REVIEW OF THE GOVERNMENT OF JAMAICA'S DAIRY PRICE POLICY

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1. INTRODUCTION

1.1 The problem of milk production in the early 1980's

Imports have traditionally accounted for the bulk of Jamaica's consumption of dairy products. From 1952 through the early 1980's, local milk production was essentially stable, while imports increased dramatically. In the first half of the 1980's, over 80 percent of dairy consumption was imported--primarily in the form of milk powder, butter, butteroil, and cheese--costing the country an average of US$17 million annually (Tables XIII-XV). Fresh milk constituted only 50-65 percent of liquid milk production, and liquid milk averaged around 10 percent of total consumption of dairy products. However, farmers sometimes were forced to throw away their Grade A milk or sell it as Grade B milk to Nestles' Jamaica Milk Products (JMP) condensery because liquid milk processors would not purchase it. (Grade A milk is whole fresh milk with a minimum butterfat content of 3.5 percent, produced under designated hygienic conditions, including adequate chilling facilities. Grade B milk is whole fresh milk with a minimum of 3.5 percent butterfat produced under less stringent conditions). This situation was largely due to the pricing structure of local milk and imported milk products.

The Jamaica Commodity Trading Corporation (JCTC), the state trading company, imported milk solids--skim milk powder and butteroil--and sold them to processors in a several-tiered price structure (Tables V and IX) as part of its social welfare program. JCTC sold milk powder to the condensery (Nestles-owned Jamaica Milk Products) and to over-the-counter distributors below cost in order to subsidize the consumption of milk powder and condensed milk by poor segments of the population. Although milk powder and butteroil sold to liquid milk and ice cream processors were not subsidized, the cost of imported milk solids per quart equivalent was still approximately half the cost of a <u>subsidized</u> quart of fresh whole (Grade A) milk (see Table XI).

The low prices of imported milk products resulted from dairy price support policies in industrialized countries, primarily the US and the EC. Export prices for their milk and butter surpluses were below the domestic price, and often below cost, depressing world market prices. In effect, JCTC imported below cost milk solids, and sold them at a loss to local processors and consumers. Although the domestic dairy industry received a subsidy too, it was not high enough to compensate for both the lower dairy productivity in Jamaica and the JCTC's and developed countries' subsidies on imported milk solids.

Both liquid milk production and Grade A milk sales in Jamaica fell to low levels in 1985 (Tables X and XII). Industry leaders feared the Jamaican dairy industry would be destroyed if the existing pricing regime was allowed to continue. The Jamaican Government set "farmgate" prices for Grade A and Grade B milk. It also set the subsidy per imperial quart (J$0.25 until March 1984, when it was raised to J$0.30), the price to the processor, the wholesale price, and the retail price. With prices tightly regulated at all levels, the processor had a strong incentive to reduce costs to the minimum to maximize profits. Since demand for liquid milk exceeded supply, and since processors produced very little 100 percent fresh milk, even a potential consumer preference for fresh milk over recombined or reconstituted milk was not a factor in the marketplace.

1.2 PL-480 Title I self-help measures to support the dairy industry

One of the purposes of the US PL-480 Title I self help program is to foster food self-sufficiency in developing countries. When the USAID Mission recognized the adverse effects of government pricing policies on the dairy industry, they included self help measures aimed at removing disincentives and improving dairy production in every Title I agreement since 1986. In the 1986 agreement, the Jamaican Government agreed to remove as many disincentives as practical to allow the domestic dairy industry to become competitive in the fresh milk market. This led to an analysis of the problem and proposed policy changes. The 1987 agreement required the Jamaican Government to increase the price of skim milk powder and butteroil to milk processors so that it would be equal to or more expensive than the fresh milk equivalent. To cushion the effect on low income consumers, skim milk powder was packaged in 2.8 ounce sachets, enough to make one quart of milk, and sold at a subsidized price over the counter. Subsequent PL-480 agreements have contained self-help measures requiring continued monitoring of relative prices for domestically produced and imported milk and encouraging local production through small farmer outreach programs.

1.3 New milk policy of 1987

On January 9, 1987, Deputy Prime Minister Hugh Shearer announced the Jamaican Government's new policies to revive liquid milk production. According to Shearer, the government's decision had been taken in the national interest in order to achieve two main objectives: To permit and encourage expansion of liquid milk production and to ensure an adequate supply of milk at a reasonable price to consumers. The new policies included the following:

1. The cost of skim milk powder to milk processors was increased by 146 percent, to a level which made a quart of reconstituted milk equal in cost to a quart of whole milk.

2. All milk sold in quarts or larger sizes was required to be 100 percent whole milk. Milk sold in pint or smaller sizes had to contain at least 20 percent whole milk. Reconstituted milk (milk powder and butteroil mixed with water) was not permitted to be sold in any size container.

3. Over the counter skim milk powder was permitted to be sold only in sachets of 2.8 ounces, enough to make one US quart of skim milk. JCTC sold the milk powder at a subsidized price to Versatile Ltd., which produced the sachets to be sold at J$.50 each (as a comparison, a quart of liquid milk sold for J$3.15 in January 1987).

4. JCTC continued to sell skim milk powder to Nestles' condensery at less than a third of the price to the liquid milk processors, to keep the cost of condensed milk to consumers at a low level. The government's reasoning was that low income Jamaicans satisfy more of their milk consumption needs through canned condensed milk which does not need refrigeration.

5. The Bureau of Standards was to publish milk standards which legally defined whole, low fat, skim, recombined and reconstituted milk. The Bureau of Standards was also to monitor processed milk to ensure that it met the quality standards and that it was correctly labeled.

Another policy change which was not as widely publicized, but which also had a salutory effect on domestic milk production, was the decontrol of milk prices. Whereas prior to 1987, the government would set the farmgate price for milk, the producer subsidy, the wholesale price and the retail price, in 1987 all price controls were removed, and the industry was allowed to set prices. To facilitate cost estimation for dairy farmers, the accounting firm Peat Marwick and Partners was hired by the Jamaica Agricultural Development Foundation to undertake a cost of production survey to determine the structure of production costs of large, medium and small dairy farms. The result of this survey, an indexing system for milk costs, is now used to determine farmgate price increases (see Table XI). Wholesale and retail prices are determined through discussions between industry groups (the Jamaica Livestock Association, the Retailers' Association, and the milk processing companies), and are raised when the farmgate price goes up.

1.4 Purpose of this study

The purpose of this paper is to investigate whether the policy decisions and pricing adjustments undertaken by the Jamaican Government since 1987, which were based on the economic conditions prevailing at the time (i.e. relative prices of domestic and imported milk products and competitiveness of Jamaica's dairy industry) have been successful in achieving the intended revival of domestic milk production, and whether they are still appropriate today.

2. CONSUMPTION AND IMPORT OF DAIRY PRODUCTS

2.1 Consumption

Around 80 percent of Jamaica's consumption of dairy products is imported, primarily in the form of skim milk powder (Table XIII). Skim milk powder is used in the production of sweetened condensed milk, the single most important milk product consumed in Jamaica; liquid milk in pint or smaller sizes; ice cream; and sachets of 2.8 ounces of powder. Total consumption of dairy products is calculated by converting annual net imports into quart equivalents and adding Jamaica's total Grade A and Grade B milk production. (Note: The final figure is at best an estimate because the only figures collected on Grade B milk production are JMP's purchases.) Using this calculation, Jamaica's annual consumption of dairy products has averaged around 230 million quart equivalents from 1982 through 1988, except for 1987. In 1987, imports increased to the equivalent of 300 million quarts, which pushed the calculation of total consumption to 343 million quarts.

2.2 Imports

Tables XIII through XV show the quantities and value in US dollars and Jamaican dollars of net milk product imports from 1982 through 1988. The US dollar cost has been climbing steadily, reaching US$21 million by 1988. Although 1989 figures are not yet available, they will be substantially higher because of rising world market prices for dairy products. As a result of the devaluation in 1989, the Jamaican dollar cost should rise even faster.

Looking at skim milk powder imports (Tables III, IV, and XIII), JCTC's have remained fairly constant since 1985, except that they dropped in 1988 and rose in 1989 due to the effects of hurricane Gilbert. JCTC does not handle skim milk imports for aid purposes, such as the school feeding program, and thus there are some discrepancies in Statistical Institute figures and

JCTC's figures. Total skim milk imports rose sharply in 1987, perhaps reflecting a shipment of EC milk powder which was not accepted by the Jamaican Government as well as increased usage by JMP.

Imports of butteroil have also been relatively constant (Tables VIII and XIII) except for an increase in 1987. Cheese and curd imports jumped in the years 1986-1988, probably reflecting JADF's imports of US cheese surpluses.

From the statistics available, there is no indication that the policy changes of 1987 have caused Jamaica's imports of skim milk powder or butteroil to decline.

3. MILK PRODUCERS

The dairy industry in Jamaica has three groups of milk producers:

1. Grade A producers sell their milk, which must be produced under strict sanitary conditions, to liquid milk processors at the Grade A farmgate price, currently J$3.30 per imperial quart. According to the latest government figures, there are 129 Grade A farms. Over 50 percent of Grade A milk comes from only two producers, Alcan and Serge Island Dairies, who together have 16 farms. Data on Grade A milk production is very accurate, because processors must report their Grade A milk purchases to JCTC to receive the J$.30 per imperial quart subsidy.

2. Grade B producers supply milk produced under less stringent sanitary requirements to the JMP condensery at a lower price, currently J$2.00 per imperial quart. JMP used to have milk routes to collect Grade B milk from small farmers, but discontinued them as it increased usage of imported milk solids and decreased purchases of fresh milk to be able to produce at the controlled prices. Condensery purchases of Grade B milk now average around 1.5 million imperial quarts annually.

3. A third group of producers, who have mainly dual-purpose animals, supply some raw milk to the rural market. Most of this milk is consumed on the farm by the farmer's family and calves.

Total milk production is estimated in the neighborhood of 40-42 million imperial quarts annually, with Grade A milk now accounting for almost 22 million quarts. However, since the only data available for Grade B and other milk production are condensery purchases, neither trends nor absolute levels of total milk production can be documented. Figures on the milk cattle population in Jamaica are similarly undocumented. The

total cattle population has been estimated at 66,000, with around half being dairy cattle. More accurate figures are available for the Grade A dairy herd, which in 1987 was approximately 9,800, with 7,300 producing milk.

3.1 Alcan

Alcan Jamaica Company, a subsidiary of the Canadian multinational Alcan Aluminium Ltd., is the largest milk producer in Jamaica, accounting for around one fourth of Jamaica's Grade A milk. The bauxite/alumina producer is in dairying because of its land management responsibilities. Under the Management of Assets Agreement between the Jamaican Government and the bauxite/alumina companies, each company is responsible for managing lands on which it holds mining leases until they are mined, and for reclaiming lands when mining has been completed. Although the reclaimed lands are then returned to the government, the government often asks the alumina companies to continue to manage them.

Alcan manages 30,000 acres of land, of which 4,000 acres is used for Alcan's own dairy production. Approximately half of this acreage is reclaimed mined out land. Another 8,000 acres of unmined land is leased to 2,500 small farmers, of which 50 are in dairy production.

Alcan selected dairy production because grass is the ideal crop for lands that will eventually be mined. It builds up organic matter that makes the mining and the reclamation easier. Since Alcan has minimal costs for land and no debt service, it finds dairy production brings an attractive cash return.

Alcan has eleven dairy farms, which together had 1,644 head of dairy cattle in 1989. In 1984, Alcan began a program to expand dairy production by developing the local Jamaica Hope breed. The target was annual production of five million imperial quarts within six years. By 1989, when production reached 5.85 million quarts--27 percent of Jamaica's Grade A milk production--that target had been surpassed (see Table XVI). Alcan runs a very modern dairy operation with continuing gains in productivity, particularly in relation to Jamaica's dairy industry in general. In 1987, Alcan's average production per cow was 3,223 imperial quarts annually. By 1989, this had risen to 3,292 imperial quarts. The national average, on the other hand, is 1,500 quarts annually.

In addition, Alcan manages two dairy farms for the government. At Wallens, near Ocho Rios, forty-one small farmers were relocated from other areas and given five acres each on which to

raise dairy cattle, which now total 133. Alcan provides management assistance and markets the milk for the small farmers. In 1985, the government asked Alcan to take over a dairy farm at Goshen in St. Elizabeth. Goshen was previously managed by the alumina company Alpart, which closed its operations in 1985. Since Alcan took over this farm, the herd has risen from 60 to 320, and milk production has almost tripled, reaching close to one million imperial quarts in 1989.

Alcan plans to continue improving the productivity and profitability of its farms by closely monitoring milk production, reproductive efficiency, mortality rates, and costs of production. It has a computerized system to compare productivity per cow, and has developed its own semen collection facilities. Since Alcan's target has been reached, the company does not plan to increase production in the future. It would prefer to develop production by small farmers who own their own land in the Manchester region. Alcan could provide management and marketing assistance and veterinary and artificial insemination services, as well as sell the farmers improved breeds of cattle through credit programs. Alcan's farm management believes that this scheme would enhance the long-term stability of the dairy industry in the Manchester region since these farmers would be producing on non-bauxite bearing land, and production decisions would be made in Jamaica rather than in the boardroom of another country.

3.2 Serge Island

Serge Island is the second largest producer of Grade A milk in Jamaica. It was set up in 1974 by the Commonwealth Development Corporation (CDC), the Jamaican Government and some private investors on a former sugar estate of around 1,200 acres. Today it is owned jointly by CDC and Industrial Commercial Developments Ltd. (the ICD Group). Since the early 1980's, when Serge Island Dairy was reorganized after many years of operating losses, the company has realized impressive increases in production and productivity. From a level of 2.6 million imperial quarts in 1982, Serge Island's production rose 84 percent to 4 million quarts in 1986, and another 32 percent to 5.4 million quarts in 1989 (see Table XVI). In 1989, Serge Island produced 25 percent of Jamaica's Grade A milk.

Equally impressive are Serge Island's productivity gains. In 1986 Serge Island's 1,575 cows in milk produced an average of 2,590 imperial quarts annually. In 1989, the average number of cows in milk had grown to 1,925, with average production at 2,805 quarts a year. Because Serge Island has limited acreage for pastures, its per acre productivity is even more important

than the per cow production. Production per acre grew from 3,478 imperial quarts annually in 1986 to 4,604 quarts in 1989. By comparison, Alcan's production per acre in 1989 was around 1,463 quarts. Since Alcan does not have a land limitation, its cost structure and thus productivity emphasis is different.

3.3 Serge Island small farmer outreach program

In 1987, Serge Island began a small farmer outreach program based on a convergence of interests. Serge Island had installed a liquid milk processing plant with an annual capacity of 6 million imperial quarts. However, Serge Island itself was not able to produce sufficient liquid milk to operate the plant at capacity because of land limitations. Serge Island already had a history of relationships with the small farmers in the area. When the Serge Island sugar estate was producing, it had purchased cane from small farmers in the area. Many of these farmers were left without a livelihood when the factory closed. Some of the farmers had also produced milk when the condensery was still operating its milk run in St. Thomas. Thus a network of small farmers with some dairy experience and infrastructure already existed.

Because of the expense involved, Serge Island's management needed assistance to reactivate interest in dairying in the surrounding areas. In 1988, USAID approved a subgrant through Agro 21 to Serge Island's small farmer outreach program. The J$2 million (US$400,000) grant was to purchase a tractor, two cooling stations, a milk tanker, a butterfat tester, and a computer to keep track of small farmer production. AID's grant also covers the salary of an extension officer who assists the small farmers. Serge Island sells them dairy cattle from its improved stock, and helps to provide financing. The small farmers can get an interest free loan for up to half the cost of the cattle from a revolving loan fund provided by CIDA through the local People's Cooperative banks. Serge Island also provides part of the loan as a credit which can be repaid in milk. Other inputs from Serge Island itself include selling materials to small farmers--fertilizer, cattle feed, fencing, etc.--at cost, which gives them the bulk purchase rate, management assistance from the extension officer, veterinary services, and artificial insemination assistance.

Although Serge Island began its small farmer program in 1987, the first milk production of any signficance was in 1989. Hurricane Gilbert, which hit Jamaica in September 1988, did extensive damage to St. Thomas, the parish in which Serge Island is located, and set the program back by around six months. In 1989, Serge Island purchased a total of 146,260 imperial quarts

of milk from small farmers. However, purchases in the first three months of the year were minimal. Production began to pick up in April, and reached a peak in August. The maximum number of small farmers delivering milk was forty-two in October. Serge Island now has almost eighty small farmers participating in the program and expects to collect a total of 350,000-400,000 imperial quarts of milk in 1990. The goal is to have two hundred small farmers delivering milk to twenty-five receiving stations, yielding Serge Island around one million quarts of milk annually. This assumes three cows per farmer, with an annual yield of 5,000 quarts per farm, or around 1,600 quarts per cow--slightly higher than the current national average! Obviously there is a long way to go.

One receiving station with a 200 quart holding/cooling tank supplied by AID is now in operation. At the moment it is underutilized, but according to Serge Island personnel usage is steadily increasing. The convenience of delivering milk to a station closer to the farm is improving collections and decreasing spoilage. Improved farm management, such as milking twice a day instead of once, will also help small farmers increase their milk production by as much as 40 percent. The Serge Island outreach program seems to be popular with farmers who already own their own land. The investment is not excessive, particularly if cattle are fed mainly on grass. If managed properly, the dairy cows can be producing milk for ten months of the year. Because the farmer finds a nearby market for all the Grade A milk he can produce at a fixed price per quart, the program has the benefit of providing a steady cash flow to the farmers for whom other income is more seasonal. One small farmer noted that since Serge Island began the program two years ago, interest in the area has been increasing. However, the price of milk is apparently not high enough to attract farmers who do not already own land into the market.

4. MILK PROCESSORS

The milk processing industry in Jamaica consists of one major manufacturer of sweetened condensed milk, Nestles' Jamaica Milk Products, and eight liquid milk processors who supply the pasturized milk market. Some of the latter make ice cream and other specialty items such as yoghurt. In addition there are a few small ice cream producers.

4.1 Jamaica Milk Products (JMP)

The Jamaica Milk Products condensery at Bog Walk is a subsidiary of Nestle (70 percent). It is obligated by agreement with the government to accept all fresh milk produced islandwide. It

used to collect substantial quantities of Grade B milk itself, but has discontinued all but a few of its milk runs. Grade B milk purchases were relatively constant from 1982-1986 at 1.5-2.0 million quarts. Since 1987, however, they have been declining, despite increased condensed milk production (Tables X and XII). There is little incentive for the farmers to try to deliver Grade B milk to the condensery without spoilage because the Grade B price is so low. Although production costs are not substantially different for Grade A and Grade B milk, Grade B milk fetches only 60 percent of the price of Grade A milk. The condensery's purchases of Grade A milk have fallen sharply since 1986, from 3 million quarts to only 76,000 quarts in 1989. Since the condensery is the "purchaser of last resort", this indicates that demand for Grade A milk from the liquid processors has risen to the point where the condensery only purchases Grade A milk rejected for some reason by the processors.

The rapidly rising world prices of skim milk powder and butteroil have caused JCTC to raise even the JMP subsidized price by 150 percent since October 1989 (Table V). This together with pending decontrol of the price of condensed milk may cause JMP to rethink its policy of using primarily imported milk powder, and perhaps begin collecting more Grade B milk.

4.2 Farm-based liquid milk processors

Since the milk pricing policy changes introduced in 1987, the trend in milk processing is towards "farm-based" processors, i.e. the processor who uses his own milk. Not only do they reduce the substantial costs of milk handling, but with the strong demand for liquid milk they can assure their own supplies. Serge Island is one good example. In 1987, Serge Island installed processing machinery which can produce 6 million imperial quarts of pasturized, homogenized milk annually. Production is not yet up to capacity--Serge Island produced 4.3 million quarts in 1989--but it has been increasing. Other farm-based processors are Century Farm, located in Old Harbour; Island Dairies, located in Ocho Rios; and Rockfield, located in St. Ann.

4.3 Non farm-based liquid milk processors

The largest operating milk processor in Jamaica is Cremo, located in Spanish Town. Its major shareholder is the US company, Beatrice Foods. It has a capacity of around 12.5 million quarts annually, although it may not be producing this much. The next largest is United Dairy Farmers, now Citrus Co., located in May Pen. It is operating considerably below capacity

due to corporate difficulties. Neither Cornwall Dairy nor Challenge are operating at present. The government is trying to divest Cornwall Dairy. Challenge has been sold to new owners, but it has not yet begun operations.

5. TRENDS SINCE 1987 IN PRICES, SUBSIDIES AND GRADE A MILK PRODUCTION IN THE DAIRY SECTOR

5.1 Prices and subsidies for dairy products

A. Skim milk powder to processors

The most important policy change in 1987 was the increase in the price of skim milk powder to milk processors. Prior to January 1987, an imperial quart of Grade A milk cost the processor J$1.58, while the milk powder and butteroil to produce a quart of recombined milk cost J$.825, about half as much (Table XI). Following Deputy Prime Minister Hugh Shearer's announcement on January 9, 1987, JCTC raised the price of skim milk powder to liquid processors by 146 percent, from J$105.65 to J$260 per 50 lb. bag. The price of a quart of recombined milk rose to J$1.63, compared with the processor subsidized price for a quart of Grade A milk of J$1.58. JCTC maintained its J$.30 subsidy for an imperial quart of Grade A milk, so the farmer received J$1.88.

Under the 1987 policy, the government agreed to maintain the cost of producing recombined milk at or above the cost of liquid milk. In fact, JCTC appears to have moved its skim milk powder price to processors more quickly than the dairy industry moved the farmgate price, except for a slight lag in December 1989 (Tables V, IX, and XI). JCTC's skim milk powder price rose from J$260 to J$380 per 50 lb. bag in August 1987, increasing the cost of recombined milk to J$2.15 per imperial quart. The farmgate price for milk rose from J$1.88 to J$2.35 per quart in July 1988, moving the processor cost of a quart of fresh milk to J$2.15. The farmgate price rose again in May 1989 to J$2.65. This time, JCTC kept the price of skim milk powder constant, but raised the price of butteroil for the first time in four years, which increased the cost of recombined milk to J$2.35 per quart, exactly the same as a quart of Grade A milk.

The next increase in milk prices came only six months later. According to the Jamaica Livestock Association (JLA), the cost of animal feed, which constitutes 40 percent of direct operating costs, had risen sharply due to the elimination of subsidies on imported feedgrains and the 18 percent devaluation of the Jamaican dollar. Thus in December 1989 producers raised the farmgate price for Grade A milk to J$3.30 per quart and the

price for Grade B milk to J$2.00 per quart. In November 1989 JCTC had raised its processor prices for skim milk powder and butteroil in response to the devaluation and rising world dairy prices. However, at these prices a quart of recombined milk cost only J$2.85, slightly lower than the J$3.00 processor's price for Grade A milk. This situation lasted only two months, however. In February 1990, JCTC again raised its skim milk powder and butteroil prices to reflect the January devaluation. At the new prices, an imperial quart of recombined milk cost J$3.31, slightly more than fresh milk.

Milk producers are satisfied that JCTC has been complying with the agreement to keep the price of milk powder and butteroil at or above the price of liquid milk. However, they are unhappy with their current farmgate price, which they maintain is too low because their costs are up sharply over December. The price of feed has risen substantially as a result of the 7.7 percent devaluation in January. Animal feed prices are also due to be decontrolled. However, because of the substantial increase in the retail price of milk in December 1989, from J$4.65 to J$6.00 per US quart, milk producers feel that a further increase at this time would alienate consumers.

B. Skim milk powder to JMP

When JCTC raised the price of skim milk powder to processors in 1987, it continued to sell below cost to Jamaica Milk Products to assure that low income consumers would be able to buy condensed milk at controlled prices. Thus the price of milk powder to the condensery remained at J$70.34 per 50 lb. bag from May 1986 to October 1989, when it increased to J$122.03, still one thidr of the price to the processors (Table V). Since then, there have been two more price increases in November 1989 and February 1990. The latest increase, to J$176.41, brings JMP's price for skim milk powder to approximately half the world market price and a third of the price to processors. The JLA estimates that JCTC's subsidy for condensed milk cost around J$52 million (US$9 million) in 1989. The subsidy is likely to be reduced in the future as the JCTC adjusts its selling prices to conform with the International Monetary Fund (IMF) agreement. According to Ministry Paper No. 12, released in February 1990, the price of condensed milk will be decontrolled in the future. In the meantime, the prices of two JMP products were increased by 19 and 11 percent to reflect the increased cost of milk powder and butteroil.

C. Skim milk powder in sachets

In 1986, in anticipation of the increased milk powder prices to processors, the government began a new program to supply 2.8 ounce sachets of skim milk powder to retail consumers at the subsidized price of J$.50. As part of its social welfare program, the government wanted to assure that low income Jamaicans could afford some form of milk. Thus they contracted with the company Versatile Ltd. to produce the sachets. The price of milk powder to Versatile Ltd. was not as low as JMP's price, but was 40 percent of the price to milk processors (Table V). This price followed the same pattern as JMP's. It remained stable until October 1989, when it rose by 50 percent. It increased in November 1989 as a result of the devaluation, and again in February 1990 for the same reason. At J$205.16 per 50 lb. bag, it is still around 40 percent of the price to the processors. Based on average world market prices for skim milk powder compared with the price to Versatile Ltd., JCTC's subsidy for this program amounts to J$6-10 million, or US$1-1.5 million. The government should review this particular form of subsidy to low income people. The difference in the processors' price for skim milk powder and the sachet price makes it profitable for processors to break down sachets instead of using bulk milk from JCTC. In fact, there have been reports that some small processors purchase cartons of sachets from the manufacturer to do just that.

3.2 Grade A milk production

The production response to the 1987 policy changes has been quite dramatic. As is shown in Table XII, collections of Grade A milk rose from 16.2 million imperial quarts in 1986 to 21.5 million quarts in 1989, a total increase of 33 percent. Annual increases were 11 percent in 1987, 17 percent in 1988, and 2 percent in 1989. Had it not been for hurricane Gilbert in 1988, the 1989 production would certainly have been higher. Serge Island in particular sustained damage and its small farmer outreach program was set back almost six months by the hurricane.

Of the 5.3 million quart increase, 54 percent (2.87 million quarts) is from Alcan and Serge Island (see Table XVI). Since these dairies produce only Grade A milk, their 2.87 million quart increase is clearly new milk production. The increases are a result of expanding herds as well as productivity gains, as described in Section 2. Because there are no reliable figures on total milk production, it is more difficult to document whether the other 45 percent (2.43 million quarts) represents a real production increase or is milk which was formerly sold as Grade B or destroyed because the processors

would not buy it. Milk producers are, however, quite satisfied with the new policy. Prior to 1987, the demand for fresh milk from the processors was weak, because they found it less expensive to buy milk powder and butter oil. Dairy farmers at times were forced to dump their Grade A milk or sell it to the condensery at Grade B prices. This is no longer the case. Farmers now find demand for all the Grade A milk they can produce. Thus the policy changes may also have had the effect of ensuring that existing milk production was utilized more efficiently.

Another indication of strong processor demand for Grade A milk is the drop in liquid milk purchases--both Grade A and Grade B--by the condensery. In the past, JMP would sometimes buy Grade A quality milk but pay lower Grade B prices because milk processors refused to buy it. According to milk producers, that no longer happens.

Because the Ministry of Agriculture no longer collects statistics on liquid milk produced in Jamaica (see Table X), there is no way to determine trends in total liquid milk production. This is unfortunately an important omission. It precludes analysis of the effect of retail price increases on the consumption of liquid milk. In 1987, the last year for which estimates are available, milk production was around 27 million quarts. Since Grade A purchases in 1989 were 21.5 million quarts, either total consumption has fallen sharply or processors are still making reconstituted milk. The answer is most likely a combination of these two explanations. Nevertheless, it would be useful for future policy planning to have some way of estimating the price elasticity of liquid milk. Figures on total demand for liquid milk at current prices would also help in deciding on production targets for the dairy industry in the future.

In addition, the lack of statistical data on total milk production precludes an assessment of how much milk powder is still being used in liquid milk production. Because of the restrictions on using milk powder (only pints or smaller sizes may use powder, and they must use at least 20 percent whole milk), processors are reluctant to disclose production figures. Most maintain they are using only 100 percent whole milk. However, JCTC's figures indicate no decline in milk powder and butteroil imports (Tables IV and VIII). The question thus arises, what is happening to the milk powder if it is not being used in milk production. Some has gone into the sachet program, and some is used in ice cream. However, the latter would not appear to account for the entire 3,346 metric tons (Table III) which JCTC sold to processors in 1989.

6. VIEWS OF INDUSTRY LEADERS AND FARMERS

In preparing this paper, the author interviewed the President of the Jamaica Livestock Association, Henry Rainford; the Chairman and Managing Director of Serge Island Dairies Ltd., Isaac Matalon and John Scoffield; the Managing Director of Alcan Jamaica Company, Dr. Carl Wellington; and the Managing Director of Jamaica Agricultural Development Foundation, Dr. Keith Roache to determine their views on the effect of the 1987 policy changes and their opinion of the present price structure. All unanimously agreed that the 1987 changes in JCTC's price structure for skim milk powder had been extremely beneficial to the indigenous dairy industry. One went so far as to say they saved the industry, as milk production would certainly have continued to decline without them. They all cited the substantial production increase in Grade A milk since 1986 and attributed it to the incentives provided by an assured market for milk (i.e. there is now a shortage of fresh Grade A milk) and the deregulated pricing system. They also agreed that the government has been keeping the cost of recombined milk (skim milk powder and butteroil equivalent) at or above the cost of Grade A fresh milk, with the exception of the two months from December 1989 to February 1990.

The main problem, according to these industry leaders, is that the farmgate price of milk, even with its J$.30 per quart subsidy, is not sufficient to attract new entrants into the dairy industry. Only those who either have already made the initial outlay and are in the industry, or who own land and have low overhead costs can make a profit at the current price. On the other hand, the retail price of liquid milk has increased by almost 100 percent in less than a year. At J$6.00 per quart, it is rapidly becoming an item that only the more wealthy consumers can afford. Thus further price increases, which producers say they need to cover increased feed costs, may price liquid milk out of the average market basket. To put the cost of milk in perspective, a typical low income family of five needed J$165.89 in June, 1989 to avoid falling below the poverty line. This budget would not allow for many quarts of milk at J$6.00. Because no one has yet found a satisfactory solution to the problem of setting milk prices at a level which the average consumer can afford and which will give the farmer a reasonable rate of return, the government fills the gap with a subsidy. However, the subsidy is declining in its relative share of the price. It has remained at J$.30 since March 1984, when the farmgate price was J$1.30. Now that the farmgate price is J$3.30, the subsidy has fallen from 23 percent of the price to 9 percent. The challenge for the future is to find a way to increase productivity in the dairy sector so that more milk can be produced for a lower per unit cost.

7. EXPANSION OF THE DAIRY INDUSTRY IN THE FUTURE

7.1 Future production increases will come from small rather than large farms

The policy changes of 1987 brought a 33 percent increase in Grade A milk production in three years. What is the outlook for the future? Although local milk production still supplies only around 20 percent of Jamaica's dairy product consumption, it is unlikely that the rate of increase will be as rapid in coming years. More than half the growth in milk production since 1986 has come from the two largest dairies, Alcan and Serge Island. At least part of the other half certainly came from improved usage of already existing production capacity, i.e. milk formerly rated as Grade B or wasted. This source of increased Grade A milk production has probably been exhausted, since demand from processors still appears to be strong. For reasons explained above, Alcan is unlikely to increase production in the future, and may even cut back. Serge Island may realize some gains in per acre production by reducing pasture size, but it is nearing capacity utilization of the farm's pastures. Thus expanded production in future years will have to come from improved productivity in the existing smaller, less efficent farms and from new farms. However, industry leaders are not sanguine that current prices will attract many new entrants into the field, unless they receive some kind of start-up assistance.

7.2 Improving small farmer productivity

With a national average of 1,500 imperial quarts of milk per cow annually, and an Alcan average of 3,292 quarts, there is clearly room for improved small farmer productivity. Serge Island's small farmer outreach program is based on the theory that small farmers can learn management and other techniques from the mother dairy that will result in greater productivity per cow and per acre of their own farms. Some of the main areas they are concentrating on is improving the quality of forage, upgrading the dairy cow breeds, providing more reliable artificial insemination services, reducing calf mortality, training farmers in the most effective use of cattle feed, and improving management of milking cycles.

Both Serge Island and Alcan have proposed new small farmer outreach programs. Alcan would like to provide a management and marketing assistance to small farmers in the Manchester area who own their own land. They feel this would stabilize the dairy industry in the area, which at present is located primarily on land which will eventually be mined. Serge Island has plans to set up a second mother farm/small farmer outreach program in

western Jamaica. It would utilize 1,500 acres of government land. Three hundred and fifty acres would be allocated to the mother farm and the rest would be divided into small farms of 50-200 acres. In general, the main thrust of future investment in the dairy industry should be to improve per cow and per acre productivity to make the best use of domestic resources. In this context, since largely imported animal feed constitutes around 40 percent of costs, the industry should try to reduce to the extent possible the role of feed concentrates in increasing production.

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Document # 0251B

Study of Price Increases for Skim Milk Powder on Dairy Production in Jamaica

TABLE I

Usage of Skim Milk Powder in Jamaica by Sectors (%)

SECTORS	1982	1983	1984	1985	1986	1987	1988	1989
Versatile Ltd. (Sachets)	--	--	--	--	2.1%	21.5%	37.0%	23.0%
Nestle Jamaica	57.8%	63.6%	49.7%	48.0%	26.0%	42.8%	41.2%	36.6%
Distributors/Processors	42.2%	36.4%	50.3%	52.0%	71.9%	35.7%	21.8%	40.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: JCTC

TABLE II

Purchases of Skim Milk Powder by Sectors (1982-1985, '000 50 lb. bags; 1986-1989, '000 55 lb. bags)

SECTORS	1982	1983	1984	1985	1986	1987	1988	1989
Versatile Ltd. (Sachets)	--	--	--	--	8.0	68.0	96.2	76.2
Nestle Jamaica	205.4	254.4	204.0	182.8	100.6	135.4	107.0	121.4
Distributors/Processors	149.9	145.3	206.8	197.8	278.5	112.9	56.5	134.1
TOTAL	355.3	399.7	410.8	380.6	387.1	316.3	259.7	331.7

Source: JCTC

TABLE III

JCTC Sales of Skim Milk Powder (Metric tons)

SECTORS	1982	1983	1984	1985	1986	1987	1988	1989
Versatile Ltd. (Sachets)	--	--	--	--	200	1700	2400	1900
Nestle Jamaica	4658	5770	4627	4146	2510	3378	2669	3029
Distributors/Processors	3400	3295	4690	4486	6948	2817	1410	3346
TOTAL	8058	9065	9317	8632	9658	7895	6479	8275

Source: JCTC

TABLE IV

JCTC Imports of Skim Milk Powder

	1985	1986	1987	1988	1989
Imports (metric tons)	9000	10000	10000	7000	12000
Average Price (US$ cif/MT)	$800	$760	$900	$1,400	$2,000
Cost (US$ millions)	$7.2	$7.6	$9.0	$9.8	$24.0

Source: JCTC

TABLE V

Skim Milk Powder Prices by User (per 50 lb. bag) (J$)

USER	1981-82	Mar.1984	Jan.1986	May 1986	Feb.1987	Apr.1987	Aug.1987	Oct.1989	Nov.1989	Feb. 1990
Sachet (dry 2.8 oz.)	$0.00	$0.00	$0.00	$0.00	$98.53	$98.53	$98.53	$150.26	$176.82	$205.16
Nestle Jamaica	$33.45	$86.50	$96.34	$70.34	$70.34	$70.34	$70.34	$122.03	$152.39	$176.41
Distributors(Over the counter)	$28.88	$59.95	$88.27	$88.27	$88.27	$233.82	$342.00	$342.00	$425.55	**
Milk Processors/Other	$57.55	$90.91	$105.65	$105.65	$260.00	$260.00	$380.00	$380.00	$472.83	$547.34
Cornwall Dairy*	$35.14	$86.14								
Average price	$39.96	$79.12	$96.75	$88.09	$129.29	$165.67	$195.68	$248.57	$306.89	$309.66
International Price (est.)	$81.75	$96.45	$94.80	$94.80	$115.38	$115.38	$157.79	$282.28	$295.94	$318.71

* Closed in October 1984 ** No longer sold over the counter

Source: JCTC, World Dairy Situation USDA

TABLE VI

JCTC Sales of Butteroil (200 kg drums)

SECTOR	1986	1987	1988	1989
Nestle Jamaica	6000	8000	6500	6000
Milk/Ice Cream Processors	1500	1500	1500	1500
All Other Processors	1000	1000	1500	1500
TOTAL	8500	10500	9500	9000

Source: JCTC

TABLE VII

JCTC Sales of Butteroil (metric tons)

SECTOR	1986	1987	1988	1989
Nestle Jamaica	1200	1600	1300	1200
Milk/Ice Cream Processors	300	300	300	300
All Other Processors	200	200	300	300
TOTAL	1700	2100	1900	1800

Source: JCTC

TABLE VIII

JCTC Imports of Butteroil

	1985	1986	1987	1988	1989
Imports (metric tons)	2000	2000	2000	3000	2000
Average Price (US$ cif/MT)	$1,700	$1,600	$1,400	$1,500	$2,200
Cost (US$ million)	$3.4	$3.2	$2.8	$4.5	$4.4

Source: JCTC

TABLE IX

Butter Oil Prices by User (per 200 kg drum) (J$)

USER	1981-82	Mar. 1984	Apr. 1985	Jan. 1987	1988	Apr.1989	Nov.1989	Feb.1990
Nestle Jamaica	$726.20	$1,775.00	$2,088.68	$2,088.68	$2,088.68	$2,749.77	$3,421.54	$3,960.75
Processors and Other	$863.97	$1,800.00	$2,088.68	$2,088.68	$2,088.68	$2,749.77	$3,421.54	$3,960.75
Cornwall Dairy*	$761.50	$1,775.00						
International Price (est.)	$943.40	$1,344.73	$1,567.55	$1,331.23	$1,633.78	$2,541.44	$3,299.57	$3,542.61

*Closed October 1984
Source: JCTC, World Dairy Situation USDA

TABLE X

Estimated Production of Liquid Milk (Whole, Recombined, Reconstituted)
('000 imperial quarts)

USAGE	1982	1983	1984	1985	1986	1987	1988	1989
Total Liquid Milk Production	30199	28980	26709	18779	24400	27100	NA	NA
Of which:								
100% Whole Milk	1000	1841	2682	4108	4000	11400	NA	NA
Reconstit. & Recombined*	29199	27138	24027	14670	20400	15700	NA	NA
Of which:								
Powder	14974	13180	11209	6073	11300	10130	NA	NA
Fresh Milk	14225	13959	12818	8597	9100	5570	NA	NA
Total Grade A Milk Used by Liquid Processors (excl.JMP)	15225	15800	15500	12709	13100	16970	20541	21441
Total Canned Milk (Condensed, evaporated, sterilized)**	42200	52200	41900	38300	18131	20060	18754	20310
Whole Milk/Total Milk (%)	3.3%	6.4%	10.0%	21.9%	16.4%	42.1%	NA	NA
Whole Milk in Recon.&Recom.(%)	48.7%	51.4%	53.3%	58.6%	44.6%	40.5%	NA	NA

*No recombined milk sold since 1986. **From 1986-1989, condensed milk production by JMP only.
Source: JCTC, JMP, Ministry of Agriculture

TABLE XI

Price Movements: Farmgate Prices, Govt. Subsidy, Processors Prices, Wholesale & Retail Prices

DATE	Grade B Farmgate Price (imp. qt.)	Grade A Farmgate Price (imp. qt.)	Govt. Subsid. (imp. qt.)	Processor Subsid. Price Grade A (imp. qt.)	Processor Subsid. Price Grade A (US qt.)	Processor Cost for Recmb.Mill (3.5% fat) (US qt.)	Wholesale Price (US qt.)	Retail Price (US qt.)
1981, November	$0.69	$0.98	$0.29	$0.72	$0.58	$0.33	$1.00	$1.20
1983, September	$0.69	$0.98	$0.29	$0.72	$0.58	$0.33	$1.13	$1.35
1983, December	$0.69	$0.98	$0.29	$0.72	$0.58	$0.33	$1.25	$1.55
1984, March	$0.86	$1.30	$0.30	$1.00	$0.80	$0.58	$1.58	$1.90
1984, August	$1.05	$1.70	$0.30	$1.40	$1.12	$0.58	$2.04	$2.50
1985, April	$1.06	$1.70	$0.30	$1.40	$1.12	$0.61	$2.04	$2.50
1985, October	$1.16	$1.88	$0.30	$1.58	$1.26	$0.61	$2.60	$3.15
1986, January	$1.16	$1.88	$0.30	$1.58	$1.26	$0.66	$2.60	$3.15
1987, January	$1.16	$1.88	$0.30	$1.58	$1.26	$1.30	$2.60	$3.15
1988, Jul,	$1.28	$2.35	$0.30	$2.05	$1.64	$1.72	$2.60	$3.15
1989, May	$1.52	$2.65	$0.30	$2.35	$1.88	$1.88	$3.55	$4.65
1989, December	$2.00	$3.30	$0.30	$3.00	$2.40	$2.28	$4.50	$6.00
1990, February	$2.00	$3.30	$0.30	$3.00	$2.40	$2.65	$4.50	$6.00

Source: JLA, JAL*, Ministry of Agriculture, JCTC

TABLE XII

Grade A Mill Purchases by Company (million imperial quarts annually) (Capacity: '000 imperial quarts/day)

COMPANY-CAPACITY (imp.qts/day)	1982	1983	1984	1985	1986	1987	1988	1989
Uni.Dry Frmrs/Citrus Co.-64.0	6.1	6.2	4.7	5.7	3.2	3.2	3.3	4.1
Cremo-64.0	4.4	3.9	3.1	3.4	4.5	6.3	6.5	6.7
Century Farm-4.0 (farm based)	1.9	1.5	2.2	2.9	3.4	4.0	3.7	4.2
Island Dairy-2.6 (farm based)	0.5	0.7	1.1	1.1	1.5	1.5	1.3	1.6
Challenge*-2.8			0.4	1.1	0.1	0.7	--	--
Cornwall Dairy*-22.0	1.2	1.4	1.6	--	--	--	--	--
Serge Island-19.2 (farm-based)	--	--	--	--	0.3	1.1	5.1	4.3
Other						0.1	0.7	0.7
J.M.F./Nestle-17.4	3.4	3.1	1.6	5.1	4.9	2.4	1.6	1.2
Grade A	2.0	2.1	2.3	3.1	3.1	0.9	0.4	0.1
Grade B	1.4	1.6	1.5	2.0	1.8	1.5	1.2	1.1
TOTAL GRADE A MILK	15.2	15.8	15.4	14.2	16.2	17.9	21.0	21.5

Source: JCTC and Jamaica Milk Products
**Closed: sold 1988, not yet in production
*Closed Oct. 1984

TABLE XIII

Total Consumption of Milk Products ('000 lbs. for imports, '000 qts. for local prod.)

	1982	1983	1984	1985	1986	1987	1988
Net Imports ('000 lbs.)							
Fresh Milk	--	1	7	849	2199	3037	154
Skim Milk Powder	22192	17515	23523	21630	24111	39034	16402
Other Milk & Cream Powder	1357	530	485	1582	1049	278	92
Butter (Fresh/Salted)	1148	1234	2725	859	3658	2492	1718
Butterfat	4967	6586	5964	8134	2022	6844	5007
Cheese & Curd	5496	3449	3989	5216	8660	8747	9473
Ice Cream Powder	12	36	--	1	--	--	--
Sweetened Condensed Milk	-0.05	-6	-20	1548	-2993	--	--
Other Sweetened Milk/Cream	550	--	-66	162	--	-511	92
Milk and Cream	--	14	12	0.6	7	--	102
Other Unsweet. Milk & Cream	--	1.0	1.6	--	1	146	1173
Total ('000 lbs.)	35725	30336	34126	39984	38814	60067	34219
Milk Equivalent ('000 qts.)	184233	169425	202825	211603	195904	300590	173407
Fresh Milk Production (est.)	40000	41700	41700	42000	42000	43000	43000
Total Consumption ('000 qts)	224233	211125	244525	253603	237904	343590	216407

Source: The Statistical Institute of Jamaica, JCTC

TABLE XIV

Imports of Milk Products, 1982-1988 (J$ 000)

	1982	1983	1984	1985	1986	1987	1988
Net Imports							
Fresh Milk	--	$8	$39	$1,850	$3,124	$3,698	$81
Skim Milk Powder	$23,400	$16,829	$34,747	$42,242	$46,866	$57,340	$51,238
Other Milk & Cream Powder	$3,087	$1,333	$2,076	$1,314	$3,732	$1,759	$617
Butter (Fresh/Salted)	$2,730	$3,678	$7,577	$3,368	$11,919	$8,938	$6,035
Butterfat	$8,083	$13,994	$15,094	$24,469	$8,314	$22,616	$18,244
Cheese & Curd	$9,222	$5,348	$9,075	$16,737	$23,464	$26,310	$24,566
Ice Cream Powder	$26	$126	--	$7	--	--	--
Sweetened Condensed Milk	($0)	($7)	($83)	$3,692	($5,832)	($1,076)	($13)
Other Sweetened Milk/Cream	$602	--	($53)	$376	--	($4)	$148
Milk and Cream	--	$66	$93	$6	$229	$1,183	$1,319
Other Unsweet. Milk & Cream	--	$939	$2	--	$3	$4	$2,617
Total	$47,150	$42,304	$68,567	$94,061	$91,819	$120,768	$114,852

Source: The Statistical Institute of Jamaica

TABLE XV

Imports of Milk Products, 1982-1988 (US$'000)

	1982	1983	1984	1985	1986	1987	1988
Net Imports							
Fresh Milk	$0	$2	$10	$338	$570	$672	$15
Skim Milk Powder	$13,136	$5,134	$8,813	$7,708	$3,552	$10,425	$9,350
Other Milk & Cream Powder	$1,735	$404	$527	$240	$681	$320	$113
Butter (Fresh/Salted)	$1,533	$1,122	$1,922	$615	$2,175	$1,625	$1,101
Butterfat	$4,537	$4,2[illegible]	$[illegible],828	$4,465	$1,517	$4,112	$3,329
Cheese & Curd	$5,177	$1,[illegible]32	$2,302	$3,054	$4,282	$4,784	$6,306
Ice Cream Powder	$15	$3[illegible]	$6	$1	$0	$0	$0
Sweetened Condensed Milk	($0)	($2)	($21)	$674	($1,0[illegible]4)	($196)	($2)
Other Sweetened Milk/Cream	$[illegible]0	$0	($13)	$69	$0	($1)	$27
Milk and Cream	$0	$20	$24	$1	$42	$215	$241
Other Unsweet. Milk & Cream	$0	$28[illegible]	$1	$0	$1	$1	$478
Total	$26,4[illegible]5	$12,9[illegible]6	$17,390	$17,164	$[illegible]6,755	$21,958	$20,958

Source: The Statistical Institute of Jamaica

Exchange Rates: US$1=J$

1982	1.7814
1983	3.2778
1984	3.9428
1985	5.48
1986	5.48
1987	5.50
1988	5.48

TABLE XVI

Grade A Milk Production by Alcan and Serge Island Dairies (million imperial quarts)

DAIRY	1986	1987 % Increase		1988 % Increase		1989 % Increase	
Alcan	4.30	4.90	14.0%	5.26	7.3%	5.85	11.2%
Serge Island	4.08	4.87	19.4%	5.27	8.2%	5.40	2.5%
TOTAL	8.38	9.77	16.6%	10.53	7.8%	11.25	6.8%
% TOTAL GRADE A MILK PROD.	51.7%	54.7%		50.2%		52.3%	

Source: Alcan and Serge Island Dairies