumption of all milk products, the use of dairy ingredients (such as milk powder and whey) to recombine fluid milk has been decreased. In addition, whey is not utilized extensively in the feed industry in the Dominican Republic.

### **Imports of Dairy Products**

The Dominican Republic is a net importer of dairy products. In 2000, the Dominican Republic's dairy self-sufficiency was about 75 percent (FAO Statistics, 2002). The gap between dairy consumption and domestic production has been filled by imports. However, due to declining dairy consumption, the Dominican Republic is not a big dairy importer. In 2000, the Dominican Republic ranked out of the top 40 countries in total dairy products imported (FAO Statistics, 2002). In 2000, the Dominican Republic's total dairy imports were 109,393 metric tons, accounting for 0.17 percent of the total world imports of dairy products (FAO Statistics, 2002). For individual dairy products, the Dominican Republic also ranked out of the top 40 countries in imports of butter, cheese, and whey in the 1990s. In 2000, the Dominican Republic ranked thirty-second in dry skim milk imports (Table 3), and its share of world imports was less than one percent (FAO Statistics, 2002).

Table 3. Selected countries' total dry skim milk imports and ranking, 1996 through 2000.

	1996		1997		1998		1999		2000	
	Mt	Rank	Mt	Rank	Mt	Rank	Mt	Rank	Mt	Rank
Algeria	58,468	9	78,893	5	87,040	4	71,272	8	91,339	5
Belgium	51,781	12	43,521	11	43,155	13	45,150	15	71,900	9
China	37,975	15	40,945	13	44,813	12	51,150	13	56,862	10
Dominican Republic	24,000	21	24,000	21	24,000	22	13,000	31	10,200	32
France	33,446	18	28,453	20	42,636	14	63,791	9	84,735	6
Indonesia	45,916	14	41,034	12	33,133	18	98,348	5	82,574	7
Italy	126,614	3	127,504	3	126,494	2	121,779	3	109,008	4
Malaysia	78,151	5	75,000	6	59,596	6	71,879	7	74,721	8
Mexico	126,700	2	132,849	2	102,600	3	125,137	2	129,078	2
Netherlands	216,085	1	224,214	1	162,459	1	230,438	1	205,379	1
Philippines	83,704	4	98,050	4	77,637	5	86,729	6	111,455	3
Total	882,840	---	914,463	---	803,563	---	978,673	---	1,027,251	---
World	1,716,935	---	1,727,457	---	1,607,154	---	1,879,505	---	1,805,896	---

Source: Food and Agricultural Organization of the United Nations Statistical Databases, 2002.

Imports of all dairy products (in milk equivalent pounds) decreased in the 1990s, at an average annual rate of -5.7 percent (Table 4). A significant decrease occurred in 1999 when dairy imports decreased from 210,094 metric tons in 1998 to 127,404 metric tons in 1999 (Table 4), for an annual decrease of 39 percent. Between 1991 and 2000, dairy imports decreased 103,514 metric tons, for an overall 49 percent decrease. These decreases were mainly caused by decreases in milk powder imports.

Table 4. The Dominican Republic dairy imports, 1991 through 2000.

Year	Milk Equivalent	Butter	Cheese	Dry Skim Milk	Whey
Metric Tons					
1991	212,907	1,500	80	26,574	----
1992	164,646	1,600	120	20,000	----
1993	179,113	1,200	230	22,000	----
1994	194,746	1,900	500	23,500	----
1995	192,764	2,200	900	22,000	----
1996	204,551	2,100	1,400	24,000	----
1997	207,002	2,400	1,400	24,000	----
1998	210,094	2,600	2,100	24,000	----
1999	127,404	2,500	2,500	13,000	----
2000	109,393	2,700	3,000	10,200	----
Average Annual Growth (%) 1991-2000	-5.7	8.7	53.7	-8.1	----

Source: FAO Statistical Databases, 2002.

In the Dominican Republic, milk powder is the main product in dairy imports, accounting for more than 70 percent of the total amount of dairy products imported in milk equivalent pounds (USDA-FAS, 2001). In the Dominican Republic, about 70



percent of the dairy consumption can be associated with milk powders (USDEC, 2000). Milk powder is used as ingredients in food and other dairy products manufactured. Most of the milk powder consumed is imported. According to the FAO, the Dominican Republic imported milk powder mainly in the form of nonfat dry milk. However, in the period 1999 to 2000, an unexpected rebound in world nonfat dry milk prices caused the Dominican Republic's imports to decrease dramatically. In addition, since July 1999, US nonfat dry milk exports under the Dairy Export Incentive Program (DEIP) dropped rapidly (USDA-FAS, 2000). Since the US was a main supplier of nonfat dry milk to the Dominican Republic, the Dominican Republic decreased its nonfat dry milk imports. Nonfat dry milk imports decreased from 24,000 metric tons in 1998 to 13,000 metric tons in 1999, and decreased further to 10,200 metric tons in 2000 (Table 4). Between 1991 and 2000, nonfat dry milk imports to the Dominican Republic decreased 16,374 metric tons, from 26,574 metric tons in 1991 to 10,200 metric tons in 2000, for an overall decrease of 62 percent (Table 4).

The Dominican Republic's butter and cheese imports increased over the last decade, reaching 2,700 metric tons and 3,000 metric tons, respectively, in 2000 (Table 4). Butter imports increased at an average annual rate of 8.7 percent (Table 4). The growth of cheese was the most impressive of all dairy imports, with an average annual growth rate of about 53.7 percent in the 1990s (Table 4). Cheese imports are expected to continue growing over the next few years. Growth in this market is fueled by increasing demand and the rapid expansion of supermarkets (USDEC, 2000).

In addition, the Dominican Republic imported fluid milk in the 1990s, with the U.S. as the largest supplier. In 1998, the US supplied over 70 percent of its total fluid milk, 1,225 metric tons (USDEC, 2000).

### Exports of Dairy Products from the U.S.

The US is one of the major dairy suppliers of the Dominican Republic. In the 1990s, although the US did not supply much butter into the country, it was the largest cheese supplier. In 2000, the US exported 881.4 metric tons cheese to the Dominican Republic, and the share of US cheese was about 29.4 percent (Table 5).

Since 1997, the US has become the largest supplier of skim milk powder. In 2000, the US supplied 4893.3 metric tons, or 48 percent of the total imports (Table 5). Although the Dominican Republic's total whey imports are unknown, due to cost advantages in price and transportation, the US is estimated to be the major supplier of whey imports. In 2000, the US exported 450.5 metric tons of whey into the country.

Table 5. Selected dairy products the US exported to The Dominican Republic, 1991 through 2000.

Year	Butter <sup>a</sup>	% of All Butter Imports <sup>b</sup>	Cheese <sup>a</sup>	% of All Cheese Imports <sup>b</sup>	Non-Fat Dry Milk <sup>a</sup>	% of All NFDM Imports <sup>b</sup>	Whey <sup>a</sup>	% of All Whey Imports <sup>b</sup>
	<i>Mt</i>	%	<i>Mt</i>	%	<i>Mt</i>	%	<i>Mt</i>	%
1991	238.5	15.9	40.4	50.5	837.4	3.2	0.0	----
1992	358.5	22.4	36.6	30.5	0.6	0.0	0.0	----
1993	11.3	0.9	118.3	51.4	906.6	4.1	51.8	----
1994	158.7	8.4	207.2	41.4	51.9	0.2	91.2	----
1995	251.3	11.4	304.2	33.8	101.4	0.5	212.1	----
1996	316.1	15.1	378.1	27.0	121.6	0.5	188.0	----

1997	323.5	13.5	491.3	35.1	4,515.2	18.8	429.7	----
1998	5.5	0.2	628.6	29.9	4,530.8	18.9	221.2	----
1999	51.5	2.1	778.8	31.2	8,093.0	62.3	419.0	----
2000	687.1	25.4	881.4	29.4	4,893.3	48.0	450.5	----

<sup>a</sup> Source: United States Department of Agriculture Foreign Agricultural Service, 2003.

<sup>b</sup> Data from Table 4.

### **Trade Policy and Tariff**

The Dominican Republic is one of the largest economies in the Central American and Caribbean regions. Since 1996, its economy has experienced continuous growth, accompanied by macroeconomic stability, a shift towards private sector participation, and increased economic and trade openness (WTO, 2002). The Dominican Republic joined the WTO in 1995, and has further liberalized its foreign trade regime. The country has established two free trade agreements with the Central American Common Market and with CARICOM (Caribbean Community) (WTO, 2002).

However, regulations and barriers still exist. The major obstacles of trade are tariffs and the exhaustive paperwork required by Customs and the Public Health Secretary (USDEC, 2000). Import permits are required for most agricultural products, including dairy products. However, US labeling requirements and standards are generally accepted in the Dominican Republic.

Dairy imports were regulated until the Dominican Republic became a member of GATT. Under the WTO commitment, dairy imports pay a tariff that varies from 20 percent for fluid milk, cream, and skim milk powder to 30 percent for whey and other by-

products, and 35 percent for cheese and ice cream (USDA-FAS, 2001). However, powdered milk was included in the Technical Rectification, submitted by the Dominican Government to the WTO, which consisted of the establishment of a tariff quota to modify the list of commitments. Either whole or skimmed milk powder has a fixed quota of 32,000 metric tons, with a 20 percent tariff until 2004 (USDA-FAS, 2001). Imports over the quota paid 64 percent tariff in 2002, which will be gradually reduced to 56 percent in 2004 (WTO, 2002). In addition, except for whole milk powder packed for retail sale, the Dominican Republic levies a value-added eight percent tax on dairy imports, which is a tax on the Transfer of Industrialized Goods and Services (ITBIS) [USTR, 2000].

The Technical Rectification imposes a high-tariff barrier to powdered milk imports exceeding the quota of 32,000 metric tons. It will be very difficult for dairy producers who must import in excess of the quota stipulation to compete. On the other hand, within the quota, importers tend to import much more than normal inventories at the beginning of every year in order to have reserves. This high level of inventory increases the costs for marketing milk, and discourages consumption to some extent.

## **JAMAICA**

### **Overview of Jamaica**

Jamaica is a small island country located in the middle of the Caribbean, Cuba to the north, and Haiti to the east. The total area of Jamaica is about 10,991 square kilometers, slightly smaller than the state of Connecticut. The population of Jamaica in 2001 was about 2.68 million, with a 0.56 percent growth rate (CIA World Factbook, 2002).

Since 1992, the Jamaican government has further eliminated most price controls, streamlined tax schedules, and privatized state enterprises. Tight monetary and fiscal policies have helped slow inflation and stabilized the exchange rate, but at the same time, have slowed economic growth. Key sectors of the Jamaican economy are tourism and bauxite, which has been stagnant since 1995. After five years of recession, the economy grew 0.8 percent in 2000 and 1.1 percent in 2001 (CIA World Factbook, 2002). In 2001, Jamaica's gross domestic product (GDP) was about \$9.8 billion (purchasing power parity), with a per-capita purchasing power parity of \$3,700. Agriculture accounted for seven percent of the total GDP (CIA World Factbook, 2002). Jamaica is facing several serious problems, such as widening trade deficit, growing internal debt, high interest rates, and a depreciating exchange rate, which have hindered its economic growth in recent years.

Jamaica's total exports in 2001 were \$1.6 billion, of which the US received 35.7 percent. Its total imports were \$3.1 billion, of which the US shipped 47.8 percent. The

main trading partners are the European Union, the US, and other Latin, Caribbean countries (CIA World Factbook, 2002).

## **Dairy Industry in Jamaica**

### **Production of Dairy Products**

Jamaica has favorable conditions for dairy production. For example, there is good pastureland, an adequate water supply, and a well-adapted cow breed called Jamaica Hope (Eurostep, 1999). However, although the dairy industry is not new to Jamaica, it is very small. In 2002, according to Jamaica's Ministry of Agriculture, there were about 3,000 dairy farmers producing milk in Jamaica. Most of these dairy farms are small to medium size. Small-sized dairy farms with no more than 10 milking cows make up for about 80 percent of the dairy farmers. In Jamaica, there are only two very large dairy farms, each with over 1,000 head of cattle. In addition, there are several thousand beef cattle farmers who produce milk. In 2002, the total milk cattle in Jamaica were about 22,000 head, and with a dairy cattle share off about 196,000 hectare of permanent pastures, with the greatest concentration in the south. The five southern parishes of St Elizabeth, Manchester, Clarendon, St Catherine, and St Thomas accounted for over 77 percent of the national dairy herds in 2002 (Jamaica Ministry of Agriculture, 2002).

However, domestic milk production has changed in the 1990s (Table 1). A significant decrease occurred in 1994, when milk production decreased from 53,000 metric tons in

1993 to 25,894 metric tons in 1994 (Table 1). For the period 1993 to 2000, domestic milk production experienced an average annual decrease rate of six percent (FAO Statistics, 2002). Between 1991 and 2000, milk production decreased 24,500 metric tons, for an overall decrease of 46 percent. Milk production in Jamaica is expected to decrease further in the near future.

Table 1. Jamaica milk and selected dairy products production, 1991 through 2000.

Year	Cow Milk, Whole, Fresh	Butter and Ghee	Cheese (All Kinds)	Skim Milk, Dry	Whey
			Metric Tons		
1991	53,000	----	----	----	----
1992	53,000	----	----	----	----
1993	53,000	----	----	----	----
1994	25,894	----	----	----	----
1995	28,090	----	----	----	----
1996	26,992	----	----	----	----
1997	28,136	----	----	----	----
1998	28,427	----	----	----	----
1999	28,335	----	----	----	----
2000	28,500	----	----	----	----

Source: FAO Statistical Databases, 2002.

Contrasts in Jamaica's milk production are due to cheap imported milk powder, mainly from the European Union and the US. World market prices of milk powder are much cheaper than domestically produced milk products. As a result, instead of using domestic fresh milk, Jamaican dairy producers prefer to process cheap imported milk powder. Dairy product imports, mainly in the form of milk powder, have increasingly driven Jamaican dairy farmers out of business.

Jamaican dairy farmers traditionally did not have fixed contracts with processing plants. As those plants switched to milk powder, dairy farmers could not find a market outlet for their fresh milk. In 1998 and 1999, more than half a million liters of milk were thrown away by farmers (Eurostep, 1999). Before the throw away, dairy farmers had already given away part of their milk, donating it to hospitals, sold it directly to consumers at low prices, or used it as animal feed (Eurostep, 1999).

The Jamaican Dairy Farmers Federation (JDFF) was established in 1998 by small- and medium-size dairy farmers with support from the government to get dairy production back on track (Eurostep, 1999). In addition, the Jamaica Dairy Development Board (Board) was established in July 1999. The Board has the mission of promoting the development of the dairy sector toward self-sufficiency on a sustainable and globally competitive basis. Besides improving efficiency in dairy production, the government has agreed to use domestically produced fresh milk in the school feeding program instead of milk made from powder imports (Jamaica Ministry of Agriculture, 2002).

The main milk products consumed in Jamaica are fresh milk, sweetened condensed milk, whole and skim milk powder, and evaporated milk. The bulk of the demand for these products is met by imports (Jamaica Ministry of Agriculture, 2002). There is virtually no butter or cheese production in Jamaica. Almost all butter and cheese is imported and converted to a marketable product. In addition, skim dry milk and whey are not produced in Jamaica as well (FAO Statistics, 2002).



## **Demand for Dairy Products**

After five years of recession, the Jamaican economy started to recover in 2000. The economic growth rate was 0.8 percent in 2000 and 1.1 percent in 2001. However, economic conditions since 1995 have restricted the improvement of the living standard and household income (CIA World Factbook, 2002). As a result, consumption of dairy products has not improved over the last decade. Although there will be growth in the market, its full potential will not be realized until there is further liberalization, continued reduction of import duties, increased purchasing power, and reduction in the poverty in the country (Jamaica Ministry of Agriculture, 2002).

The tourism industry grew throughout the 1990s. To some extent, the growth in Jamaica's tourism has increased total food consumption, including dairy products. Because Jamaica has little raw milk production to satisfy dairy demand, the country has to import a large amount of its dairy products. In 2000, its dairy self-sufficiency was less than 20 percent (FAO Statistics, 2002). In Jamaica, about 50 percent of dairy consumption is associated with fluid milk, either ultra high temperature (UHT) milk or fresh milk, and the rest is reconstituted from milk powder.

Per-capita milk consumption is relatively low in Jamaica, compared with other Latin American and Caribbean countries. For example, in 2000, per-capita milk consumption in Jamaica was 48.67 kilograms (Table 2); per-capita milk consumption was about 62.87 kilograms and 98.71 kilograms in the Dominican Republic and Honduras, respectively (FAO Statistics, 2002).

Table 2. Per-capita consumption of dairy products in Jamaica, 1991 through 2000.

Year	All Milk <sup>a</sup>	Butter	Cheese	Skim Milk <sup>a</sup>	Whole Milk <sup>a</sup>	Whey <sup>a</sup>
Kilograms						
1991	63.53	0.99	0.85	11.84	45.38	0.54
1992	51.54	0.70	1.17	7.81	35.54	0.44
1993	66.40	0.76	1.90	11.96	41.15	0.63
1994	42.82	0.64	0.89	5.57	31.02	1.03
1995	52.63	0.83	1.60	5.86	35.81	1.52
1996	45.67	0.70	1.21	4.26	33.08	2.59
1997	44.40	0.56	1.22	14.66	20.71	1.29
1998	45.26	0.71	1.49	13.59	20.87	1.23
1999	52.20	0.78	1.57	19.41	21.21	1.27
2000	48.67	0.62	1.48	16.93	20.80	1.52
Average Annual Growth (%) 1991-2000	-0.9	-2.9	13.9	23.4	-6.6	19.4

<sup>a</sup>Included food and other uses, such as cattle feed.

Source: FAO Statistical Databases, 2002.

To increase milk consumption among school children, the government launched school feeding programs in the 1990s. The program mainly used imported milk powder to recombine fluid milk. In 1999, when the government decided to get its milk production back on track, it agreed to use domestically produced fresh milk instead of imported milk powder (Eurostep, 1999). However, despite supporting programs and campaigns launched by the Jamaican government, per-capita milk consumption decreased at an average annual rate of 0.9 percent in the 1990s (Table 2). Between 1991 and 2000, per-capita milk consumption decreased 14.86 kilograms, from 63.53 kilograms in 1991 to 48.67 kilograms in 2000, peaking at 66.40 kilograms in 1993 (Table 2).

Because of different import barriers of butter importation in the 1970s and 1980s, such as slow timeliness of obtaining foreign currency, butter imports were seen as undesirable and were hard to get by some extent. As a result, Jamaicans developed a taste for margarine (Kilmer, 1988). Consumers also changed their preferences towards butter consumption over health concerns. As a result, in the 1990s, per-capita consumption of butter decreased at an average annual rate of -2.9 percent (Table 2). Between 1991 and 2000, per-capita butter consumption decreased 0.37 kilograms, reaching a trough in 1997 at 0.56 kilograms (Table 2).

Per-capita cheese consumption increased by 13.9 percent, on average, per year in the 1990s (Table 2). However, most of the increase was associated with growth in tourism. A significant decrease occurred in 1994, when per-capita cheese consumption decreased from 1.90 kilograms in 1993 to 0.89 kilogram in 1994, for an annual decrease of 53 percent (FAO Statistics, 2002). This dramatic decrease was mainly due to Jamaica's high inflation and foreign exchange problem, which made prices for imported dairy products increase rapidly (USDA-FAS, 1996). However, between 1991 and 2000, per-capita cheese consumption increased from 0.85 kilogram to 1.48 kilograms, for an overall increase of 0.63 kilograms (Table 2).

Skim milk powder is an important dairy product that is imported into Jamaica every year. Because of cheap prices, milk processors have switched to using milk powder, and consumers recombine fluid milk from skim dry milk instead of drinking fresh milk. The growth of skim milk consumption was impressive in the 1990s, with an average annual

rate of 23.4 percent, ranging from a low of 4.26 kilograms in 1996 to a high of 19.41 kilograms in 1999 (Table 2). Whole milk consumption decreased over the 1990s, for an average annual decrease of 6.6 percent (Table 2), mainly due to reducing fat intake among high- and middle-income classes. In 2000, per capita whole milk consumption was about 20.8 kilograms, dropping from 45.38 kilograms in 1991 (Table 2).

Whey is mainly utilized in the food manufacturing industry. As whey imports increased during the 1990s, per-capita whey consumption increased from 0.54 kilogram in 1991 to 1.52 kilograms in 2000, for an average annual increase rate of 19.4 percent; however, the low was 0.44 kilograms in 1992 and the high was 2.59 kilograms in 1996 (Table 2).

### **Imports of Dairy Products**

Jamaica is historically a net importer of dairy products, and its self-sufficiency in dairy products is relatively low, less than 20 percent in 2000 (FAO Statistics, 2002). However, the volume of dairy imports has never been high. In 2000, Jamaica ranked out of the top 40 countries in total dairy products imported (in milk equivalent pounds). Jamaica's total dairy imports were 95,673 metric tons in 2000, accounting for 0.14 percent of the total world imports of dairy products (FAO Statistics, 2002). In addition, Jamaica ranked out of the top 30 countries in imports of butter, cheese, dry skim milk, and whey in the 1990s. In 2000, Jamaica's total butter and cheese imports were 1,600 metric tons and 5,500 metrics tons, respectively (Table 3). Its share of world imports of

butter and cheese was about 0.13 and 0.18 percent, respectively (FAO Statistics, 2002). Dry skim milk imports were 4,300 metric tons in 2000, or 0.24 percent of world imports of dry skim milk (1,805,896 metric tons) (FAO Statistics, 2002). In 2000, Jamaica imported 290 metric tons of whey (Table 3).

Table 3. Jamaica dairy imports, 1991 through 2000.

Year	Milk Equivalent	Butter	Cheese	Dry Whole Milk	Dry Skim Milk	Whey
	<i>Metric Tons</i>					
1991	112,472	3,373	2,522	7,464	2,825	95
1992	69,830	676	3,415	4,602	1,878	78
1993	112,075	2,437	5,163	6,516	2,905	113
1994	82,319	975	2,853	6,683	1,329	186
1995	108,127	2,055	4,739	7,891	1,354	278
1996	94,974	1,743	3,803	7,169	996	477
1997	96,609	1,741	3,990	7,477	645	377
1998	82,509	1,800	4,100	3,100	3,370	230
1999	62,542	1,837	4,395	1,638	2,057	257
2000	95,673	1,600	5,500	3,200	4,300	290
Average Annual Growth (%) 1991-2000	3.5	23.2	14.3	1.0	44.4	19.7

Source: FAO Statistical Databases, 2002.

Jamaica's dairy production is not competitive with imports. To satisfy domestic dairy demand, the country imports over 80 percent of its total dairy consumption every year, and its percentage is expected to increase (FAO Statistics, 2002). Between 1991 and 2000, dairy imports (in milk equivalent pounds) decreased from 112,472 metric tons in 1991 to 95,673 metric tons in 2000 (Table 3), for an overall decrease of 16,799 metric tons. Furthermore, imports ranged from a high of 112,472 metric tons in 1991 to a low of

62,542 metric tons in 1999 (Table 3). Imports were affected mainly by Jamaica's depressed economic conditions in the 1990s. However, for the period 1999 to 2000 there was a significant increase in the importation of dairy products. Moreover, Jamaica's dairy imports increased further in 2001, with total 102,273 metric tons dairy imports (FAO Statistics, 2002). As its economy recovers, dairy imports are expected to increase as the result of improving the living standard and incomes among Jamaicans.

Between 1991 and 2000, butter imports decreased 1,773 metric tons (Table 3). Due to Jamaicans' changing preferences and economic conditions, butter imports fluctuated in the first half of the 1990s, ranging from a high of 3,373 metric tons in 1991 to 676 metric tons in 1992 (Table 3). For the period 1996 to 2000, butter imports were more stable, ranging from 1,837 metric tons in 1999 to 1,600 metric tons in 2000 (Table 3).

Virtually no cheese is produced in Jamaica. As a result, almost all cheese is imported and converted to a marketable product. Cheese imports have been growing and reached almost 5,500 metric tons in 2000, compared to 2,522 metric tons in 1991. It is expected that Jamaica's cheese imports could reach 7,500 metric tons by 2003 (USDEC, 2000). A large proportion of the cheese imported is cheddar, which is a low-cost cheese made in bulk.

All skim dry milk is imported into Jamaica. It is used to make fluid milk and other dairy products. In addition, skim milk powder is utilized in food manufacturing, such as liquid breakfast drinks, pastries, and cookies. During the 1990s, Jamaica's skim dry milk imports increased at an average annual rate of 44.4 percent, peaking in 2000 at 4,300

metric tons compared to a low of 645 metric tons in 1997 after trending downward since 1991 (Table 3). The lowest level of skim dry milk imports occurred in 1996 to 1997, when only 996 and 645 metric tons were imported into Jamaica, respectively, mainly due to the relatively more imports of whole dry milk and the depressed economic conditions during that period.

During the 1990s, Jamaica's whole dry milk imports increased at an average annual rate of one percent, peaking in 1995 at 7,891 metric tons (Table 3). The lowest level of whole dry milk imports occurred in 1999, when only 1,638 metric tons were imported into Jamaica, mainly due to the depressed economic conditions during that period.

Whey imports increased at an average annual rate of 19.7 percent (Table 3); however, absolute volume was low in the 1990s. In 2000, Jamaica imported only 290 metric tons of whey, down from a high of 477 metric tons in 1994 and up from a low of 78 metric tons in 1992 (Table 3).

### **Exports of Dairy Products from the U.S.**

The US was one of the major suppliers of butter in the early 1990s and in previous decades. However, the share of US butter decreased to a very low level in the late 1990s. In 2000, the US only exported 40.8 metric tons of butter to Jamaica, and its share was only 2.6 percent, down from a high of 69.3 percent in 1991 (Table 4). American butter has been traditionally seen as inferior to New Zealand butter because of the taste and low melting point (Kilmer, 1988).

New Zealand was Jamaica's largest cheese supplier in the 1990s, with a share about 80 percent (USDEC, 2000). New Zealand's and Australia's cheddar brands are preferred to those from the US. The US is the second largest cheese supplier. Cheese imports from the US increased from 51.6 metric tons in 1993 to 452.7 metric tons in 1999. In 2000, the US exported 305.5 metric tons cheese and curd to Jamaica, with a market share of 5.6 percent (Table 4). The US also exported processed American-type cheeses, cheese spreads, and Monterrey Jack cheese to Jamaica (USDEC, 2000).

Milk powder, including skim milk powder and whole milk powder, is the main dairy import to Jamaica. With high subsidies, more than 60 percent of the volume of imported milk powder to Jamaica originates in the European Union, with the United Kingdom, Germany and the Netherlands being the biggest European suppliers. The European exports dominate the small Jamaican market (Eurostep, 1999). The volume of US nonfat dry milk exported to Jamaica has been small and variable over the years. In the period 1998 to 1999, the market share of US nonfat dry milk was over 20 percent compared to zero percent in 1991, 1994, and 1995 (Table 4). Due to the increased prices of US nonfat dry milk during the period 2000 to early 2001, the US market share decreased. In 2000, the US only exported 243.9 metric tons of nonfat dry milk to Jamaica, with a market share of 5.7 percent, down from 27.9 percent in 1999 (Table 4).



Table 4. Selected dairy products exported from the US to Jamaica, 1991 through 2000.

Year	Butter <sup>a</sup>	% of All Butter Imports <sup>b</sup>	Cheese <sup>a</sup>	% of All Cheese Imports <sup>b</sup>	Whole Dry Milk <sup>a</sup>	% of All WDM <sup>b</sup>	Non-Fat Dry Milk <sup>a</sup>	% of All NFDM Imports <sup>b</sup>	Whey <sup>a</sup>	% of All Whey Imports <sup>b</sup>
	<i>Mt</i>	%	<i>Mt</i>	%	<i>Mt</i>	%	<i>Mt</i>	%	<i>Mt</i>	%
1991	2,337.8	69.3	67.1	2.7	0.0	0.0	0.0	0.0	92.9	97.8
1992	104.3	15.4	59.2	1.7	2.7	0.1	885.3	47.1	50.5	64.7
1993	1,328.0	54.5	51.6	1.0	501.2	7.7	68.5	2.4	125.6	111.2 <sup>c</sup>
1994	292.3	30.0	74.1	2.6	2.4	0.0	0.0	0.0	127	68.3
1995	3.2	0.2	168.5	3.6	2059.3	26.1	0.0	0.0	77.9	28.0
1996	20.7	1.2	278.1	7.3	6.4	0.1	1.7	0.2	146.5	30.7
1997	56.4	3.2	289.5	7.3	0.0	0.0	1,386.0	214.9 <sup>c</sup>	90.7	24.1
1998	5.2	0.3	379.8	9.3	231.6	7.5	791.6	23.5	104	45.2
1999	14.5	0.8	452.7	10.3	0.0	0.0	573.5	27.9	153.2	59.6
2000	40.8	2.6	305.5	5.6	15.5	0.5	243.9	5.7	169.8	58.6

<sup>a</sup> Source: United States Department of Agriculture Foreign Agricultural Service, 2003.

<sup>b</sup> Data from Table 3.

<sup>c</sup> The discrepancy exists and needs further analysis.

The volume of US whole dry milk exported to Jamaica has been variable over the years. In 1995, the market share of US whole dry milk was over 26.1 percent compared to zero percent in 1991, 1997, and 1999 (Table 4). In 2000, the US exported 15.5 metric tons of whole dry milk to Jamaica, with a market share of 0.5 percent (Table 4).

Due to the cost advantage of transportation, the US supplied large percentage of the whey to Jamaican markets in the 1990s. In 2000, the US supplied 169.8 metric tons, or 58.6 percent, of the total whey imports to Jamaica (Table 4).

### **Trade Policy and Tariff**

Jamaica has a relatively open economy, which is very dependent on trade. Jamaica started a comprehensive program of structural reform and liberalization in 1985, particularly restoring external balance and reducing state intervention in its economy (WTO, 1998). This reform was continued and strengthened during the 1990s when most price controls were eliminated, several public enterprises were privatized, and import duties were reduced.

As a founding member of the Caribbean Community and Common Market (CARICOM), the Jamaican government applies CARICOM Common External Tariff (CET) to all goods and services imported into the country from non-CARICOM sources. Jamaica, formerly a GATT contracting party, became a WTO member in 1995. Under the Uruguay Round commitment, Jamaica bound its agricultural tariffs, including dairy products, at 100 percent; other duties and charges were bound at 15 percent (WTO, 1998).

Although the Jamaican government has been moving towards greater liberalization, it continues to use high tariffs as a barrier to imported goods. Final goods that are substitutes for domestic production normally face the highest CARICOM common external tariffs (CET), from 20 percent to 25 percent. A 15 percent General Consumption Tax is applied on all imported and domestically-produced goods (WTO, 1998).

Jamaica is traditionally a dairy importer. As a source of government income and to partly protect its domestic dairy production, all dairy imports were taxed. In 1987, the Jamaican government established the Jamaican Commodity Trading Company (JCTC) as the sole importer of skim milk powder. Tariffs for dairy products increased, and as a result, domestic fresh milk prices increased. The situation of parity between the price of skim milk powder to processors and the price of fresh milk stimulated domestic milk production in the late 1980s and early 1990s. However, in 1992, the import monopoly was removed as a result of conditions negotiated with the World Bank to get a structural adjustment loan. At the same time import tariffs were reduced.

At present, most dairy products, such as butter and cheese, have a five percent tariff (Hemispheric Database, 2003). However, in order to protect local producers, import duties on certain dairy products carry higher duty rates. For example, Jamaica levies a 30 percent duty on skim milk powder, and 50 percent duties on whole milk powder and cream imports (Hemispheric Database, 2003). Also, dairy products, including milk powder, still require an import license and a 15 percent of General Consumption Tax (USDEC, 2000; Hemispheric Database, 2003).

## **TRINIDAD AND TOBAGO**

### **Overview of Trinidad and Tobago**

Trinidad and Tobago is a country of two small islands located in the Caribbean, between the Caribbean Sea and the North Atlantic Ocean, off the northeast coast of Venezuela. The total area of the country is 5,128 square kilometers, slightly smaller than the state of Delaware. The population of the country in 2001 was about 1.16 million, with a -0.52 percent population growth rate (CIA World Factbook, 2002).

The economy of Trinidad and Tobago is based on the production and refining of petroleum. Tourism is a growing sector, realizing substantial foreign exchange earnings. Its economy largely depends on the recovery of the global economy, along with anticipated higher oil prices. Some constraints on the country's economic growth are persistent high unemployment and the political uncertainties following the selection of a new government in December 2001 (CIA World Factbook, 2002). The country has enjoyed over seven years of real gross domestic product (GDP) growth since 1994, as a result of strengthened economic reforms. In the last several years, the country's economic growth rate was on average over three percent (US Department of State, 2002). In 2001, Trinidad and Tobago's GDP was \$10.6 billion (purchasing power parity), with a four percent real growth rate. Per-capita purchasing power parity in the country was \$9,000, and agriculture accounted for two percent of the total GDP (CIA World Factbook, 2002).

Trinidad and Tobago's total exports in 2001 were \$4.1 billion, of which the US received 45.9 percent. Its total imports in 2001 were \$3.5 billion, of which the US

shipped 39.8 percent. The main trading partners are the European Union, the United States, and other CARICOM and Latin American countries (CIA World Factbook, 2002).

## **Dairy Industry in Trinidad and Tobago**

### **Production of Dairy Products**

Trinidad and Tobago has a very small dairy industry, and very little can be said about it. Its livestock activity and dairy farming are not as developed as other areas of agriculture. Although livestock and dairy farming have been targeted for generous subsidies and government programs, only the poultry and pork industry were very developed. Although the country has almost achieved self-sufficiency in poultry, the country's beef and dairy industry are, in particular, small (USMEF, 2002).

There were an estimated total of 30,000 head of cattle in the country in the late 1980s for agricultural, meat, and milk production (Library of Congress, 1987). As with other Caribbean islands, such as Cuba, the Dominican Republic, and Jamaica, most of the dairy farms in Trinidad and Tobago are characterized by small dual-purpose operations. The situation has not made any significant changes over the last decade.

Although the country has a sound climate for pasture growth, Trinidad and Tobago has the smallest percentage of its farmland used as pastures in all of Latin America and the Caribbean (Tobago Home, 2001). Instead, sugarcane is the major ration ingredient. Supplements utilized with sugarcane have shifted as far as was feasible from the standard

soybean meal and maize, which are available only through importation and are relatively expensive. The Sugarcane Feeds Centre was established in 1976 (Neckles, 1988). The Centre has been working with farmers continuously since its inception. Most of the work has been with small producers on five to eight hector farms established by the State.

Trinidad and Tobago has limited raw milk production and relies heavily on dairy imports. Raw milk is handled almost exclusively by Trinidad Food Products, a subsidiary of Nestle. Domestically produced raw milk is used only for fluid milk consumption. Ultra high temperature (UHT) milk accounts for about 60 percent of the total milk consumption in the country every year. The remaining 40 percent of the fluid milk consumption is reconstituted from imported milk powder (USDEC, 2000).

Although dairy demand continued growing in the last decade, dairy production, on average, decreased one percent annually (FAO Statistics, 2002). Because of these trends, dairy product imports have increasingly filled the gap between a declining domestic supply and a growing demand for dairy products in the country.

In the period 1991 to 1995, milk production continuously declined from 11,578 metric tons in 1991 to 9,175 metric tons in 1995 (Table 1). Due to the collapse of oil prices in the mid-1980s and the concurrent decrease in Trinidadian oil production, the country experienced a severe recession until 1994, with milk production declining as a result. However, since 1994, the country recovered rapidly as a result of economic reforms (supplemented by tight monetary policy and fiscal responsibility) and high oil prices. Milk production increased in the period 1995 to 2000 by an average annual

growth rate of 2.5 percent (Table 1). Between 1991 and 2000, milk production decreased 1,178 metric tons, from 11,578 metric tons in 1991 to 10,400 metric tons in 2000 (Table 1). Milk production in Trinidad and Tobago is expected to increase slightly in the near future due to its economic growth and technology improvements in the dairy industry.

Table 1. Trinidad and Tobago milk and selected dairy products production, 1991 through 2000.

Year	Cow Milk, Whole, Fresh	Butter and Ghee	Cheese (All Kinds)	Skim Milk, Dry	Whey
Metric Tons					
1991	11,578	----	----	----	----
1992	10,813	----	----	----	----
1993	9,446	----	----	----	----
1994	9,371	----	----	----	----
1995	9,175	----	----	----	----
1996	9,623	----	----	----	----
1997	9,838	----	----	----	----
1998	9,976	----	----	----	----
1999	10,241	----	----	----	----
2000	10,400	----	----	----	----

Source: FAO Statistical Databases, 2002.

Although Trinidad and Tobago has a relatively bigger dairy processing industry compared to other small islands, the country virtually does not produce dairy products other than fluid milk. All demand for butter, cheese, milk powder, and whey are imported from other countries (USDEC, 2000).

### **Demand for Dairy Products**

Although the country is relatively small, Trinidad and Tobago is a regional economic and political forerunner. In the second part of the last decade, the economy grew and enjoyed one of the highest per-capita incomes in the hemisphere (CIA World Factbook, 2002). Its increasing prosperity due to economic growth and low inflation has led to rising imports of packaged and processed foods as well as fresh meats and vegetables, and it is an important market for US food and agricultural products, including dairy products (Bailey, et al., 2001).

Due to its relative high living standard and high incomes dairy consumption in the country is relatively high compared with other Latin American and Caribbean countries (FAO Statistics, 2002). As in other modern societies, as many women work outside the home, there are increasing demands for packaged read-to-use dairy products such as ultra high temperature (UHT) milk. A continuing economic growth, decreasing unemployment, and increasing exposure to US advertising through cable television have not only changed the Trinidadian lifestyle, but have also increased exports of US food products, including dairy products (USDA-FAS, 1997; US Department of State, 2002).

In recent years, as tourism has grown in the country, Trinidad has attracted an increasing number of tourists each year, especially in the marina sector of Chaguaramas in Trinidad. The tourism sector in Tobago has also grown in recent years due especially to its aquatic flora (Government of Trinidad and Tobago, 2001; USMEF, 2002). Affected by tourists, consumption of some dairy products has increased (USDEC, 2000).



The government supports dairy consumption in the country. The Prime Minister and the Minister of Education held a joint campaign to encourage dairy consumption in the country, along with implementing a school feeding program and a school nutrition program to benefit all primary and pre-school students (FAO, 2001).

Between 1991 and 2000, per-capita consumption decreased 1.13 kilograms. Due to its depressed economic condition before 1994, per-capita milk consumption continuously decreased during the period 1991 to 1993 from 104.60 kilograms in 1991 to 93.44 kilograms in 1993 (Table 2). After the economy recovered in 1994, per-capita milk experienced an increase over the following two years. However, due to the increase in world milk powder prices in the period of late 1996 to 1997, Trinidad and Tobago's dairy imports decreased, and domestic milk consumption decreased again as a result. Per-capita milk consumption reached a trough in 1997 at 80.33 kilograms (Table 2). In 2000, per-capita milk consumption recovered to 103.47 kilograms (Table 2). Ultra high temperature (UHT) milk accounts for about 60 percent of the total milk consumption in the country every year. The remaining 40 percent of the fluid milk consumption is reconstituted from imported milk powder (USDEC, 2000).

Per-capita butter consumption decreased significantly in the 1990s due to concerns about reducing fat intake. Per-capita butter consumption decreased 5.7 percent, on average, annually (Table 2). In 2000, per-capita butter consumption was about 0.71 kilograms, decreasing 0.65 kilograms from the 1991 level.

Table 2. Per capita consumption of dairy products in Trinidad and Tobago, 1991 through 2000.

Year	All Milk <sup>a</sup>	Butter	Cheese	Skim Milk <sup>a</sup>	Whole Milk <sup>a</sup>	Whey <sup>a</sup>
	Kilograms					
1991	104.60	1.36	3.39	30.20	50.05	0.96
1992	99.86	1.13	3.70	27.54	46.07	0.80
1993	93.44	1.13	2.69	18.85	55.56	1.21
1994	98.77	1.23	3.37	28.47	46.26	2.06
1995	100.50	0.93	3.42	34.24	41.60	1.34
1996	91.12	0.78	3.24	27.60	40.45	1.26
1997	80.33	0.97	3.11	19.60	38.81	4.98
1998	97.16	0.72	3.86	23.53	46.57	4.14
1999	93.99	0.77	4.04	20.00	45.85	3.77
2000	103.47	0.71	4.25	25.04	48.65	3.06
Average Annual Growth (%) 1991-2000	0.3	-5.7	3.7	1.4	0.4	35.0

<sup>a</sup> Included food and other uses, such as cattle feed.

Source: Food and Agricultural Organization of the United Nations Statistical Databases, 2002.

In the 1990s, per-capita cheese consumption increased 3.7 percent, on average, annually (Table 2). Per-capita cheese consumption decreased to 2.69 kilograms in 1993 due to the recession (Table 2). Per-capita cheese consumption decreased slightly from 3.42 kilograms in 1995 to 3.11 kilograms in 1997 (Table 2). Overall, between 1991 and 2000, per-capita cheese consumption increased on average 0.1 kilograms annually to 4.25 kilograms in 2000 (Table 2).

The people of Trinidad and Tobago consume more skimmed milk than those in other countries in the region because of health concerns about reducing fat intake. All dry skim milk was imported and world market prices left a big impact on skim milk consumption.

Therefore, per-capita skim milk consumption in the country experienced fluctuations in the 1990s, ranging from a peak in 1991 at 30.20 kilograms to a trough in 1993 at 18.85 kilograms (Table 2). Between 1991 and 2000, per-capita skim milk consumption decreased 5.16 kilograms.

Whole milk consumption followed the same pattern as all milk consumption. Although per-capita whole milk consumption increased 0.4 percent, on average, annually between 1991 and 2000, whole milk consumption decreased 2.4 kilograms, from 50.05 kilograms in 1991 to 48.65 kilograms in 2000 (Table 2).

In Trinidad and Tobago, where the poultry and pork industries are well-developed, dairy ingredients, such as whey, are used in the feed industry. In addition, whey is also used in the food industry. Per-capita whey consumption increased significantly in the 1990s by an average annual 35 percent (Table 2). Between 1991 and 2000, per-capita whey consumption increased 2.1 kilograms, peaking in 1997 at 4.98 kilograms (Table 2). In 2000, per-capita whey consumption was reported to be 3.06 kilograms (Table 2). Utilization is expected to continue to increase but at a slower rate over the next few years.

### **Imports of Dairy Products**

Trinidad and Tobago's dairy self-sufficiency was less than ten percent (FAO Statistics, 2002). Most dairy products have to be imported to meet the domestic demand. However, it is estimated that self-sufficiency will decrease. In 2000, Trinidad and Tobago ranked out of the top 40 countries in total dairy products imported (in milk equivalent

pounds). Total dairy imports were 127,390 metric tons in 2000, accounting for 0.19 percent of the total world imports of dairy products (FAO Statistics, 2002).

For individual dairy products, Trinidad and Tobago also ranked out of the top 40 countries in imports of butter, cheese, dry skim milk, and whey in the 1990s. In 2000, the country's total butter and cheese imports were 1,024 and 7,559 metric tons, respectively (Table 3); its share of world imports was about 0.08 and 0.24 percent, respectively (FAO Statistics, 2002). Dry skim milk imports were 3,501 metric tons in 2000, and its share was only 0.19 percent of the world imports of dry skim milk (1,805,896 metric tons) (FAO Statistics, 2002). In 2000, Trinidad and Tobago imported only 317 metric tons of whey (Table 3).

Imports of dairy products (in milk equivalent pounds) increased at an average annual growth rate of 1.6 percent (Table 3). Despite the recession in the period 1992 to 1995, dairy imports increased 12,206 metric tons, from 106,201 metric tons in 1992 to 118,407 metric tons in 1995 (Table 3). However, the increase in world milk powder prices in the period 1996 to 1997 caused dairy imports to decrease to 100,042 metric tons in 1997 (Table 3). With its economic growth in the late 1990s and the return to normal milk powder prices, Trinidad and Tobago's dairy imports experienced increases, from 100,042 metric tons in 1997 to 127,390 metric tons in 2000 (Table 3), with an average annual growth rate of nine percent.

Table 3. Trinidad and Tobago dairy imports, 1991 through 2000.

Year	Milk Equivalent	Butter	Cheese	Dry Whole Milk	Dry Skim Milk	Whey
Metric Tons						
1991	113,937	1,715	4,172	7,035	3,736	87
1992	106,201	1,398	4,600	6,554	3,329	73
1993	111,513	1,449	3,404	8,483	2,450	111
1994	115,799	1,560	4,228	7,133	3,515	191
1995	118,407	1,221	4,319	7,101	4,305	125
1996	102,854	995	4,111	6,279	3,480	118
1997	100,042	1,240	4,007	6,280	2,625	471
1998	107,629	935	4,956	6,336	3,003	393
1999	109,291	1,007	5,250	6,642	2,728	360
2000	127,390	1,024	7,559	6,692	3,501	317
Average Annual Growth (%) 1991-2000	1.6	-4.2	8.5	0.1	2.1	36.7

Source: FAO Statistical Databases, 2002.

Trinidad and Tobago did not import much butter in the 1990s, so butter imports decreased at an average annual rate of 4.2 percent. Between 1991 and 2000, butter imports decreased 691 metric tons, reaching a trough in 1998 at 935 metric tons (Table 3). Increasing health concerns about reducing fat intake was the main reason for the decrease in consumption and butter imports.

Cheese is relatively important to Trinidad and Tobago, particularly for high-quality imported processed cheese. Growth in tourism has directly caused the increase in cheese consumption in the country. It was also the main force for the increase in cheese imports.

Although the import volume was not high in the early 1990s, about 4,172 metric tons in 1991, cheese imports increased at an average annual growth rate of 8.5 percent over the 1990s (Table 3). In 2000, the country imported 7,559 metric tons of cheese (Table 3), and ranked 41<sup>st</sup> among all countries in cheese imports (FAO Statistics, 2002). Cheese imports are expected to continue to increase as consumption increases.

Trinidad and Tobago import dairy products mainly in the form of whole and skim milk powder. In Trinidad and Tobago, milk powder is mainly used to make fluid milk and to process other dairy products; 40 percent of the fluid milk consumed every year was reconstituted from milk powder (USDEC, 2000). In the 1990s, dry whole milk imports were stable, with an average annual growth rate of 0.1 percent (Table 3). In 2000, the country imported 6,692 metric tons dry whole milk (Table 3). Between 1991 and 2000, dry skim milk imports decreased 235 metric tons, peaking in 1995 at 4,305 metric tons (Table 3). Dry skim milk imports decreased 1,680 metric tons in the period 1995 to 1997, from 4,305 metric ton in 1995 to 2,625 metric tons in 1997 (Table 3).

The increase in Trinidad and Tobago's whey imports was the most impressive of all dairy imports. From a very low level of only 87 metric tons in 1991, whey imports increased to 317 metric tons in 2000 (Table 3), for an overall increase of 264 percent, reaching a high of 471 metric tons in 1997 (Table 3).

### **Exports of Dairy Products from the U.S.**

The US has been one of the main suppliers of dairy products to Trinidad and Tobago. However, the market share of US butter to Trinidad and Tobago was never high in the 1990s. The market share of US butter peaked in 1991 at 11.5 percent (Table 4). In the period 1999 to 2000, the country did not import butter from the US mainly due to the price competition with New Zealand. Although it is a small nation, Trinidad and Tobago is willing to import dairy ingredients from any source as long as the price is competitive and the quality is good.

Table 4. Selected dairy products exported from the US to Trinidad and Tobago, 1991 through 2000.

Year	Butter <sup>a</sup> Mt	% of All Butter Imports <sup>b</sup>	Cheese <sup>a</sup> Mt	% of All Cheese Imports <sup>b</sup>	Non- Fat Dry Milk <sup>a</sup> Mt	% of All NFDM Imports <sup>b</sup>	Whey <sup>a</sup> Mt	% of Whey Imports <sup>b</sup>
1991	198.0	11.5	34.5	0.8	264.5	7.1	24.4	28.0
1992	67.6	4.8	48.6	1.1	121.5	3.6	58.6	80.3
1993	0.0	0.0	49.7	1.5	0.0	0.0	110.5	99.5
1994	50.4	3.2	115.4	2.7	34.7	1.0	134.3	70.3
1995	88.1	7.2	124.3	2.9	16.8	0.4	51.8	41.4
1996	109.9	11.0	111.7	2.7	176.1	5.1	68.0	57.6
1997	7.2	0.6	205.2	5.1	655.2	25.0	114.1	24.2
1998	20.4	2.2	267.8	5.4	719.5	24.0	87.1	22.2
1999	0.0	0.0	255.9	4.9	440.2	16.1	75.5	21.0
2000	0.0	0.0	364.3	4.8	214.8	6.1	91.0	28.7

<sup>a</sup> Source: United States Department of Agriculture Foreign Agricultural Service, 2003.

<sup>b</sup> Data from Table 3.

Trinidad and Tobago's cheese market has been important to US dairy exporters. Although the market share of US cheese was not high in the 1990s, it indicated an increasing trend. Between 1991 and 2000, the market share of US cheese imports

increased from zero percent to 4.8 percent, peaking in 1998 at 5.4 percent. In 2000, Trinidad and Tobago imported 364.3 metric tons of cheese from the US (Table 4). Since cheese imports are expected to increase, a strong market exists for US cheese products, particularly in processed cheeses and specialty cheeses.

The US is the largest supplier of skim milk powder to Trinidad and Tobago. However, due to competition with the EU countries, the market share of US nonfat dry milk fluctuated in the 1990s, peaking at 25 percent, or 655.2 metric tons, in 1997 (Table 4). In 2000, the country imported 214.8 metric tons of nonfat dry milk from the US (Table 4). Ireland is also a big supplier of milk powder to Trinidad and Tobago, and historically, Ireland has supplied two-thirds of the total milk powder imports, including both whole and skim milk powder, to the country (USDEC, 2000).

The market share of US whey imports was erratic in the 1990s, ranging from a high of 99.5 percent in 1993 to a low of 21.0 percent in 1999 (Table 4). In 2000, US whey exports to Trinidad and Tobago were 91 metric tons, or 28.7 percent of the country's total whey imports (Table 4).

### **Trade Policy and Tariff**

Since 1988, Trinidad and Tobago has introduced a program of structural reform and liberalization. As a result, a number of trade restrictions were eliminated and the average level of tariff protection was reduced (Department of State, 2002).



Trinidad and Tobago signed the Uruguay Round Final Act in 1994 and became a WTO member in 1995 (Department of State, 2002). Under the Uruguay Round commitment, Trinidad and Tobago bound its agricultural tariffs, including dairy products, at 100 percent; other duties and charges were bound at 15 percent (WTO, 1998).

As a member of the Caribbean Community and Common Market (CARICOM), the government of Trinidad and Tobago applies CARICOM Common External Tariff (CET) to all goods and services imported into the country from non-CARICOM countries. The Common External Tariffs have been reduced to a range of zero to 20 percent. A 15 percent value added tax (VAT) is collected on the majority of imports, as well as locally produced goods (US Department of State, 2002).

The tariff structure offers a higher protection to final consumption goods and agricultural products than to inputs and capital goods. Quantitative restrictions have largely been dismantled since 1990. Import surcharges are currently applied on a number of agricultural products. Although import surcharges on milk products were eliminated in 1998, import surcharges on certain products remain. For example, import surcharges of 60 percent on sugar, 75 percent on icing sugar, and 86 percent on some poultry cuts are expected to remain in place beyond 2004 (WTO, 1998).

At present, duties on dairy products are kept low by the government. For example, milk powder, which includes skim and whole milk powder, has a duty of five percent. Duties on fresh butter imports are ten percent; there is no duty on butterfat and butter oil. Cheese, including fresh cheeses and processed cheeses have duties of five percent, and

there is no duty on whey (Hemispheric Database, 2003). Other non-tariff barriers, such as labeling standards, testing and certification to the extent required, do not usually hinder US products, including dairy exports.

## **SUMMARY**

Over the last decade, the world total dairy imports increased. Since the establishment of the UR GATT in 1995, the share of EU dairy exports has declined, due in part to the impact of export subsidy limitations. As trade barriers and export subsidy levels are further phased down and world demand increases, the US is in a good position to gain greater access to the international markets. Although Australia and New Zealand are expected to be the primary gainers from the new trade environment, the US has the production capacity to be a major world supplier (Washington, 2000).

The Caribbean dairy markets are attractive for US exports because of their proximity, close ties to the U.S., and a lack of significant domestic dairy production and processing facilities (USDEC, 2000). In the Caribbean markets, U.S. dairy exports are strongest in cheese, cream, and whey. For milk powder and fluid milk, the US position varies considerably by island (USDEC, 2000). However, in recent years, competition has come from New Zealand and the European Union. In order to maintain dominance in Caribbean, US dairy exporters need to train distributors and supermarket clients in handling and storage procedures for US products. In addition, US dairy exporters also need to improve their importer contacts in the country through direct attendance at food, hotel, and restaurant trade shows.

Most Bahamians buy their food from supermarkets. US exports dominate the Bahamas' food retail industry, with 85 to 90 percent of the market share (USDA-FAS, 2000). For dairy products, although tariffs are high, as tourism grows and attracts three

million tourists a year, mainly from the United States, the consumption and imports of US dairy products may increase in the near future. The Bahamas is a dairy-deficit country and most dairy consumption has to be imported. For US dairy exporters, opportunities exist primarily in fluid milk, ice cream, and specialty cheeses.

US exports dominate the food retail industry in Bermuda, with 85 to 90 percent of the market share (USDA-FAS, 2000). For dairy products, although consumption and imports decreased during the 1990s, as tourism recovers, dairy products may increase in the near future. Bermuda is also a dairy-deficit country and most dairy consumption has to be imported. Opportunities as well as competition exist. New Zealand and the European Union will continue working to expand their market share on the islands.

In the Dominican Republic, dairy consumption is supplied by domestic production and imported dairy products, mainly in the form of skim milk powder and cheese. The US is the largest dairy supplier to the country, and US dairy products have long been known for high quality and good taste.

Jamaican dairy production has changed over the last few decades. The government has tried to make the market more competitive and to win back a larger share for the Jamaican market, but subsidized products continue to flood the island. As long as imported dairy products are cheaper than those domestically produced, imports will continue to dominate the market.

In terms of Trinidad and Tobago, the most important opportunities for US dairy exporters are in skim milk powder and whey. Because of competition from the EU

countries, the exports of dry whole milk to the country are not optimistic. Trinidad and Tobago is a dairy-deficit country and must import a large amount of its dairy products every year. Dairy markets and imports for most dairy products will continue to grow, mainly due to the expansion in tourism. Furthermore, the expansion of supermarket chains will increase opportunities for dairy products. As this trend develops, US products may be able to penetrate the country's dairy import market more easily.

## REFERENCES

- Bailey, Trisha A., Timothy G. Taylor, Gary F. Fairchild. Various Countries. International Trade and Development Center Working Paper IW 01-10, Gainesville, Florida. September 2001.
- Bermuda Customs. "Bermuda Customs Tariff." 2003.  
<[www.customs.gov.bm](http://www.customs.gov.bm)>. (Visited on May 5, 2003).
- Central Intelligence Agency (CIA). *The World Factbook*. 2002. <[www.cia.gov](http://www.cia.gov)>.
- Dairy Industries International. *Dairy Industries International*. Various Issues. United Kingdom.
- Eurostep. 1999. "Dumping in Jamaica: Dairy Farming undermined by subsidized EU exports." <[www.eurostep.org](http://www.eurostep.org)>. (Visited on April 19, 2003).
- Falvey L. and C. Chantalakhana. "Smallholder Dairying in the Tropics" ILRI (International Livestock Research Institute), Nairobi, Kenya. 1999. 462 pp.
- Food and Agricultural Organization of the United Nations. *The Milk Market Report*. Various Issues. Economic and Social Department (ES), Commodities and Trade Division. FAO. 2001. <[www.fao.org](http://www.fao.org)>. (Visited on April 30, 2003).
- Food and Agricultural Organization of the United Nations. *FAO Statistics*. 2002. <[www.fao.org](http://www.fao.org)>.
- General Agreements on Tariffs and Trade (GATT). Trade Policy Review, Various Volumes. GATT, 1992; GATT, 1995.
- Geographia. "Agriculture in the Bahamas." The Bahamas Investment Authority. Investment Incentives in the Bahamas. 2003. (Visited on May 4, 2003). <[www.geographia.com/bahamas/investment/incent01.htm](http://www.geographia.com/bahamas/investment/incent01.htm)>.
- Government of Trinidad and Tobago. "About Trinidad and Tobago: Tourism." 2001. <[www.gov.tt/about](http://www.gov.tt/about)>. (Visited on April 30, 2003).
- Hemispheric Trade and Tariff Data Base for Market Access. *Hemispheric Database*. 2003. <[alca-ftaa.iadb.org/eng/NGMADB\\_E.HTM](http://alca-ftaa.iadb.org/eng/NGMADB_E.HTM)>.
- Jamaica Ministry of Agriculture. "Dairy Facts and Figures." Jamaica Dairy Development Board. 2002. <[www.moa.gov.jm](http://www.moa.gov.jm)>. (Visited on April 19, 2003).
- Kilmer, Richard L. "A Market Analysis of Cheese, Butter, Nonfat Dry Milk, and Butter Oil in Jamaica." Staff Paper Series, 1988: 322. University of Florida, Gainesville.

- Library of Congress. Various Countries. Library of Congress Country Studies, Federal Research Division, Library of Congress. 1987. <[lcweb2.loc.gov/frd/cs/patoc.html](http://lcweb2.loc.gov/frd/cs/patoc.html)>.
- Miles Market. "Miles Mentionables." By Harry C. D. Cox Bermuda's Specialty Market. October 1993. <[www.miles.bm](http://www.miles.bm)>. (Visited on May 4, 2003).
- Neckles, F. A. "Experiences with Whole Sugarcane Feeding in Trinidad and Tobago." Food and Agricultural Organization of the United Nations, 1988. <[www.fao.org/docrep/003/s8850e/S8850E07.htm](http://www.fao.org/docrep/003/s8850e/S8850E07.htm)>. (Visited on April 29, 2003).
- New Agriculture On-line. *New Agriculture*. Trinidad and Tobago. Country Profile 1999-4. <[www.new-agri.co.uk](http://www.new-agri.co.uk)>. (Visited on April 30, 2003).
- Office of the United States Trade Representative. Various Countries and Various Issues. U.S. National Trade Estimate Report on Foreign Trade Barrier. <[www.ustr.gov](http://www.ustr.gov)>.
- Royal Gazette Dairy Newspaper of Bermuda. "Bermuda Economy, Dependent on international business and tourism, almost everything is imported." Authored by Keith Archibald Forbes, Bermuda Online. 2003. <[www.bermuda-online.org](http://www.bermuda-online.org)>. (Visited on May 4, 2003).
- Tobago Home. Tobago Home-Economics, the Economics of Tobago. 2001. <[www.tobago.hm](http://www.tobago.hm)>. (Visited on April 30, 2003).
- U.S. Dairy Export Council. *Export Profile*, Various Issues. <[www.usdec.org](http://www.usdec.org)>.
- U.S. Dairy Export Council. *World Dairy Markets and Outlook*. Various Issues.
- U.S. Department of Agriculture-Foreign Agricultural Service. *Attaché Reports*. Various Countries and Various Issues. <[www.fas.usda.gov](http://www.fas.usda.gov)>.
- U. S. Department of Agriculture, Foreign Agricultural Service. *Dairy World Markets and Trade*. Various Issues. <[www.fas.usda.gov](http://www.fas.usda.gov)>.
- U.S. Department of Agriculture-Foreign Agricultural Service. *Trade Databases*. 2003. <[www.fas.usda.gov](http://www.fas.usda.gov)>.
- U.S. Department of Commerce. *International Market Insight (IMI) Series*, Various Countries. National Trade Data Bank, 2000. <[www.doc.gov](http://www.doc.gov)>. (Visited on March 16, 2003).
- U.S. Department of State. *Country Commercial Guide*. Various Countries and Years. Released by the Bureau of Economic and Business. <[www.state.gov](http://www.state.gov)>.

U.S. Department of State. Country Report on Economic Policy and Trade Practices. Various Countries and Various Issues. Released by the Bureau of Economic and Business Affairs. <[www.state.gov](http://www.state.gov)>.

U.S. Meat Export Federation. Library- The Caribbean Market for Value-Added Meats Report: Trinidad and Tobago. USMEF. 2002. (Visited on April 30, 2003). <[www.usmef.org/TradeLibrary/Economics/Economics.htm#caribbean](http://www.usmef.org/TradeLibrary/Economics/Economics.htm#caribbean)>.

Washington, Andrew. "The Derived Demand for Imported Dairy Products in Selected International Markets." Ph.D. dissertation. University of Florida, Gainesville, 2000.

Washington Times. "Agricultural Sector Is Ripe for Growth, Opportunities to Support Tourism Sector Abound." A Special International Report Prepared by The Washington Times Advertising Department, Published on March 29, 2000. <[www.internationalspecialreports.com/theamericas/00/bahamas/17.html](http://www.internationalspecialreports.com/theamericas/00/bahamas/17.html)>. (Visited on May 4, 2003).

World Trade Organization. Country Information, Various Countries. WTO. 2003. <[www.wto.org](http://www.wto.org)>.

World Trade Organization. Trade Policy Review. Various Countries. <[www.wto.org](http://www.wto.org)>.

World Trade Organization. Trade Status of Working Party Accessions. WTO. 2003. <[www.wto.org](http://www.wto.org)>.

World Trade Organization. Uruguay Round goods schedule. WTO. 2003. <[www.wto.org](http://www.wto.org)>.