

**Implications of U.S. Sugar and Dairy Income Support Programs for
Poverty in the United States, Costa Rica and Jamaica**

by

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Acknowledgement

I would like to express my sincere appreciation to the following people who made significant contributions to the completion of this project:

- Professor Harlan Beckley
- Professor Michael Anderson
- Ms. Claudette Milford-Allen (Director of Information and Documentation Services, Statistical Institute of Jamaica) and
- Karelle Samuda

Thank you all for your continued support throughout the duration of this project. I would also like to thank my fellow classmates for their input and inspiration throughout the semester.

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Subsidy and Poverty

The increased acceptance of free trade as the most effective engine of economic growth has intensified the perceptions of economic injustice and hypocrisy of agricultural subsidies. News sources percolate with reports of the harmful effects of the agricultural subsidies of the rich developed countries on the economic wellbeing of their poorer developing neighbors. For example in a 2002 report Oxfam classified the European Union Common Agricultural Policy's (CAP) sugar regime as "The Great EU Sugar Scam". In addition, the organization claimed that Europe's subsidized overproduction of sugar ensures big profits for EU's large framers while "undermining opportunities for people in the developing world to work their way out of poverty".¹

In a second example, a New York Times report states that "the developed world funnels nearly \$1 billion a day to its own farmers, encouraging overproduction, which drives down commodity prices."² The editorial links these policies to tragedies such as the empty stomach of twelve-year-old Arnel Mamac that prevents him from walking to school and saddens his mother as she considers her son's loss.³

In an article on its web site, the World Bank comments that "agriculture is the driving force in almost all the economies of developing countries"⁴ accounting for more than half of export earnings for forty of these countries. The article further blames

¹ BBC News, "Europe's 'bitter pill' for poor sugar farms", KIRBY, Alex, August 21, 2002.

² Harvesting Poverty, The Unkept Promise, Editorial/ NY Times, December 03, 2003.

³ Harvesting Poverty, The Unkept Promise, Editorial/ NY Times, December 03, 2003.

⁴ "Agricultural Trade". World Bank.

<http://lnweb18.worldbank.org/ESSD/ardext.nsf/12ByDocName/AgriculturalTrade>.

“enormous agricultural subsidies from OECD countries”⁵ for impeding the maximization of the gains from agricultural trade by these countries. Such criticisms are typical of a general perception among developing countries that subsidies in their richer developed counterparts reduce their income earning potential and thus contribute to their impoverishment.

Developing countries and their advocates perceive that subsidies in developing countries benefit the rich more than they benefit the poor, an allegation with both international and national applications. Internationally, it refers to the fact that the developed nations are wealthy whereas most developing countries are poor. At the national level, the allegation refers to the supposition that farmers in developed nations are often large land owners and large food processing companies that gain enormous profits due to government subsidies.

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Additionally subsidies are particularly vexing because of the circumstances under which they are implemented. The European Union Common Agricultural Policy and the United States Sugar regime stimulate overproduction by guaranteeing minimum prices to their farmers. The government then subsidizes the storage of this surplus and in some cases its exportation. In addition, the governments maintain the artificially high price through a combination of import quotas and tariffs on certain categories of imports.

Opponents of subsidies and their supporting programs argue that the combined use of subsidies (transfers of money from government to producers), tariffs, and quotas makes a significant contribution to the impoverishment of developing countries by significantly reducing the income that they earn from their agricultural exports.

⁵ “Agricultural Trade”. World Bank.
<http://lnweb18.worldbank.org/ESSD/ardext.nsf/12ByDocName/AgriculturalTrade>.

Additionally they allege that the export of surpluses that result from subsidies and their supporting policies reduce the world price and competes with the exports of more efficient but unsubsidized producers in the international market. For example, in the case of sugar, Zimbabwe, Malawi and Mozambique are all lower cost producers than the EU, but the EU is the largest exporter of white sugar. Moreover, the restricted access to the markets of developed countries reduces the quantities of produce that developing countries can sell.

Oxfam's paper "The Great EU Sugar Scam" expresses these sentiments. Instead of an "investment in rural development" Oxfam classifies the EU sugar regime as an "annual golden handshake"⁶ to monopolies such as British Sugar. British Sugar controls Britain's sugar import quota from which Oxfam alleges that it gains over half of its profits. The company has a profit margin 20 percent higher than the average for companies in the food sector in Britain. Oxfam believes that subsidy transfers play a crucial role in this abnormal profit margin. The case of British Sugar is representative of the distortions that subsidy opponents point to as evidence of subsidies benefiting the rich in developed countries.

The supporters of subsidies justify their existence as necessary support to poor farmers. They argue that these payments help to develop rural areas and help to stabilize the income of the individuals engaged in this important activity. This view is largely dependent on a traditional consideration of farmers as small scale family-based initiatives with limited ability to deal effectively with erratic swings in market conditions.

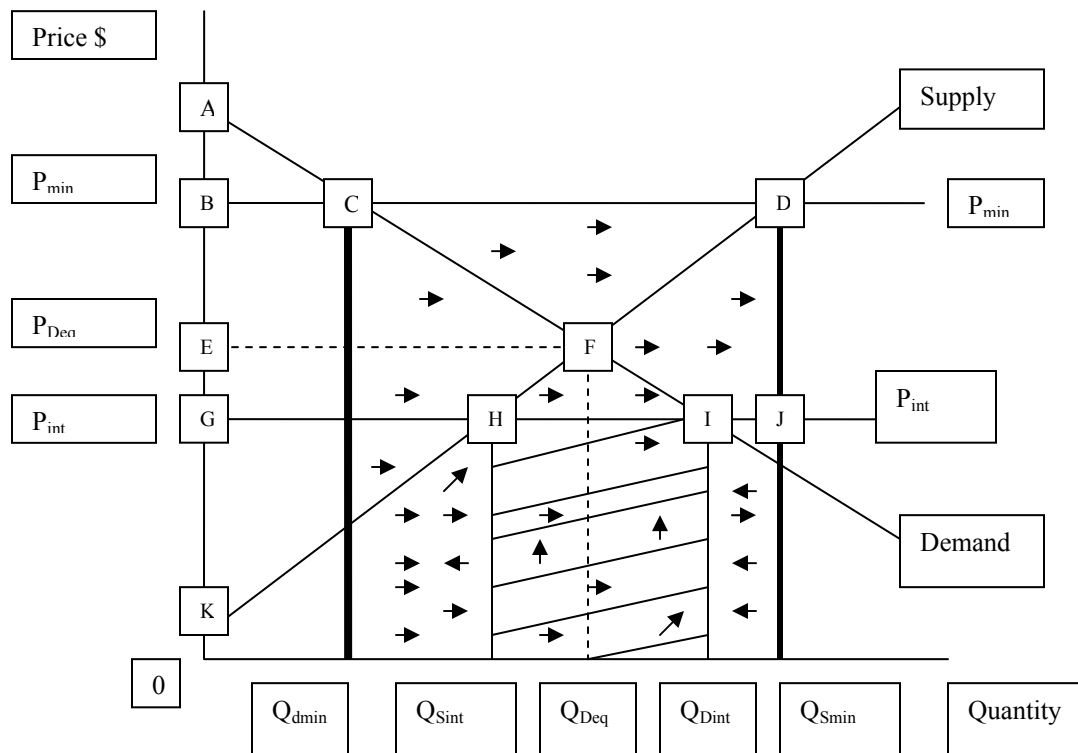
⁶ "The Great EU Sugar Scam",
http://www.oxfam.org.uk/what_we_do/issues/trade/downloads/bp27_sugar.pdf

Increasingly proponents of income support programs in the U.S. justify them as a necessary counterweight to unfair trading practices in other countries.

Given the popular rhetoric about the effects of subsidies and the frequent agitation on behalf of farmers in relatively poor developing countries, this study aims to investigate the actual effects of U.S. sugar and dairy subsidies on two countries, Jamaica and Costa Rica, in relation to their trade to with the United States. More importantly this study attempts to test the claim by defenders of subsidies in the U.S. that these programs help to alleviate poverty among farmers. Identifying beneficiaries of the U.S. agricultural subsidies should give a good indication of whether or not these programs were actually lifting families out of poverty. The sugar and dairy industries are chosen because they are both heavily subsidized within the U.S. In addition, they are important industries in Jamaica and Costa Rica, therefore, ideal for suggesting the impact of U.S. subsidies on the farmers in these countries.

The Theory

The Supply and Demand Model



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Economists refer to a market free of government intervention in the determination of output and price as a free market. Furthermore, if the market has many small suppliers and many small consumers, then they classify this market as a perfect market. In a perfect market structure demand and supply interact to determine the price of a good. Therefore, market equilibrium price (P_{Deq}) is the price at which the quantity demanded is equal to the quantity supplied. This market equilibrium may occur under autarky or with the existence of international trade.

The U.S. dairy and sugar market would be perfect autarkic markets if the total domestic demand for dairy and sugar was supplied by a collection of many small U.S. producers only and the market price was determined by the free interaction of demand

and supply. Under such conditions the market equilibrium would be represented by the quantity Q_{Deq} and the price P_{Deq} .

The benefit gained by consumers from consuming either good is represented diagrammatically by the area enclosed in triangle AEF. This area is referred to as consumer surplus and is the difference between the maximum price the consumer is willing to pay per unit of the good (represented by the points on the demand line) and the price they actually pay (P_{Deq}). Similarly, the producers benefit from supplying the good to the consumers is represented by the area enclosed in the triangle EFK. This is difference between the market price (P_{Deq}) and the minimum price at which producer is willing to supply the good. A rise in the price of a good, sugar for example, results in a loss of consumer surplus and an increase in producer surplus and vice versa. Poor dairy and sugar farmers would have very small producer surpluses.

Neither the U.S. dairy nor sugar markets are autarkic markets, that is, both markets participate in international trade. The U.S. imports and exports dairy as well as sugar products to international markets and thus U.S. producers are in constant competition with foreign producers.

If this international trade occurred unencumbered by government intervention the intersection P_{int} Q_{Dint} would represent the open market equilibrium. The market equilibrium quantity ($0Q_{Dint}$) is supplied by a combination of domestic output ($0Q_{Sint}$) and imports (the distance $0Q_{Dint} - 0Q_{Sint}$). In order for this situation to make sense, we must assume that the international price for dairy and sugar is lower than the U.S. domestic market price. Assuming that this is the case then, the opening of the U.S. market to international competition means that domestic suppliers must lower their price to equal

the international price (P_{int}) to compete with the imports. This means that U.S. dairy and sugar producers lose a part of their market share to foreign producers. In addition, the lower price reduces producer surplus for domestic producers (area of triangle GHK < area of triangle EFK). This loss of producer surplus is representative of a loss of income and possibly a reduction of the number of domestic producers in the market.

The erosion of market share that can accompany international trade imposes costs on the United States. This includes the loss income represented by the smaller producer surplus (triangle GHK) and a possible loss of farming jobs. Proponents of subsidies and their supporting policies point to this loss of producer surplus in the theoretical model as justification for the protection of the domestic market. They argue that international trade is responsible for the impoverishment of their domestic farmers. Opponents of subsidies such as Oxfam suggest that the loss of market share by domestic producers to foreign producers is the just result of free international trade. The U.S. sugar and dairy imports from poorer but more efficient producers help these farmers to increase their income and thus improve their standard of living.

Falling prices, whether due to international competition or a reduction in demand for the good could (represented by a shift to the left of the demand curve) harm producers and can plunge them into poverty. In addition agriculture is subject to unpredictable fluctuations in supply due to droughts and exceptionally good harvests. These fluctuations translate into fluctuations in family income and erratic movements into and out of poverty. Furthermore, income is an important factor that affects demand for farm products, particularly basic food products such as sugar and dairy. However, demand for

these basic food items tend to be relatively income inelastic meaning that the quantity demanded is not very responsive to an increase in income levels.

The combination of income inelasticity and unpredictable fluctuations in output expose farming families to considerable uncertainty. The income elasticity for food demand suggests that farmers usually do not benefit a great deal from an increase in their consumers income and hence growth in farm incomes tend to lag behind income growth in other sectors of the economy. A minimum price thus helps alleviate the situation for poor farm families.

The United States had relatively free sugar and dairy markets prior to the 1930's economic depression. However, the government introduced minimum prices in both industries during this decade. The imposition of the minimum price is represented by the vertical line at P_{min} . This line represents a level below which the market price is not allowed to fall. The government imposed a minimum price to assist its producers, who were mainly owners of small to medium scale family farms. Therefore the price is set above the open market equilibrium price. (For purposes of illustration, the P_{min} is set above P_{Deq} . This is not the only possibility but it is the most probable.) By guaranteeing a minimum price above the open-market equilibrium price (P_{int}) the government raises the total revenue received by suppliers for each quantity that they supply to the market since total revenue is the product of price and quantity ($TR = P \times Q$). This is the effect of a minimum price that governments use to address income poverty among their farmers.

The graph shows that the imposition of the minimum price or price floor, above market equilibrium price, results in quantity demanded falling to $0Q_{Dmin}$ and the quantity supplied by domestic suppliers rising to $0Q_{Smin}$. The increase in price stimulates surplus

production by domestic producers equal to the difference between quantity demanded (Q_{Dmin}) and the quantity supplied (Q_{Smin}) (the distance $0Q_{Smin} - 0Q_{Dmin}$). Government must arrange for the storage, purchase or export of this surplus in order to prevent some farmers from undercutting the price-floor in order to dispose of their surplus output. Total government transfers to farmers for purchases or storage of this surplus output are equal to the area of the rectangle shaded with arrows. A second option is to allow farmers to sell to consumers at the market determined price. The government can then pay the farmers an amount equal to the difference between the legislated minimum price for the good and the market equilibrium price for the quantity that they sell (deficiency payments). In the theoretical model of this system, total government transfers are equal to the area of the rectangle BGJD. Economists refer to these income transfers from government to a group of producers as subsidies.

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Governments also supplement subsidies with barriers to the free entry of lower priced imports of the subsidized good. These barriers may include import quotas, tariffs or a combination of both. The combination of surplus production in the domestic market with import barriers reduce the income earned by foreign producers. In the extreme case represented above, the relatively high minimum price returns the domestic market to autarkic conditions with local producers supplying total domestic demand. There is also a complete loss of the income previously earned by foreign farmers that exported their products to the domestic market. The lost income is represented by the area shaded with a mixture of diagonal lines and arrow heads. The lost income indicates that subsidies and other barriers to trade in developed nations can impede poverty reduction in developing

countries by retarding the growth of export sectors that employ a significant portion of their population.

Developing countries that export goods to the developed countries that use subsidies may lose income even if they are allowed to supply a limited quota. This all depends on the price they receive for the goods they sell under the quota versus the size of the reduction in quantity sold. A higher price could offset a lower quantity. However, subsidy opponents seem to suggest that the reduction in quantity is far greater than any increase the price received. Therefore, there is a net reduction in income earned by the developing countries and this contributes to their impoverishment. At the national level, reduction in export earnings can plunge the farmers involved in the export sector into poverty.

Developing countries are also harmed by exports of surplus output that results from minimum price legislation and subsidies in developed countries. Assuming that the international market is a perfect market, the developed countries must sell their exports at the lower international price in order to dispose of the surplus. This practice is referred to as dumping. The increase supply in the international market that results from dumping harms farmers in developing countries by further lowering the international price. Programs such as the United States Export Enhancement Program provide export subsidies that allow farmers to sell at the lower international price without making a loss. The practice of dumping and use of export subsidies are additional examples of the perversion of free international trade perpetrated by the developed world that aggravate the poverty of the developing countries.

According to David Ricardo's theory of comparative advantage, a country should produce and export the goods that it produces with a greater relative efficiency i.e. with fewer resources in comparison to its competitors. This implies that such a country should import those goods produces relatively inefficiently. Subsidies are particularly vexing to free trade advocates because they allow countries to export goods in which they have a comparative disadvantage. This is considered as unfair infringement on the income earning potential of the countries that do have a comparative advantage in the subsidized good. Since the aim of subsidies is to increase the income of producers and thus help them stay in the market, it can be assumed that necessity of a subsidy suggests that the country's production is relatively inefficient and thus it has a comparative disadvantage in the product. Under the dictates of comparative advantage, such a country should not be exporting this good and under the ideal conditions of the theory, it should not produce the good either. Nevertheless, the idea of using domestic subsidies as a counterweight to subsidies in foreign countries is often used by the supporters of subsidies in countries such as the U.S. and England. This argument posits the idea that subsidies can and should be used to protect domestic farmers from cheap subsidized imports.

The U.S. has traditionally had a relative abundance of capital in relation to labor where as Jamaica and Costa Rica has had a relative abundance of labor to capital. According to the Hecksher-Ohlin model for international trade, a country should export the good that uses the resource that it has in relative abundance. This rule should also ensure that the country produces and trades according to its comparative advantage. Sugar has traditionally been a labor intensive industry and so has the milk production. However, with the advances in technology both these industries have undergone

significant changes in the production process. Machines such as crop harvesters have replaced the sugar cane cutter, or at least reduced the demand for such laborers in the United States. This introduction of technology into the production process might mean that comparative advantage in farming has changed in the favor of the United States and to the disadvantage of Jamaica and Costa Rica. This is definitely a possibility and is worth investigating in another project as such a change would reduce the extent of the distortion in trade being caused by the U.S. sugar and dairy price supports.

Reality and Theory: Which Group does the Empirical Reality Support?

Agriculture has been a mainstay of U.S. economic activity since the 1790's. However, the participants have changed and continue to change as the years go by. The U.S. government began intervening in the agricultural sector during the Great Depression of the 1930's to assist its farmers afflicted by poverty. Back then, and for many years afterwards, farms were largely family based initiatives and operated on a small to medium scale. However, the increasing commercialization of farming has led to the establishment of many large industrial size operations that may be dominating the U.S. agricultural sector. Like Oxfam and other anti-subsidy groups mentioned earlier, this study proposes that government subsidies and other supporting policies originally designed to assist sugar and dairy farmers afflicted by poverty are now primarily benefiting large entrepreneurs due to the industrialization and increased concentration of the United States agricultural sector.

In order to examine the validity of this proposition, the paper briefly examines the aims and structure of current and past income-supporting policies for sugar and dairy in

the United States. In addition, the study discusses measures of industry concentration to evaluate the extent to which U.S. farming has evolved into an industrial-scale dominated sector versus the smaller family passed initiatives.

This study also addresses sugar and dairy production and policies in Jamaica and Costa Rica, as well as their sugar and dairy trade with the United States. Policies and trade are examined and evaluated to see the current effect of the U.S. subsidies on Jamaica and Costa Rica under the present global context that surrounds each country. The paper ends with a conclusion that summarizes the findings of the investigation.

Sugar

The Evolution of U.S. Production and Policies

The present legislation governing government assistance to the sugar industry is a modern version of the 1937 Sugar Act through which the government limited the amount of sugar supplies that may be marketed in the U.S. This is achieved through a quota system that assigns a fixed quota to each country exporting sugar to the United States. The original aim of the Sugar Act was to “protect the welfare of consumers and those that are involved in the sugar producing industry and to promote the export trade of the United States”.⁷ Government payouts under this system up to 1998 were about US\$ 505 million less than its receipts from the excise tax it levied on refined beet and sugar cane sugar to fund this program. Therefore, the quotas of the Sugar Act not only limited the total revenue of foreign producers, it forced these producers to pay income tax to the U.S. government. This surplus excise tax provides some empirical support to the allegations

⁷ Robert R. Nathan Associates, Inc, Cane Sugar Refining In The United States, p.20

that U.S. farm policies hurt the economic welfare of the countries exporting sugar to the United States.

Current U.S. policy guarantees a minimum price for sugar through a combination of loans to sugar processors at a legislated rate (US\$ 0.18 per pound of raw cane sugar and US\$0.22 per pound of raw beet sugar) and the use of a tariff-rate quota (TRQ) to restrict the amount of low-priced sugar allowed to enter the United States. The processors use their sugar as collateral to acquire loans from the Commodity Credit Corporation. Sugar processors may subsequently repay the loans or choose to forfeit the sugar used as collateral (only if TRQ is greater than 1.5 million tons). The loan rate thus acts as the minimum guaranteed price of sugar for the U.S. sugar processors and is a hybrid form of minimum price.

The U.S. assesses sugar imports up to the quota at either no tariff or at a 0.63-cent per pound tariff. Imports in excess of the quota are assessed at 15.82-cents per pound tariff, making such imports prohibitively expensive. The quota is usually set at the beginning of each fiscal year and is allocated among 40 designated countries.

The American Sugar Alliance represents the U.S. domestic suppliers' geographic diversity. The organization has seventeen members, only four of which are cooperatives. Cooperatives represent small farmers and small number of cooperatives relative to the profusion of commercial companies suggests that the bulk of the domestic supply is produced by commercial companies. This suggests that commercial companies are the major recipients of government loans.

The Beneficiaries of Government Intervention in the U.S. Domestic Sugar Market

The loan rate of the government's loan program acts as a minimum price for the sugar in the domestic market. If the market price is higher than the loan rate then processors gain the difference as profits. In addition, the insulation of the U.S. market gives local producers a guaranteed market and higher prices for their products.

Furthermore, the combined use of loans and the tariff-rate quota benefit farmers by guaranteeing continued demand from processors and restricting competition from foreign farmers. The existence of a well established and highly funded sugar lobby betrays the recognition by local producers of the threat posed to their profits by relatively cheap imported sugar.

Poor sugar farmers benefit from the current income support mechanisms. Nevertheless, the increasing concentration in the local sugar market suggests that the provisions of the Farm Act are not particularly powerful tools for fighting poverty in the States.

According to the U.S. census bureau concentration in agriculture refers to the percent of farms (starting with the largest and working down) needed to produce a certain level of output. The census bureau measures concentration in manufacturing using the share of industry output accounted for by the largest firms, often the largest four, eight, twenty or fifty firms⁸. In 1997 the U.S. sugar market was already fairly concentrated with the top four sugar mills and the top four sugar refineries accounting for over 50 percent of total domestic supply.⁹

Since the loans are made to the processors, i.e. the refineries and the mills, these are the primary beneficiaries of the income supports to the sugar industries. In addition,

⁸ Economic Research Service, Farm Structure: glossary, <http://www.ers.usda.gov/Briefing/FarmStructure/glossary.htm#concentr>

⁹ Econo

in comparison with the farmers, the mills and refineries benefit more from an increase in the market prices of the sugar sold to final consumers.

Moreover, the largest companies participate in all levels of the production process. Hence, the high concentration ratios in the milling and refining sectors suggest that the industry is dominated by large industrial size producers.

The government's income support programs may also benefit the poor by helping to secure jobs in the sugar industry. According to the American Sugar Alliance the sugar industry supports 372,000 jobs directly and indirectly. This seems like an impressive number and it would not be an insignificant loss if all these people were to lose their jobs. However, the exact proportion of this number that accounts for jobs that are directly supported by the sugar industry is not given.

Jamaican Production and Policies

The sugar industry of Jamaica had its beginning in the islands' colonial history. The English colonists introduced sugar in Jamaica in the 18th century. In time sugar grew to become and still remains as one of the major employers of Jamaican population. Many of the participants in Jamaica's sugar industry work as cane cutters and small scale farmers. In 1996, Jamaica exported US\$109.2 million of sugar. In the year 2000, the island exported US\$83.8 million of sugar, representing a decline of 8%.¹⁰ These numbers eloquently testify to the travails of the Jamaican sugar industry. Financial woes that limit the productive capacity of the industry explain a significant part of this reduction in earnings. These financial difficulties arise from several factors including the relatively high production cost of sugar, declining sugar prices, inefficient factory operation and

¹⁰ Ministry of Agriculture of Jamaica, "Corporate Plan", <http://www.moa.gov.jm/Corporate%20Plan/index.htm>

under utilization of factory capacity.¹¹ While the Jamaican government controls 70% of the sugar industry and has provided emergency aid to the private owners of sugar estates in the past, there is no permanent system of national government price support. The government's 70% stake in the sugar industry results from a failed attempt to privatize its holdings. In 1993, the government divested its assets and contracted a foreign management firm to manage the part of the industry that it had controlled but was forced to reverse this process in 1998.

Presently, Jamaica exports 11000 tones of sugar per annum to the United States on a quota basis. Like other U.S. quota holders, Jamaica receives a price that is approximately three times the world market price. However, this price is equal to the minimum price set by the U.S. government's price supports for its domestically produced sugar. Furthermore, under WTO trade liberalizing policies, the United States' quota to Jamaica and the purchasing price for sugar will be reduced on an annual basis until 2009 when the quota system will be eliminated.¹²

Costa Rican Production and Policies

In the year 2002, sugar ranked number twenty seven of a list of fifty principal exports from Costa Rica.¹³ Ninety percent of the sugar produced in Costa Rica comes from farms that are smaller than 7 hectares, which suggests that small to medium farmers play a large role in the industry.¹⁴ The industry is supervised by the *Liga Agrícola Industrial de la Cana de Azucar -LAICA* (The Sugar Cane Industrial Agricultural Alliance), which sets

¹¹ Ministry of Agriculture of Jamaica, "Corporate Plan", <http://www.moa.gov.jm/Corporate%20Plan/index.htm>

¹² Ministry of Agriculture of Jamaica, "Corporate Plan", <http://www.moa.gov.jm/Corporate%20Plan/index.htm>

¹³ Procomer, <http://www.procomer.com/est/productos/>

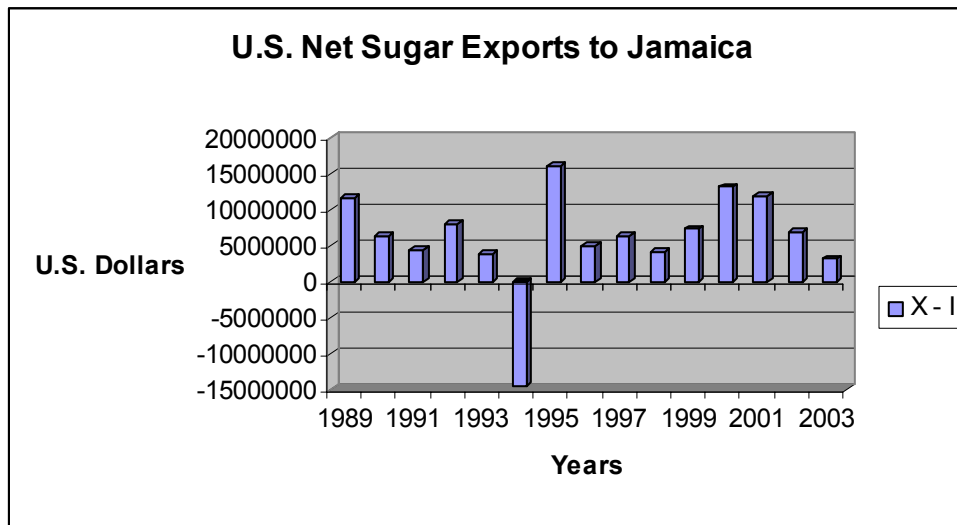
¹⁴ Liga Agrícola Industrial de la Cana de Azucar (LAICA) <http://www.laica.co.cr/qs.asp>

and distributes the annual quota for sugar productions. LAICA also administers the country's quota for sugar cane exports and represents the sixteen sugar mills that produce Costa Rica's sugar output. The United States is one of the countries from which Costa Rica receives an export quota. In fact the United States purchased 25% of these sugar exports in 2002 making it the third largest market for Costa Rican Sugar exports. This undoubtedly makes the U.S. a very important market for Costa Rican sugar and therefore the U.S. trade policies in its sugar industry should have a direct impact on the Costa Rican sugar farmers.

The Net Effect: The U.S. Sugar Trade with Jamaica and Costa Rica
Who Benefits and Who is Harmed?

The United States' Trade with Jamaica
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The graph below illustrates United States trade balance in sugar with Jamaica between 1989 and 2003¹⁵.



¹⁵ United States Interantional Trade Commission, <http://dataweb.usitc.gov/scripts/INTRO.asp>

Except for 1994, the U.S. had a trade surplus in sugar with Jamaica. This means that with the exception of 1994, the U.S. has exported more sugar to Jamaica than it has imported. The inability of the Jamaican sugar industry to supply total demand in its domestic and international market explains this two-directional flow of sugar. The country has placed a priority on meeting the demand in external markets perhaps because of the contractual nature of demand in these markets, the possibility of losing these contracts if they are broken and the importance of the foreign exchange earned. This inability to satisfy the demand in both markets has made it necessary for Jamaica to import sugar.

Jamaica benefits from exporting sugar to the United States under the quota system due to the higher price. However, analysts must weigh this benefit in relation to a possible increase in quantity of Jamaican sugar exported to the U.S. at the lower world price. If the Jamaican sugar output increased sufficiently to supply total domestic demand and increase the quantity available for export to the U.S., the U.S. tariff-rate quota system would block this progression. Consequently, the growth rate of Jamaican farmers' export earnings from the U.S. is directly proportional to the rate of increase in Jamaica's quota. This limitation suggests that the alleviation of poverty among the participants of the Jamaican sugar industry is mainly dependent on increased efficiency of the local industry and on the trade policies implemented in the U.S.

Ironically, replacing the U.S. sugar subsidies and tariff-rate quota system with a free market system might harm Jamaica rather than improve the situation for the country's sugar industry. Jamaica is neither the lowest cost producer of sugar nor the only country striving to gain greater access to the U.S. market. In a free market system,

United States' importers would understandably import sugar from the lowest cost producers. In the fiercely competitive environment that would emerge in a liberalized U.S. market, Jamaica could quite easily lose its market share. In addition, the decline in the price Jamaica receives for sugar could impact negatively on the financial health of the industry. Given that the Jamaican sugar industry has been struggling to maintain profitability, this decline in revenues could adversely affect the viability of the industry. However, the combination of increased competition with falling prices could spawn innovative management and production techniques to help revitalize Jamaica's sugar industry.

The anti-subsidy rhetoric tends to make a very general claim that these subsidies hurt the poor in the developing world. This conclusion follows from the economic theory when we compare the possible results of free trade. However, when we combine the predictions of free trade with the general rule of welfare maximization by the consumer, the actual results of a particular subsidy for a specific group might be quite different from the most publicized effects. The relatively high production cost of sugar in Jamaica, approximately US\$ 0.30 per kilogram of sugar, makes the country less competitive with other sugar producers. The tariff-rate quota system in the U.S. therefore gives Jamaica a guaranteed share of the U.S. market. At present therefore, Jamaica is benefiting from the existence of policies designed to support the U.S. subsidies to U.S. sugar farmers.

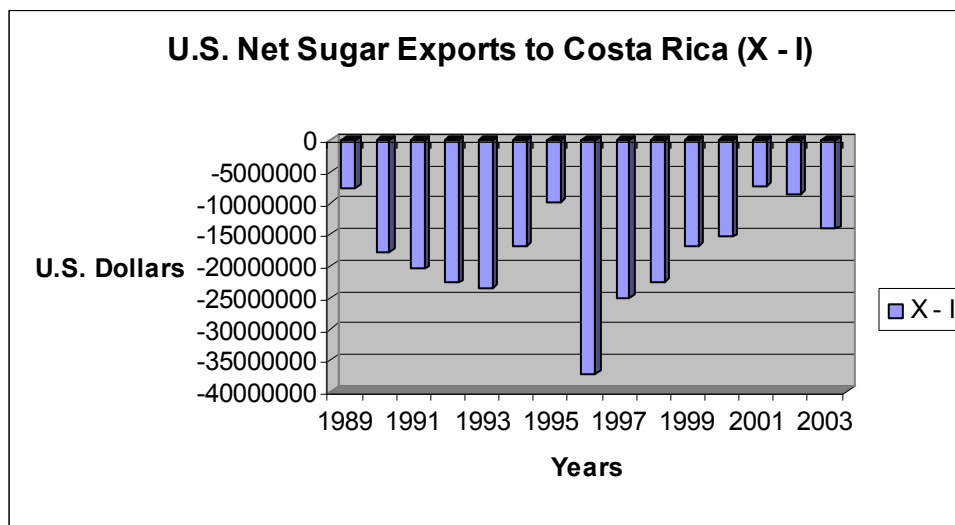
Nevertheless, this result is merely coincidental with the present situation in Jamaica. It is not a general rule for Jamaica's trade relations with the United States. For example, Jamaica is currently attempting to reduce production cost to US\$0.18 per kilogram of sugar as well as to increase its production efficiency. These savings could

allow Jamaica to gain a profit at the lower world price. An increase in quantity of sugar exported to the U.S. would increase the countries revenues under these circumstances. The present cap on sugar imports in the U.S. would make such an increase impossible.

The benefits to Jamaica of the U.S. subsidies are a strange phenomenon of current conditions in Jamaica. The U.S. subsidies and quotas may not harm the country at present but this could easily change if Jamaica succeeds in improving its efficiency. It is a fair conclusion then that current poverty among Jamaican sugar industry workers is largely due to the inefficiency of the domestic industry rather than lost income due to U.S. sugar subsidies.

The U.S. Trade with Costa Rica

As can be seen in the graph below, Costa Rica has maintained a trade surplus in sugar with the United States over the period 1989 to 2003¹⁶. This translates into a trade deficit in sugar for the United States.



¹⁶ United States International Trade Commission, <http://dataweb.usitc.gov/scripts/INTRO.asp>

It seems that Costa Rica is able to satisfy its domestic and international demand. Therefore, the possibility that U.S. subsidies and the restriction of imports via the quota is more likely to cause a loss of income for Costa Rica than is the case for Jamaica. The efficiency of the Costa Rican industry means that the country is in a better position to take advantage of opportunities that would arise from the liberalization of the U.S. sugar industry. The techniques necessary for providing a numerical estimate of the actual impact of the liberalization of the U.S. sugar industry on the income of the Costa Rican sugar industry are beyond the scope of this paper. A good estimate requires the modeling of the flow of international trade that would result from liberalizing the U.S. sugar industry. Furthermore, Costa Rica's ability to gain from such a change depends not only on its relative efficiency in comparison with the U.S. and Jamaica but also with every other sugar producing countries in the region. A loss of income could restrict the profitability of the industry leading to lower wages for its workers and thus contributing to their poverty. At this point, it is not possible to specify the degree of this threat.

Dairy

U.S. Production and Policy

Dairy production has been a permanent part of the U.S. agricultural output. In its earliest form, the dairy industry operated as a perfect market with a large number of producers and consumers. The government limited its intervention to the necessary task of setting sanitary regulations.

Today, a combination of federal and state programs influences the price of milk in the U.S. market. According to a report from the General Accounting Office "these programs

ensure that dairy farmers receive at least a specified minimum price for their unprocessed milk”.¹⁷ In addition a 1990 report in a budgetary hearing before the one hundred and first Congress stated that “The basic purpose of the dairy price support program is to assure an adequate supply of milk and dairy products at reasonable prices . . . [as well as to] . . . foster an economic environment that makes profitability possible for the nation’s milk producers”.¹⁸ These statements reveal an increase in the scope of government price support to the dairy industry with the aim of increasing farmers’ income. The government achieves these aims by combining a marketing order program and federal government standing offers. Marketing orders set the minimum price of milk based on its intended use. The standing offers promise to purchase butter, cheese and nonfat dry milk at prices. Government officials hope increased revenues earned by manufacturing firms will enable them to pay the mandated support price.¹⁹

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The Beneficiaries of Government Intervention in the U.S. Domestic Dairy Market

Concentration in the United States’ dairy industry has been increasing over recent years. The National Agricultural Statistics Service (NASS), for example, reported that in 1993 farms with at least 100 cows accounted for 50% of the cows in the industry and 55% of the milk produced within the U.S. By 2000 66% of the cows in the industry were located on farms with at least 100 cows. Farms of this size accounted for 20% of the total number of operations in the dairy industry and produced 70% of the total milk

¹⁷ United States General Accounting Office, DAIRY INDUSTRY, Information on Prices for Fluid Milk and Factors that influence Them, p. 26, October 26,1998.

¹⁸ U.S. FARM POLICY: PROPOSALS FOR BUDGET SAVINGS, U.S. Government Printing Service, p. 134 -135, 1990.

¹⁹ United States General Accounting Office, DAIRY INDUSTRY, Information on Prices for Fluid Milk and Factors that influence Them, p. 27, October 26,1998.

output. Furthermore, the largest operations with 500 and more cows, which only made up 3 percent of total operations, accounted for 35% of the cows in the industry and 31% of the milk output. Additionally the report states that 65% of small scale operators in the study reported that they planned to exit milk production within ten years.²⁰

Undoubtedly, some small farmers still participate in the dairy industry but the large industrial sized producers and the medium sized producers have the most to gain from the government's loans and milk marketing order programs. Therefore, these programs no longer serve as important tools for dealing with poverty in this segment of the population.

Jamaican Production and Policy

In its Corporate Plan the Ministry of Agriculture in Jamaica reports that:

Increasing competition from cheap imported milk solids, the local dairy industry has been experiencing surplus production, the dumping of milk and the depression of farm gate prices.²¹

This has resulted in milk production stagnating at 27million liters in the period 1996-2000, down from 1990 – 2000's peak production of 38 million liters. Unlike sugar industry, the dairy industry is capable of significantly increasing its output given a more level playing field. Cheap milk imports not only harm Jamaican dairy farmers by reducing their market share (a 45% in over the last decade) but dairy consumers as well. The cost savings received by importers are not passed on to the consumers but instead

²⁰ SHORT, Sara D., Characteristics and Production Costs of U.S. Dairy Operations, p. ii, <http://www.ers.usda.gov/publications/sb974-6/sb974-6.pdf>

²¹ Ministry of Agriculture of Jamaica, "Corporate Plan", <http://www.moa.gov.jm/Corporate%20Plan/index.htm>

contribute to a retail margin of JA\$16 – JA\$22 per liter.²² Nevertheless, the U.S. does not seem to appear to be the source of this competition. For example, according to Claudette Milford-Allen²³ of the Statistical institute of Jamaica, the E.U. is the major source of solid milk (milk powder) imports to Jamaica, with New Zealand being the main supplier of imported butter and cheese to the island.

Approximately eighty percent of the Jamaica's domestic output is produced by “small-scale producers, owning up to ten dairy cows”.²⁴ There are about 3000 small and medium sized dairy farms and two large farms with over 1000 heads of cattle. The removal of government subsidies in 1992 has left the islands milk producers to fend for themselves.

Costa Rican Production and Policy

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According to the National Chamber of Milk Producers of Costa Rica, the country is self-sufficient in its milk production. The Costa Rican milk industry is shared by a combination of private companies and cooperatives. The industry also has a *Sector transformador artesanal (artisan transforming sector)* comprised of vendors of fresh milk (milk men / women), the artisan producers of fresh cheese and small industrialized fresh cheese factories. The constituents of the artisan sector are all small scale producers with the vendors of the fresh milk and the family operated fresh cheese production facilities being the smallest of the three. Therefore, the participants in this sector are medium to low income earners and hence there is a direct connection between their

²² Ministry of Agriculture of Jamaica, “Corporate Plan”, Dairy Facts and Figures, p. 3

²³ Claudette Milford-Allen is the Director of Information and Documentation Services at the Statistical Institute of Jamaica. This information is taken from my email correspondence with her.

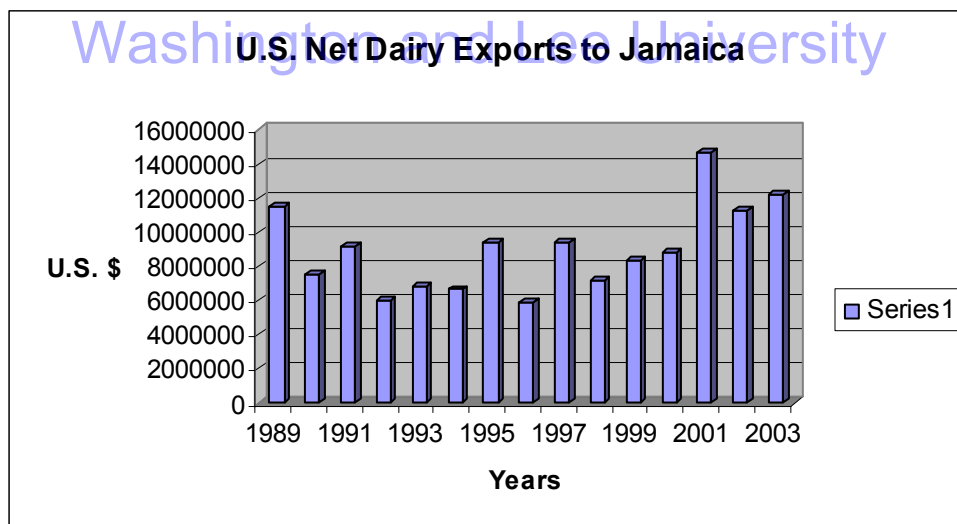
²⁴ Dumping in Jamaica: Dairy Farming undermined by subsidized EU exports.
<http://www.eurostep.org/pubs/position/coherence/jamaicad.htm>

livelihood and the poverty figures for the country. At present the country is self-sufficient in the dairy industry with a 8% food dependency coefficient²⁵. However the National Chambers of Milk Producers reports that the high consumption of milk and its byproducts in Costa Rica makes the country's market a prime target for foreign dairy producers.

The Net Effect: The U.S. Sugar Trade with Jamaica and Costa Rica
Who Benefits and Who is Harmed?

The United States' Trade with Jamaica

An analysis of the trade balance between the U.S. and Jamaica from 1989 to 2000²⁶ shows that the U.S. has a trade surplus with Jamaica in the dairy industry.



Furthermore, the general trend in this surplus has been upward reflecting the worsening conditions for Jamaican farmers. The E.U. is the largest exporter of milk powder and skimmed milk powder to Jamaica. Additionally, New Zealand takes the lead

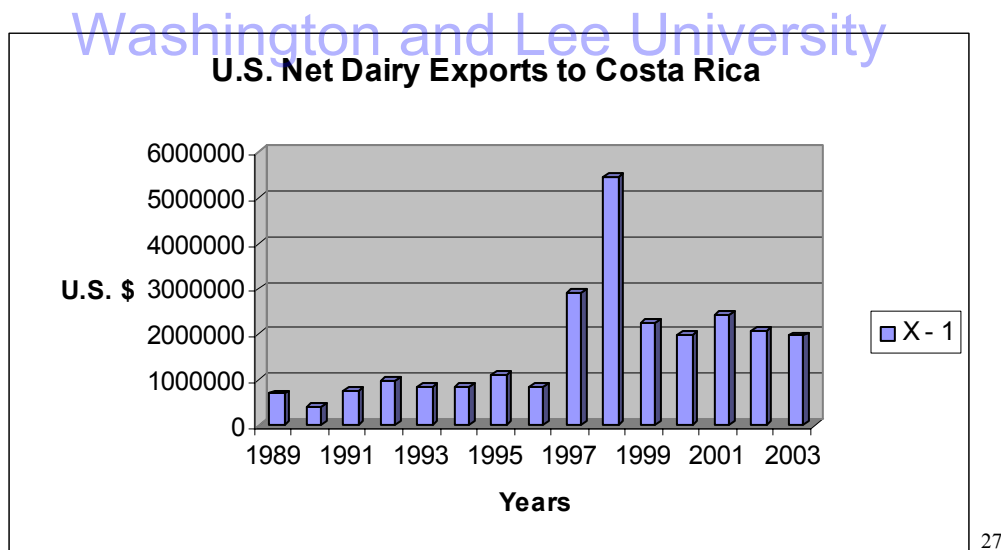
²⁵ Food Dependency Coefficient : % imported/ consumption, http://www.proleche.com/proleche/info_sector.htm.

²⁶ United States International Trade Commission, <http://dataweb.usitc.gov/scripts/INTRO.asp>

in cheese and butter exports to the island with the U.S. sharing the top position with Dominican Republic for ice cream exports to Jamaica. Currently, relatively cheap imports from the E.U. and New Zealand pose a greater threat to Jamaican farmers than do imports from the U.S. It is therefore not clear how much of the plight of the Jamaican farmers would be alleviated were U.S. subsidies were to end. It remains clear however that the relatively cheap milk products that enter Jamaica harm some local farmers. Subsidized U.S. milk products is one source of these exports and therefore the U.S. must take some of the blame for the negative impacts of its policies on Jamaican farmers.

The U.S. Trade with Costa Rica

The U.S. also enjoys a trade surplus in milk with Costa Rica. After the sharp increase in this surplus in 1997 and 1998, figures have declined and stabilized.



Furthermore, the National Chamber of Milk Producers (La Cámara Nacional de Productores de Leche)²⁸ Ministry of Agriculture of Costa Rica reported that the country

²⁷ United States International Trade Commission, <http://dataweb.usitc.gov/scripts/INTRO.asp>

²⁸ La Cámara Nacional de Productores de Leche, http://www.proleche.com/proleche/info_sector.htm

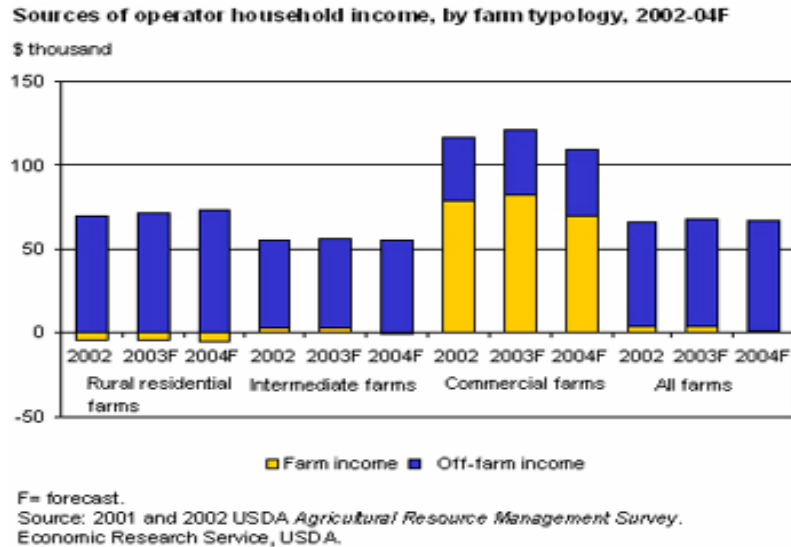
is largely self-sufficient in its milk production, with an 8% food dependency coefficient.²⁹ Therefore, at this moment, the U.S. exports do not seem to be having a very strong negative impact in the domestic milk market of Costa Rica. The signing of the free trade agreement between Costa Rica and the United States leaves Costa Rica's producers open to increased competition from U.S. products. This free trade agreement will probably increase the penetration of the Costa Rican industry by U.S. produced dairy products. Given the significant participation by medium-to-small scale enterprises in this industry, any such displacement is likely to have a direct negative impact on the income of this sector of the economy.

Conclusion³⁰

A report from the Economic Resource Service indicates that medium and small sized farms in the U.S. get most of their incomes from non-farm activities. On the other hand, commercial farms get the majority of their income from farm activities. The graph below illustrates these results.

²⁹ Food Dependency Coefficient : % imported/ consumption,
http://www.proleche.com/proleche/info_sector.htm

³⁰ The use of trade surplus to gauge the effect of U.S. sugar and dairy subsidies limits the certainty of this conclusion. The findings of this study would have been further strengthened by more specific information on number of workers and farmers in each industry and the degrees of poverty that exists among them.



These results are consistent with the conclusion that large commercial sized farms stand to gain most from the government's price support system. These programs are no longer for poverty alleviation.

The low prices that characterized the economic depression of the 1930s provoked the U.S. government to introduce programs to return purchasing power to farm products and thus increase farm income. The programs took the form of price floors, subsidies to support these price floors and the use of tariffs and quotas to control imports and thus protect the domestic market. Since family-owned farms still dominated the U.S. agriculture industry, these programs also played a significant role in the reduction of poverty.

The agriculture industry has undergone significant changes over the past half a century. Increasing technology and transportation has created conditions for larger operations to flourish. The U.S. sugar and dairy industry both illustrate this trend. The dominance of family based farms has given way to the dominance of industrialized

commercial enterprises. For the most part, the direct benefits of subsidy programs accrue to the commercial sized producers rather than small scale farmers.

The effects of the imposition of subsidies and price floors produced followed classic economic theory. Higher prices resulted in quantity demanded falling, with a simultaneous increase in the quantity supplied to the markets by farmers. A part of the resulting surplus gets exported to international markets where it rivals farmers in developing countries such as Jamaica and Costa Rica. The Surplus production that results from the U.S. imposition of a minimum price in the U.S. agrees with the predictions of economic theory.

However, the effects of U.S. sugar subsidies on the Jamaican sugar industry contradict popular rhetoric and simplistic interpretations of economic theory about the harmful effects of subsidies in the developed countries on the income of developing nations. At present the U.S. sugar program benefits Jamaica by giving Jamaica a guaranteed share of the U.S. market. High production costs and the inability of the Jamaica to meet its local sugar demand contribute to this apparent paradox. At the current production costs, it is doubtful whether or Jamaica would be able to maintain its share of the U.S. sugar market under a liberalized trading regime. The generic economic model suggests that foreign exporters could loose from the imposition of subsidies in the U.S. market. However, the model assumes that foreign exporters would be more efficient than the U.S. farmers with which they compete. Since this is not the case in the U.S. – Jamaica sugar trade, there is no violation of economic theory.

The case of the Jamaican sugar industry does not invalidate the claim that subsidies give producers unfair competitive advantage and contribute to a loss of income

to developing countries. Costa Rica's trade surplus with the U.S. in sugar, and U.S.' trade surplus with both Costa Rica and Jamaica offers good but limited evidence in support of the claim that the allegations against subsidies. Costa Rica is in a position to take advantage of the liberalized U.S. sugar market and Jamaica can acquire this capacity as well.

Elimination of U.S. subsidies alone would not result in a significant improvement of the prospects for the exports of sugar and dairy subsidies in Jamaica and Costa Rica while Europe and others maintain their subsidies. It is not unthinkable that exports from European nations could displace exports from Jamaica and Costa Rica in the U.S. market. Economic rationality does not take account of the circumstances behind lower priced goods. It simply predicts that consumers should buy from the cheapest source of an identical good. Subsidized European sugar and dairy would still pose a significant challenge to the dairy and sugar farmers, even in the case of a unilateral liberalization these industries by the U.S.

The proliferation of regional free trade agreements could however change the expected impact of unilateral action by the U.S. in the farming industry. Regional free trade agreements would give Jamaica and Costa Rica more access to the U.S. market while potentially maintaining existing barriers to non-member countries. This would significantly improve the prospects of Jamaican and Costa Rican farmers in a liberalized sugar and dairy industry. Jamaica and Costa Rica are small countries and cannot supply the entire U.S. market. U.S. farmers would still have significant role to play in supplying domestic demand. Of course liberalized trade would leave producers in Jamaica, Costa Rica and the U.S. vulnerable to the erratic shift in prices that tend to result from

unpredictable changes in the supply of agricultural products. Jamaica and Costa Rica are already faced with this reality. The increasing dominance of the U.S. sugar and dairy industry by commercialized firms mean that the industry should be better able to deal with competition than the family-farm based industry of the 1930's. It is no longer a valid claim to appeal to the need to protect family farmers in the sugar and dairy industries. Perhaps this accounts for the shift in rhetoric in the U.S. to the need to guarantee the independence of the nation's food production.

Any attempt to reduce the harmful effects of subsidies to developing countries will take multilateral coordination. Furthermore it would be all too simple minded to expect that liberalized trade in the U.S. sugar and dairy market, as well as other agricultural markets, would necessarily benefit Jamaica and or Costa Rica. The benefits of free trade in a particular product go to the lowest cost producers. However, eliminating harmful subsidies could help improve the current system of international trade.

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