CASE STUDY: HIGH FRUCTOSE CORN SYRUP

Introduction

In January 1997, Mexico’s National Chamber of Sugar and Alcohol Industries, an association of Mexico’s sugar producers, filed an antidumping petition claiming that U.S. corn millers were selling high fructose corn syrup (HFCS) on the Mexican market at less than normal values, and these imports were threatening to cause material injury to the domestic sugar industry. The following year, the Mexican Secretariat of Commerce and Industrial Development (SECOFI), the agency charged with administering Mexico’s antidumping law, agreed, thus leading to the imposition of antidumping duties on all imports of HFCS from the United States. However, the United States successfully challenged the results of the investigation through the World Trade Organization’s (WTO) dispute settlement process.

Because the findings of the first antidumping investigation were declared unlawful by the WTO dispute settlement panel, Mexico re-launched a second antidumping investigation in 2000, again imposing antidumping duties on U.S. imports of HFCS. When this investigation was found to be inconsistent with Mexico’s North American Free Trade Agreement (NAFTA) obligations by a bi-national dispute settlement panel, Mexico finally agreed to lift the antidumping duties on April 18, 2002. Although the antidumping duties have been lifted, U.S. producers of HFCS still face a number of trade barriers in the Mexican market.

Background: The HFCS Industry

The production of high fructose corn syrup (HFCS) accounted for the second largest use of all corn used for food and industrial production in the United States 2003; the manufacture of HFCS utilized over 20 percent of all corn bushels consumed in the United States. Although the Census Bureau reported that there were 30 firms in the corn milling industry in 1997, four companies accounted for over 70 percent of total production.1

The production of HFCS begins with the harvest of corn kernels. Each corn kernel contains four ingredients: starch, protein, oil and fiber. Once the corn kernels are shipped to the refiners, it is broken down into these four components using the wet milling process. The production of high fructose corn syrup begins with dextrose, a naturally occurring form of glucose, which is a pure crystalline sugar created by introducing enzymes to the starch component of the corn kernel. Processors introduce other enzymes to dextrose to produce 42 percent fructose syrup, known as HFCS-42. By passing HFCS-42 through a column which retains fructose, processors create a 90 percent fructose syrup (HFCS-90); combining the 90 percent and 42 percent fructose syrup results in a 55 percent fructose syrup (HFCS-55). Further processing produces crystalline fructose.

1 Leading producers of HFCS include Archer Daniels Midland (ADM) Company, Cargill, Inc., and Corn Products International.
HFCS-55, which accounted for approximately 57 percent of HFCS production in 2004, is used extensively in the soft-drink industry, as well as in frozen desserts and ice cream. HFCS-42 is the next most prevalent form of HFCS and is used primarily in foods that need just a mild sweetness, such as condiments or canned fruits. The extremely sweet HFCS-90 is used primarily in low-calorie products because sweetness can be obtained with very little of the product. Finally, crystalline fructose is often combined with sugar and used in cereals, dry-mixes, and instant beverages.

U.S. consumption of HFCS has exploded in the last twenty years. In 1975, the average U.S. consumer ingested 3.5 pounds of HFCS each year; by 2004 this figure had grown nearly 250 percent to 42.3 pounds per year. The wet corn milling industry as a whole grew from $4.8 billion to $7.5 billion.

Between 1993 and 1998, U.S. HFCS producers exported between 1.5 and 4.2 percent of total domestic production. During this time period, Mexico was by far the leading destination of U.S. HFCS exports, followed by countries such as Canada and Japan. Moreover, as can be seen from Figure [1] exports to Mexico of HFCS, spurred in part by tariff reductions under the North American Free Trade Agreement (NAFTA), were growing quickly. Between 1991 and 1994, U.S. exports of HFCS-42 to Mexico grew over 300 percent to 21 thousand metric tons (MT), while exports of HFCS-55 grew 178 percent to 45.2 thousand MT. Although exports fell slightly in 1995, between 1996 and 1997 they began growing quickly once again. Mexico accounted for nearly 60 percent of U.S. exports of HFCS-42 and nearly 90 percent of U.S. exports of HFCS-55 in 1996. As can be seen in Figure [2], the calculated unit price of U.S. exports to Mexico grew only slightly during this time period.

According to the Corn Refiners Association, corn refiners invested heavily to expand its capacity following the passage of the NAFTA, under which Mexican tariffs on HFCS were scheduled to be phased out from a base tariff of 15 percent to a zero tariff by 2004. Experts estimated that HFCS annual capacity in the United States grew by 3.5 million tons between 1994 and 1997. Although consumption in the United States has increased, it has not kept pace with the increase in capacity, thus resulting in the industry’s overcapacity—particularly as exports to Mexico have been virtually eliminated since 2002 as explained below.

The origins of the HFCS dispute is undoubtedly linked to the dispute between Mexico and the United States over NAFTA’s sugar provisions. The original NAFTA agreement allowed Mexico to export its entire production surplus of sugar to the United States. The agreement stipulated that between 1994 and 1999 as much 25,000 metric tons raw value (MTRV) could be shipped duty-free; in 2000 this amount could increase to 150,000 MTRV, and could continue to increase 10 percent each subsequent year. These maximums could be exceeded if Mexico achieved a net production surplus of sugar in two consecutive years. In other words, if Mexico was a net surplus producer of sugar in

---

3 Production surplus is defined as total production minus domestic consumption.
two consecutive years the agreement allowed it to export all surplus sugar to the United States beginning in 2000. However, a side letter agreement that was later negotiated changed these provisions. The United States claims that under the side agreement, Mexican sugar production must exceed its consumption of both sugar and HFCS to be considered a net surplus producer, making it less likely that Mexico would qualify for duty-free status. Moreover, it limited the amount of access for Mexican sugar to the U.S. market to 250,000 MTRV between 2001 and 2007. Mexico has challenged this interpretation, claiming it has had the right to export its total net surplus on a duty-free basis since 2000.\(^4\) Although Mexico requested the establishment of a NAFTA dispute settlement panel to resolve the disagreement in August 2000, the United States has reportedly blocked formation of the panel by refusing to name a panelist. The Corn Refiners Association believes that if the United States allowed imports of Mexican sugar as envisioned under the original NAFTA agreement, Mexico would drop current impediments to U.S. HFCS exports.\(^5\)

---

**Figure I**

U.S. Exports of HFCS

Source: U.S. Census Bureau.

---

\(^4\) Multiple version of the side agreement were negotiated, and there is disagreement over which version is valid. Regardless of the disagreement over the transition process, both parties agree that NAFTA provides for free-trade in sugar beginning in 2008.

\(^5\) Corn Refiners Association (2005), “Cost of Mexico Sweetener Dispute to the U.S. Corn Industry.”
Compared to the U.S., the Mexican HFCS is relatively small; production of HFCS was estimated at 250,000 to 300,000 MT in 2001, compared to 8.4 million MT in the United States. However, sugar is Mexico’s largest agriculture industry, and it has undergone tremendous upheaval in recent years. Government-controls, namely a system of marketing allotments, keep Mexican sugarcane prices above world prices and even above prices in the United States. Nevertheless, the sugar industry found itself in crisis in the period leading up to and shortly after the instigation of the antidumping petition. Although Mexico had hoped to dramatically increase its sugar exports to the United States under the NAFTA, exports remained low due to the U.S. import restrictions described above. A surge in imports of HFCS from the United States further reduced demand for Mexican sugar, while the Mexican government issued permits to allow the import lower-priced sugar from world markets. Sugar mill owners, who were borrowing money for operating capital, could not meet payments using the low prices for exported refined sugar and fell into bankruptcy. Finally, in 2001 the Mexican Ministry of Agriculture expropriated 27 of the nation’s 60 sugar mills to ensure against future mismanagement. The antidumping petition filed in 1997 and subsequent restrictions on HFCS sales in Mexico arose in this environment.

Figure II

U.S. Exports of HFCS to Mexico
Calculated Export Price

Source: U.S. Census Bureau

---

6 The United States has some of the highest sugar prices in the world due to government controls and import restrictions. Under the marketing allotment, Mexican sugar millers are forbidden to supply to the market more than their predetermined allocation.
The antidumping investigation described below is not the first time that U.S. exporters of HFCS have suffered due to other trade conflicts between the United States and Mexico. In December 1996, the Mexican government increased import duties on U.S. HFCS to compensate for the damage to Mexican producers that occurred when the United States raised tariffs on Mexican broomcorn brooms. After the United States dropped the tariff increase on broomcorn brooms, Mexico dropped the temporary increase in HFCS tariffs in December 1998.

The Antidumping Case

On January 14, 1997, Mexico’s National Chamber of Sugar and Alcohol Industries (Sugar Chamber) filed an antidumping petition claiming that U.S. corn refiners were selling HFCS-42 and HFCS-55 on the Mexican market at below normal value, and these imports were threatening Mexico’s sugar industry with material injury. The petition indicated that the threat of damage was based on the recent increase in the capacity of the U.S. HFCS producers; this excess production would likely be shipped to Mexico. Furthermore, the price level at which HFCS was imported would have serious consequences for domestic sugar production and the industry’s attempt to restructure their debt with the sugar sector development bank. The Sugar Chamber further claimed that Mexican-produced sugar was comparable to HFCS-42, and Mexican-produced refined sugar was comparable to HFCS-55.

On February 27, 1997, SECOFI initiated an official investigation. At this time, SECOFI announced that the period of investigation, or the period that SECOFI would determine whether products were being dumped, was January 1, 1996 through December 31, 1996. On June 25, 1997, SECOFI made a preliminary decision that there was enough evidence that during the period of investigation there was a “threat to cause damage” to the Mexican sugar industry. The decision cleared the way for the imposition of the duties listed in Table 1, which ranged from $66 to $175 dollars per metric ton. As a comparison, the average unit value of U.S. HFCS exports in 1997 was $430.

<table>
<thead>
<tr>
<th></th>
<th>HFCS-42</th>
<th>HFCS-55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargill Incorporated</td>
<td>66.57</td>
<td>63.42</td>
</tr>
<tr>
<td>A.E. Stanley Manufacturing Company</td>
<td>125.30</td>
<td>95.58</td>
</tr>
<tr>
<td>Archer Daniels Midland Company</td>
<td>77.25</td>
<td>65.12</td>
</tr>
<tr>
<td>CPC International, Inc.</td>
<td>125.30</td>
<td>175.50</td>
</tr>
<tr>
<td>All Other Firms</td>
<td>125.30</td>
<td>175.50</td>
</tr>
</tbody>
</table>

During the preliminary investigation, U.S. producers and Mexican importers of HFCS argued that the Sugar Chamber had no standing to file an antidumping petition, as it did
not represent Mexican HFCS producers. Under the World Trade Organization (WTO) Antidumping Agreement, antidumping petitions must be filed by or on behalf of the domestic industry, where domestic industry refers to domestic producers of “like” products, or those that produce identical or similar to the products being imported. The U.S. respondents argued that, despite the suggestion by the Sugar Chamber, HFCS and sugar could not be considered similar products. SECOFI found that during the period of investigation there was no domestic production of HFCS, therefore the Sugar Chamber did have standing to file the antidumping petition because HFCS and sugar are similar products.

In December 1997, the U.S. Corn Refiners Association requested SECOFI terminate the investigation because an alleged agreement between Mexican sugar producers and soft-drink bottlers from September 1997 eliminated any threat of injury. The agreement reportedly urged soft drink manufacturers to limit purchases of HFCS for three years in exchange for a 20 percent discount on sugar. Although SECOFI investigated the allegation, the Sugar Chamber denied the existence of any agreement. The investigation continued, and on January 23, 1998, SECOFI published its final determination imposing antidumping duties ranging from $63.75 to $100.60 per MT for HFCS-42 and $55.37 to $175.50 per MT for HFCS-55.

In February 1998, the U.S. Corn Refiners’ Association asked for a review of the antidumping action under the NAFTA. Shortly thereafter, the U.S. Trade Representative announced on May 8, 1998 its intention to bring the dispute to a WTO dispute settlement proceeding.

Case Outcome

The U.S. submission to the WTO Dispute Settlement Body argued, among other things, that the initial antidumping petition filed by the Sugar Chamber did not contain enough evidence of the threat of material injury to justify the initiation of the investigation. Moreover, SECOFI failed to confirm that Mexico had no HFCS industry during the period of investigation, which was a key element of their determination that the Sugar Chamber had the standing to file the antidumping petition in the first place. The United States also took issue with SECOFI’s assertion that a determination of threat of material injury does not require an assessment of the likely impact of imports and other relevant economic factors on the domestic industry, unlike the determination of actual material injury. The United States argued that SECOFI should also have taken into consideration the alleged agreement between the sugar industry and soft drink manufacturers when assessing the likelihood of a future surge in imports of HFCS.

On February 24, 2000, the WTO Dispute Settlement Body (DSB) ruled that Mexico’s imposition of antidumping duties on HFCS was not in accordance with the WTO Antidumping Agreement. Although the DSB found that the initiation of the petition was justified, the injury determination was not in accordance with WTO rules. Specifically, the panel found that SECOFI did not adequately consider all economic factors affecting the Mexican sugar industry that were pertinent to the “threat of material injury” decision.
SECOFI also failed to take into account the agreement between Mexican sugar producers and soft drink manufacturers.

Mexico decided on September 20, 2000 to uphold the 1998 determination based on a new analysis that took into account many of the additional factors the WTO found missing in the earlier investigation. However, on October 12, 2000, the United States requested that the matter be reexamined by the same dispute settlement panel to establish whether Mexico had correctly implemented the DSB’s recommendations. In June 2001, the panel found that Mexico had failed to implement their recommendations; specifically, Mexico did not adequately consider the impact of dumped imports on the domestic industry and the impact of the agreement between sugar producers and soft drink manufacturers on future imports. Although Mexico appealed the ruling, an appellate body upheld the decision on November 21, 2001.

The NAFTA dispute settlement investigation was taking place simultaneously. In addition to the issues raised in the WTO proceedings, the U.S. Corn Refiners Association requested that the NAFTA panel also consider the fact that SECOFI erroneously determined the antidumping duty imposed on all other firms, particularly those who cooperated with the investigation. The Association also claimed that SECOFI erroneously applied the concept of the “best information available” for the determination of the duties. On August 3, 2001, the NAFTA panel also found that SECOFI had failed to prove the existence of an imminent material threat of injury for many of the same reasons as the WTO panel. Although Mexico appealed the ruling, the NAFTA panel ordered that Mexico had 30 days to eliminate the antidumping duties on April 15, 2002.

On April 18, 2002, Mexico announced that it would lift antidumping duties on U.S. HFCS exports as directed by the NAFTA dispute resolution panels. However, government officials announced that it would replace the antidumping duties with a tariff-rate quota (TRQ). Under the TRQ, up to 148,000 tons of U.S. HFCS could be shipped duty-free to Mexico, but any quantities above the quota would face tariffs of 210 percent. Mexican officials at the time indicated that the TRQ was directly related to the TRQ currently restricting Mexican exports of sugar to the United States.

Although the TRQ is still in place, U.S. exporters have not been able to utilize the entire quota. At approximately the same time as the TRQ was put in place, the Mexican government enacted a 20 percent tax on soft drinks and other beverages that use any sweetener other than cane sugar, including high fructose corn syrup, on January 1,

---

7 Countries may use the best information available, typically the dumping margins requested in the original antidumping petition, to set the dumping margin when companies refuse to cooperate with the investigation.
8 Like the WTO panel, the NAFTA panel ruled that SECOFI was justified in its initiation of the investigation, rejecting arguments that the Sugar Chamber did not have standing to file the petition. Because the NAFTA panel ruled that SECOFI had failed to prove the threat of material injury, it did not consider the other aspects of the complaint regarding the actual dumping margins.
9 The tariff of 210 percent was the maximum allowable under Mexico’s WTO obligations. At this time, Mexico reclassified the trading status of U.S. sweeteners trade from NAFTA preferential trading partner to WTO most favored nation trading partner.
The tax law was even more effective than the antidumping duties in restricting U.S. exports of HFCS; as can be seen in Figure [1], U.S. exports of HFCS to Mexico were reduced to virtually nothing in 2002. The United States requested the establishment of a WTO dispute settlement panel over the soft drink tax on June 10, 2004.

Although the outcome of the dispute has yet to be determined, even Mexican officials admit that they will likely have to repeal the tax. According to the trade ministry’s legal director for international negotiations, “Mexico recognizes it is a particularly difficult case. We consider that sooner or later we will have an adverse decision.” Instead, Mexico is considering replacing the tax with an import tariff up to 210 percent on U.S. imports of HFCS, which Mexico claims it is entitled to do under the NAFTA to compensate the country for losses stemming from U.S. restrictions on Mexican sugar imports.

In total, the Corn Refiners Association estimates that they have lost $3.0 billion in HFCS sales to Mexico since 1997. This translates to a lost of sales of 672 million bushels of corn, valued at $1.4 billion.12

References


---

10 The tax was temporarily lifted until September 30, 2002.
12 Corn Refiners Association (2005), “Cost of Mexico Sweetener Dispute to the U.S. Corn Industry.”