The New Deal and the "New Cuba":

Cuba's Participation in the U.S. Sugar Quota Program, 1934-1941

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The New Deal transformed agriculture into one of the most heavily regulated sectors of the economy of the United States (Libecap 1998). The first major piece of New Deal agricultural legislation was the Agricultural Adjustment Act of May 1933. It provided for production controls for major agricultural commodities, defined as "basic agricultural commodities," including wheat, corn, cotton, tobacco. Sugar was not included as a "basic commodity" because the mechanisms created under the AAA would not work for import-competing commodities, such as sugar. Rather than raise the prices received by domestic farmers, they would stimulate imports.

Sugar was, however, included a few months later. A confluence of events, both domestic and foreign, convinced the administration to find a solution to the problem with import restrictions, and, although not without political resistance, by May 1934, President Franklin Roosevelt pushed through an amendment to the Agricultural Adjustment Act that made sugar a "basic commodity" and set up institutions for import quotas on sugar. In a February 8th address to Congress in which he proposed his specific solution, he began his remarks with the alarming statement, at least for some sectors, that "there is a school of which believes that sugar ought to be on the free list. This belief is based on the high cost of sugar to the American consuming public." The statement was prefaced by a perception of the industrial situation: "[s]teadily increasing sugar production in the continental United States and in insular regions has created a price and marketing situation prejudicial to virtually everyone interested. Farmers in many areas are threatened with low prices for

their beets and cane, and Cuban purchases of our goods have dwindled steadily as her shipments of sugar to this country have declined."[1]

The reference to Cuba was controversial. It was common knowledge that the proposed legislation was both about farm policy and foreign policy toward Cuba. The provision for import quotas on sugar meant import quotas on Cuba, which was the only significant foreign source of sugar in the United States. Neither was the reference to Cuban purchases of U.S. exports a surprise. Until the Depression, Cuba had been one of the most important buyers of American farm products, machinery and consumer durables. That had all changed since the crisis as Cuba's economy – an economy built upon sugar exports – was in the throes of a disaster that equaled or even exceeded the distress on American farms. Since August 1933, the Cuban government had collapsed from the severity of the crisis. A populist revolutionary government seized power and promulgated a series of far-reaching populist reforms, aimed mostly at labor and sugar, that promised a "New Cuba;" but the new government never obtained effective control as widespread violence, labor strikes and seizures of sugar mills paralyzed the nation's economy (Foreign Policy Association 1935, Whitney 2001). Colonel Fulgencio Batista seemed to be emerging as the man most likely to restore the peace. Meanwhile, diplomatic personnel in Cuba admonished that the one way the US could assist was to raise the net-of-duty price of sugar received in Cuba.

The story that followed, of the adoption of sugar controls in the United States, has been championed as an example of the unintended consequences of regulatory policy. Anne Krueger (1996) argued that the system of sugar controls, which began from an effort to "shore up the Cuban economy," took on "a life of its own" as a domestic interest group endogenously emerged as the principal beneficiary and, then, lobbied for its continuation. Since then the sugar lobby has been one of the most successful protection-seeking agricultural interest groups in the United States. In Krueger's account, Roosevelt's interest in pacifying Cuba was the prime motivating factor for his insisting on the program – the initial condition in a path-dependent process that ultimately persisted because of endogenous domestic interest-group formation. Her account explains how domestic

[1] U.S. House of Representatives, 73rd Congress, 2nd session, "Amend the Agricultural Adjustment Act. Message from the President of the United States," H. R. Doc. No. 246, Feb. 8, 1934.

industry initially opposed controls, which were pushed through by the Roosevelt administration, acting as a "benevolent guardian," "to shore up the Cuban economy" (1996, p. 180). Yet when controls came up for revision in 1937, through an endogenous process, domestic producers who were beneficiaries of the program rallied support for its renewal.

Though the "benevolent guardian" argument serves the analytical purpose of making the initial conditions independent of endogenous domestic political interests, there is reason to doubt its historical validity. This paper, without pretending to overturn the path dependence of regulatory regimes, which is now well-established, is an effort to develop a better understanding of the economic relationship between the United States and Cuba that this program helped to create. Besides incorrectly attributing its principal motivation to foreign policy, the "benevolent guardian" argument overlooks the integral role that Cuba played in helping an essentially domestic program function as a stabilization measure. It also misperceives the long significance of sugar controls in the United States as a source of economic instability in Cuba, rather than as a policy intended to transfer benefits. It is true that the Roosevelt administration allowed some rents from the quota program to be transferred to Cuba, which served to fund some of the programs of the New Cuba, but they were small relative to the benefits that protection transferred to the domestic industry, and they were important for the broader foreign policy objectives of his administration.

The main task of this paper is to examine the role that Cuba played in making the program function more or less effectively as a price stabilization program. The principal argument is twofold. First, the participation of foreign suppliers, as well as the insular possessions (which did not have representation in congressional votes) made it possible to design a stabilization program that targeted constituent areas at the expense of non-constituent areas. Second, the achievement of these objectives depended on the existence of significant supply elasticity in the system. Both insular possession and foreign supplier areas filled this function. However, for larger shocks, the Cuban sugar industry served as a "shock absorber" or a "producer of last resort," which stood prepared to absorb a positive or negative demand shock even of considerable size. Cuba was not the only supplier area that stood ready to absorb shocks of moderate size, but it was unique in its capacity to absorb substantial shocks.

The paper also shows that Cuba was in this unique position because of its own political and institutional response to the world crisis. As a consequence of Cuba's history of participation in the US sugar market, it occupied an important role in a suddenly changed market environment as war emerged in Europe. The long-run consequences are, as in Krueger's analysis, unintended. One can surmise that, if the United States had any part in the rise of Fidel Castro to power in 1959, the persistence of the U.S. sugar controls in the form they took on cannot be dismissed as a principal cause.

The AAA and Jones-Costigan

Title I of the Agricultural Adjustment Act extended two broad sets of regulatory powers to the executive, effectively two alternative instruments for introducing production controls to stabilize agricultural markets and "to relieve the existing national economic emergency by increasing agricultural purchasing power." The first instrument provided for direct control of seven "basic agricultural commodities" (wheat, corn, cotton, hogs, rice, tobacco, and milk and dairy products) by authorizing the Secretary of Agriculture to negotiate contracts with farmers for acreage restrictions or other measures to limit production. Farmers were to be compensated out of a fund created from a "processing tax" on the industry. The second instrument was available to any agricultural commodity. It gave the Secretary the authority to "enter into marketing agreements with processors, associations of producers, and others engaged [agricultural commerce]." Such marketing restrictions had to be agreed upon voluntarily by associations representing a large share of the industry's production. Given that condition, the Secretary of Agriculture was given the powers to require licenses for all trade of the commodity to enforce the marketing agreement (Perkins 1965, Tapp and Braun 1934).

Sugar was included as a "basic commodity" in the bill that passed the Senate on April 18, 1933, but it was removed from the list by the House on the grounds that acreage restrictions on sugar, an import-competing commodity, would not be effective in raising the price, without provisions to impose limits on imports, which an overworked Congress was unprepared to do at the time. In a message to Congress on February 8, 1934, President Roosevelt requested that the Agricultural Adjustment Act be amended "to make sugar beets and sugarcane basic agricultural commodities." The Sugar Act of 1934, also known

as the Jones-Costigan Act, became law in May 1934. The consequences on the price of sugar can be seen in Figure 1.

Price Stabilization and Income Objectives

The acreage restriction programs under the AAA were billed as a measure to "stabilize the price and production of sugar for the benefit of the continental producers and the industry of the insular possessions and at the same time to maintain a fair price for sugar to the consumer."[2] One could argue, however, that price stabilization was not the ultimate goal of the program, rather, that price stabilization was perceived as an intermediate step toward achieving a politically desirable income objective – higher or more stable farm incomes. Newbery and Stiglitz (1981) argue that it is common among most commodity price stabilization programs to find that the immediate objective – to stabilize the price of a commodity – often serves as a surrogate policy for stabilizing the incomes of constituent groups at risk.

Given this common indirect policy objective, since price and income variation are not perfectly correlated, Newbery and Stiglitz examine under what conditions price stabilization may be used effectively as a surrogate for income stabilization. They find that price stabilization can achieve greater income stability if demand is sufficiently inelastic. The basic insight comes from a comparative institutional analysis, which contrasts the income variance when prices are free to respond to market forces, i.e.

$$\text{Var}(\log pq) = \text{Var}(\log p) + \text{Var}(\log q) + 2\text{Cov}(\log p, \log q)$$

with income variance when price variance is eliminated, in which case:

$$\text{Var}(\log pq) = \text{Var}(\log q)$$

Consider, for example, their basic model with constant elasticity of demand, $p = q^{-1/\eta}$, where p is the price, q is the market quantity, η is the constant price elasticity of demand, and p and q are stochastic variables. Income variance when the price can vary is $\text{Var}(\log pq) = (1 - 1/\eta)^2 \ \text{Var}(\log q)$. One observes that the price-stabilized income variance is lower than the price-unstabilized variance only if demand is significantly price inelastic, $\eta < ½$,

[2] U.S. House of Representatives, "Sugar Beets and Sugarcane as Basic Agricultural Commodities," H.R. Report No. 1109, March 29, 1934, to accompany H.R. 8861.

for the constant elasticity of demand function. (pp. 26-27).[3] Estimates place the price elasticity of demand for sugar in the early 1930s at 0.35 or less, which suggests that the sugar industry probably satisfied this condition.

If we should attempt to apply this approach to the operations of the U.S. Sugar Program, however, the result is turned on its head. The model takes as given that a policy can be found that eliminates price variance. Yet this suppresses the main problem the AAA had to address. Direct price fixing was not authorized under the crop control laws. Instead, price stabilization was to be achieved by estimating and imposing quantity restrictions that would result in a desired target price. Estimating those quantities accurately was information intensive and complicated. The constant elasticity of demand model oversimplifies the practical difficulties, but it does offer a useful insight. Since the price variance is $\text{Var}(\log p) = (-1/\eta)^2 \text{Var}(\log q)$, small errors measuring either the quantity demanded or supplied for a given target price would produce much larger deviations of the realized price from the target price. A price elasticity of demand of 0.35 or less implies a fairly large magnification effect – a factor of 8 or greater. Inelastic demand may have made price stabilization an effective surrogate for income objectives, but it also made it more difficult to achieve.

The actual program also departed from the representative agent assumption implicit in the model by embedding political differentiation into the program. Although it was essentially a domestic stabilization measure, the presence of offshore and foreign participants opened the door to using redistribution to serve mainland producers. In short, the program to stabilize the domestic price of sugar can only be understood in relation to its redistributive consequences. Its mandate was to achieve income objectives selectively for mainland growers and processors. The presence of offshore and foreign participants thus made it possible to achieve income objectives through redistribution and protection, a design that would not have been available in a purely domestic program.

Quota Assignment Rules

[3] Dye and Sicotte (2006) estimates the price elasticity of demand for sugar for the early 1930s at about 0.35, which may put it within range.

To understand these points, it is necessary to examine the rules that governed the assignment of quotas to each area under the program. Quotas were assigned on two levels: first, each of the major supplier areas – mainland beet, mainland cane, each insular possession (Hawaii, Puerto Rico and the Philippines), Cuba, and other foreign suppliers were assigned specific overall group quotas; then, separate arrangements were made within each domestic group, including acreage curtailment contracts with individual growers of beet or cane and "marketing" (sales) quotas for each processor. The act gave the Secretary of Agriculture discretion for setting the latter, but it restricted how the supplier areas' marketing and import quotas were determined. Mainland beet and cane areas were given fixed minimum quotas of 1.55 and 0.26 million short tons plus 30 percent of any growth in total US consumption exceeding 6.452 million short tons. The remainder was to be prorated among the insular possessions and foreigners on the basis of "representative" historical sales levels determined by the Secretary of Agriculture within certain limits provided in the statute (Dalton 1937). The two-tiered quota-assignment system facilitated the ability of Congress to write redistributive rules for the allocation of quotas into the statute at the level of the supplier area to meet political objectives, while, at the same time, it delegated less politically charged quota assignment issues to an administrative body. The AAA was instructed to administer individual quotas for sugar beet and cane growers in a fashion that met individual supplier-area needs equitably.

The statutory requirements produced a simple formula for the assignment of quotas. Mainland producers were entitled to quotas of m_i and offshore areas (insular possessions and foreign) were entitled to quotas of o_j:

$$m_i = \overline{m}_i + 0.3\mu_i(D - D_0)\,,\ i = b,\ c \qquad (1)$$

$$o_j = \omega_j(D - m_b - m_c) \qquad (2)$$

where m_i is the mainland quota in tons (i = beet, cane), $\overline{m}_i$ is i's fixed minimum quota, μ_i is the i's share of the total mainland quotas, ω_j is j's share of total offshore quotas, D is the estimated demand, and D_0 is the 6.452-million-ton benchmark. (Quotas are shown in Table 2.) The guaranteed minimum and variable portion in equation (1) served to redistribute risk – the mainland bore no downside production risk, but it shared in the upside risk. The

program's design aimed to achieve a minimum stable income for the mainland through a combination of this risk-distribution mechanism and domestic price stabilization.

The sugar control legislation was subject to renewal at the end of 1937. When it was renewed in 1937, the formula for determining supplier-area quotas was revised. From that year, until the program's suspension in 1941, all supplier areas were allotted fixed shares of the USDA's estimate of demand, given its price target. If consumption fell below 6,682,670 short tons, the mainland, Hawaii and Puerto Rico were guaranteed a joint minimum of 3,715,000 short tons. The Philippines, meanwhile, was guaranteed a minimum under the Philippines Independence Act of 952,000 tons (Wolf, pp. 38-39). The revision maintained the risk-distribution mechanism of the 1934 legislation, in a slightly altered form, and it incorporated Hawaii and Puerto Rico. Thereby the former mechanisms for a minimum stable income remained intact; although, the downside was redistributed to be born more heavily by the Philippines and Cuba.

Returning now to equation (2), another formative decision regarded how the shares ω_j were to be determined. The 1934 law stated that they were to be determined on the basis of "representative" historical sales levels. It further stipulated that "representative" levels should be determined using sales "during such three years, respectively, in the years 1925-1933, inclusive, as the Secretary of Agriculture may, from time to time, determine to be the most representative three years" (Dalton, p. 105-06). The ostensible discretion given the Secretary of Agriculture, however, was constrained by instructions to "reestablish prices to farmers at a level that will give … purchasing power with respect to the articles that farmers buy." Although ambiguous, it was clear that the price could not fall below some undetermined minimum without receiving political scrutiny. In fact, even before this language was penned, the Secretary of Agriculture had already estimated the amount available for distribution in 1934 to the non-mainland areas (Dalton, pp. 118, 120-21). The only set of "representative" years meeting the stipulation that would achieve the production target was the period 1931-1933. Any other combination of years within the law's stipulation would have caused exceeded consumption to exceed the Secretary's estimated target.

The significance of these decisions about quota assignment rules is lost without some background on the recent history of participation in the US sugar market. During the

1920s, in the average year 42 percent of the US sugar market on was served by domestic areas – including mainland beet sugar (in western and Midwestern states), mainland cane sugar (in Louisiana and Florida), and the US insular possessions (Hawaii, Puerto Rico, and the Philippines). The remaining 58 percent was met by foreign suppliers, over a protectionist wall that rose with two major tariff revisions in 1922 and 1930. Foreign participation, however, was almost exclusively Cuban, for two reasons. Since 1903, Cuba had preferential treatment in US markets, a 20 percent discount on all import duties.[4] Besides the tariff preference, Cuba had the strongest regional competitive advantage – the lowest-cost producer of any major sugar-producing country in the western hemisphere (Dye 1998). Besides being the largest supplier in the US market, Cuba also supplied almost a million tons in non-US export markets, which could easily be shifted to Cuba's preferential market in the US, if demand warranted, thereby crowding out full-duty-paying foreign competition.

Prior to the adoption of the quota, the tariff was the protectionist instrument of choice, and US policy toward sugar. Protection for sugar increased significantly with two major 1920s tariffs acts, in 1922 and 1930. Together they doubled the specific tariff on Cuban sugar and, with falling prices, produced a tenfold increase in the ad valorem equivalent tariff by the early 1930s. Even as the sole duty-payer, prior to the 1920s, Cuban sugar had been highly competitive in the US market; but with the tariff increases, Cuba's share of the US market eroded significantly during the 1920s and early 1930s. The consequences for relative market shares can be seen in Table 1. The market share of the insular possessions increased steadily after 1922, nearly doubling by 1929. This was offset by a compensating decline in Cuba's market share, which fell roughly from 60 to 50 percent by 1929. After 1929, however, Cuba's market share fell more sharply to 25 percent by 1933, while the insular possessions and mainland saw major gains not only in their shares of the sugar market but also absolute increases in production levels.

As the depression deepened the pressure for increased protection continued. In June and July of 1931, only a year after the Hawley-Smoot tariff went into effect, sugar beet growers' associations and refiners petitioned the US Tariff Commission to recommend to President Hoover to further increase in the tariff against Cuban sugar under the flexible

[4] From the US-Cuban reciprocity treaty of 1903.

tariff provisions of the tariff act, which authorized the President to alter individual tariff rates under the advice of the Tariff Commission to equilibrate the cost differential between domestic goods and foreign imports. The Tariff Commission, instead, undertook an in-depth study of costs of production in the sugar industry, which was completed February 1933 (Heston, pp. 196-97). It concluded, first, that the tariff measures adopted since 1922 had failed to provide the stimulus Congress had intended to mainland sugar producers, but competition from Cuba was not the principle cause. Rather, it was from the Philippines and Puerto Rico. A tariff increase would not protect mainland producers from competition from the duty-free insular possessions. Second, the Commission concluded that a further tariff increase would more likely threaten political instability in Cuba than give protection to domestic producers. Cuba's economy was so dependent on the US sugar market, they observed, that wages and sugar production costs were endogenous to the tariff. Further increases, the Commission predicted, would drive wages down further and intensify political instability. The Tariff Commission proposed an import quota as a more effective instrument under the present situation.

The release of the Tariff Commission report coincided with the initial phase of the Agricultural Adjustment bill. After the bill was passed, since Congress had not included sugar as a "basic commodity," Secretary of Agriculture, Henry A. Wallace, initiated meetings to negotiate a sugar marketing agreement with industry representatives under the second set of provisions of the act. After negotiations from July to September of 1933, the agreement that was reached awarded a quota to mainland beet sugar of 1.75 million tons, 30 percent higher than the maximum beet sugar sold in any previous year. Mainland cane had a similar non-binding quota. When submitted to the Secretary of Agriculture, it was rejected on the grounds that it did not restrict the supply of sugar and did not adequately address the needs of farmers. President Roosevelt, then, took a personal interest in the matter, submitting his own proposed set of quotas along with a plan to make sugar a "basic commodity" to Congress.

Meanwhile, the same crisis that had gave the Democrats a mandate for remaking the American regulatory landscape, caused a political revolution in Cuba. The Cuban government fell during the same week in September in which the domestic sugar industry submitted its ill-fated marketing agreement. On September 4, a populist revolutionary

government had claimed power, but it had been unable to establish the peace, labor unrest paralyzed the country, including the seizure of 36 sugar mills, most owned by Americans. The State Department had recently engineered an abrogation of the revolutionary government in favor of a handpicked president, Carlos Mendieta, with the cooperation of Colonel Fulgencio Batista. Meanwhile, the State Department communicated a common Cuban sensibility that, if its sugar was selling at a significantly higher price, the political agitation would not continue.[5]

Sugar interests in Cuba, in the meantime, had been pressing Washington for a combination of two reforms to the current tariff situation. First, the adoption of sugar production and import quotas, along the lines of those that had been adopted in Cuba since 1931, rather than the current policy of recurrent adjustments of the tariff, which ultimately would cause most of Cuba's market share to shift to the insular possessions, without satisfactorily achieving mainland producers' objectives. Second, a reduction of the tariff, which would increase the differential between the price of sugar Cubans received in the US relative to the world price. The differential would be created by the import quotas. Prior to its establishment, arbitrage of Cuban sugar between the US and world markets caused the equilibrium world price to equal the US price minus the tariff on Cuban sugar (See Figure 1). The quota established a wedge or "differential" between the prices Cubans received in the two markets. A reduction of the US tariff, under the new regime, therefore would increase the economic rents from the program that were transferred to Cuba. It was the industry's view that the increased per unit income from the differential would compensate for the lost sales volume that Cuba would bear under the American quota, and hopefully help to restore political stability.

The Cuban quota under the industry's plan had been 1.7 million tons. On February 5, three days before prior to Roosevelt's message to Congress, Carlos Mendieta, sent a special message to President Roosevelt asking for a quota of 2 million short tons and a tariff reduction. Roosevelt's reply to Mendieta promised to seek "the economic

[5] One direct statement to such an effect was made by Chargé d'Affairs Reed: "In every conversation I have had with Cubans and Americans who are opposed to the Machado administration [removed from power in August 1933] I have asked the following question: 'If sugar were selling at 3 cents a pound, would the present political agitation continue?'; and the answer has invariably been: 'No.'" Reed to Stimson, September 23, 1930, in *Foreign Relations of the United States*, 1930, vol. 5, pp. 657-58.

rehabilitation of Cuba." His proposal to Congress, which came three days later, recommended a Cuban quota of 1.944 million tons and a reduction of the tariff from 2 cents to 1.5 cents per lb., with a commitment to include an additional tariff reduction to 0.9 cents per lb. as part of a revision of the existing trade reciprocity treaty, which would be first reciprocal trade to be negotiated under the Reciprocal Trade Agreement Act, yet to be passed, as another piece of major New Deal legislation that would be approved in the First Hundred Days.[6]

Without discounting the direct interest in pacifying Cuba, administration's relations with Cuba at that moment had greater political significance. In November, Secretary of State Cordell Hull had planned to inaugurate the administration's celebrated Good Neighbor Policy toward Latin America at the Seventh Conference of the Inter-American States, held in November in Montevideo; but its credibility was being challenged by the political instability in Cuba, in which the US was implicated, by its refusal to recognize the Grau San Martin government and the replacement of Grau with Mendieta. Success of the Good Neighbor Policy seemed to hinge on establishing a credible commitment to it in Cuba. Roosevelt swiftly pressed Congress for these symbolically significant (but substantively minor) concessions to Cuba, as well as immediate efforts toward abrogation of the abhorred Platt Amendment. Both were achieved in May 1934 (Gellman, pp. 74-75, 102-05, 108).

Krueger's assessment that the President's program was intended to "shore up" the Cuban economy comes from a controversy surrounding the President's proposal. It included a beet sugar quota of 1.45 million tons, which met strong objections from spokespersons of the beet sugar farmers and processors. The American Farm Bureau Federation, speaking before the Senate Committee on Finance, argued that "the sugar producing farmers should be allowed to control their acreage by enlarging it annually 10% to 15% until such enlargement gradually reaches the surplus point of production," and the President of the National Beet Growers Association argued that "we cannot subscribe to any principle [as basis for a marketing agreement] which would do violence to the farmers' inalienable right to the markets of the United States (Dalton, pp. 102-03). Their position,

[6] The latter reduction was made on the condition that the quotas remaining in effect.

however, was not opposed to the quota *per se* but to a quota that did not reserve the US market for domestic (i.e. mainland) interests.

The sugar law, passed in May 1934, represented a compromise between the President's and the industry's proposal. The minimum quota for mainland beet sugar was less excessive than the industry had demanded, but it still exceeded the maximum annual sales of beet sugar in any prior year. Similar comments can be made about the quota for mainland cane sugar. One contemporary industry specialist observed that the quota was not intended to restrict production but, rather, to serve as "a check on further expansion" (Dalton p. 104). Besides the guarantees to the mainland, the constrained decision of Secretary Wallace to set 1931-1933 as the "most representative three years" resulted in apportioning the prorated shares by a standard that applied the historical low for Cuba and historical highs for Hawaii, Puerto Rico and the Philippines. The effect was to institutionalize the protectionist effects of the tariff increases of 1922 and 1930 on the market shares of these areas into the quota program (discussed above).

Table 2 permits comparison of actual deliveries with the quotas assigned. Considering either initial or final quotas, one observes that beet sugar quota was not binding for the first five years of the program. It was in deficit every year from 1935 to 1938. (It was not in deficit in 1934 only because of carryovers from the 1933 bumper crop.) The mainland cane sugar quota was binding, but only because producers in Louisiana and Florida increased production by 50 percent from 1933 to 1936. The mainland cane sugar producers managed to exceed their final quotas in increasing amounts from 1934 to 1936 without penalty. When the sugar law was revised in 1937, the distribution of quotas across supplier areas was similar in the original and revised law, except that mainland cane sugar received an increase in its basic quota after 1937 of about 70 percent, which in effect accommodated the expansion in violation of quotas from 1934 to 1936. So the 1934 and 1937 sugar acts, at least for the first several years of operation of the quota system, did not strictly serve as a "check on further expansion." Instead it granted a quota in excess of capacity in the beet sugar industry that encouraged expansion of beet sugar production capacity of at least 20-25 percent. It also accommodated the expansion of mainland cane sugar production by giving it a quota increase of about 70 percent. Once these quotas were met, application of the sugar assignment rules in

equations (1) and (2) protected mainland producers from the downside production risk of a further contraction of demand, but gave them a share in the upside risk. In the 1937 legislation, production floors were given also to the insular possessions (and the Philippines, which was transitioning into independence). A large downward shock would be born disproportionately by Cuba and other foreign suppliers.

Deficits and Quota Reallocations

The chronic deficits of the beet sugar industry point to an additional problem the AAA had to confront. It had to rely on the capacities of non-deficit supplier areas to contribute supply elasticity to the system in order to achieve the price stabilization objective. Yet the size of deficits and the capacities of non-deficit supplier areas to fill them were uncertain. Obtaining accurate forecasts and targeting outputs with considerable precision was important. Errors in the AAA's quota assignments could result in wide swings in price outcomes. There were two main sources of uncertainty. First, the AAA had to forecast the demand for sugar, *D*, for a given target price. From this *D*, the AAA was instructed to assign quotas to supplier areas using the rules reflected in equations (1) and (2). Second, within each supplier area, the AAA signed contracts with individual growers and processors to meet, but ideally not exceed, these quotas. To accommodate farmers' planning needs, quotas were announced each year before the beginning of the crop season. Yet weather and yield variability introduced uncertainty into end-of-crop-year supply outcomes, which might either exceed or fall short of expectations. Therefore, besides demand prediction errors and chronic deficits, there were possible errors in quota assignments among supplier areas and individual producers.

Observing the record of deficits and reallocations of deficits tells us something about how this problem was addressed. Figures 2A and 2B give two estimates of deficits and reallocations. To understand them, a little detail about the month-to-month operation of the program is useful. To reduce the impact of errors, the Secretary Wallace adopted a sequential quota-assignment decision process by which quotas were revised as more information became available. Administrators routinely announced mid-season revisions of its estimates of sugar demand and the crop estimates based on revised forecasts of quantities demanded or supplied. In a given year, initial quotas were announced in late

December or early January, but the demand estimates and quotas in a typical year might be revised two to four times, and the two most common reasons were modifications of the demand forecast or reallocations of supplier-areas deficits. Figure 3 summarizes the record of mid-season adjustments for each prewar year of operation of the program from 1934 to 1941. In Table 2 the "initial" and "final adjusted" quotas represent the initial and final officially announced quotas.

Figure 2B gives the difference between the actual deliveries and the initial quota from Table 2. Figure 2A gives the difference between the actual deliveries and the "entitled final quota" in Table 2. The "entitled final quota" is the quota implied from a strict application of the statutory assignment rules, using a revised final estimate of demand, *D*, that is, following equations (1) and (2) for 1934-1936, and the corresponding rules from the 1937 statute for 1937 to 1941, without taking account of deficits. The figures also give similar estimates for later years when the quota system was reestablished in 1948, after its wartime suspension, using the appropriate statutes. Negative values are deficits, and positive values are reallocations of deficits. Figure 2A, therefore, tells us something about how well supplier areas were prepared to meet quotas that would fulfill the rule-based entitlements of the price stabilization program, and which non-deficit supplier areas were relied upon for the deficit reallocations. Figure 2B tells us, among other things, about how responsive non-deficit supplier areas to the reallocation needs of the program relative to their initial quotas.

Several observations are noteworthy from Figure 2A. First, there were not one but two chronic deficit areas during the 1930s – mainland beet sugar and the Philippines. Second, all of the non-deficit suppliers could be called upon to fill some of the deficits at least some of the time. Of course, the size of the problem varied with demand and supply conditions – and each year of operation was in some way unique. In lean years, such as 1935, 1938 and 1940, there were few deficits or they small and easily handled. In 1938, a large share was left unfulfilled – an implicit downward demand revision. In more abundant years, such as 1936 (there weren't many), demand was underestimated, and upward revisions called upon all of the supplier areas to fill them. In 1937, the initial demand estimate was accurate, but a major revision had to be made for a larger-than-expected beet sugar deficit.

The years, 1939 and 1941, saw major positive demand shocks caused by the emerging conflict in Europe. In September 1939, Germany's invasion of Poland prompted the UK to hoard stores of sugar in anticipation of war and a repeat of shortages experienced during World War I. The price of sugar surged by 30 percent in the first week of September (see Figure 1), by early October, the Secretary Wallace suspended all sugar quotas for the remainder of the year. The "final adjusted quotas" in Table 2 for 1939 give the quotas in effect until the suspension, which indicate that mainland and insular possession producers mustered the resources to respond in a big way to the price incentive. That Cuba is seen, in the table, to have met its quota in the US market but not exceed it is misleading. Cuban exports to the United States actually exceeded contribution to the US market by 200,000 tons, according to Cuban export statistics, which were re-exported. The suspension of the quotas created the incentive. The law stipulated that, whenever Cuba's quota was not in effect, US tariff on Cuban sugar would rise from 0.9 cents per lb. to 1.5 cents per lb.

The second shock, in 1941, came with the escalation of war in Europe and increased global demand for sugar as with many other commodities. This time, Secretary Wallace did not suspend the quota. Instead, he tried to revise quotas aggressively ahead of the demand shock. The AAA demand estimate was increase every month between March and August. By the end of the crop year, the final demand "estimate" was 20 percent above the initial estimate. Actual deliveries were shy of the demand sought by the Secretary of Agriculture by 1 million tons. Using the statutory rules as a benchmark, all supplier areas were in deficit, given the sharp increase in the quotas, except for Cuba and foreign suppliers. But in this episode, the reallocations using our rule-based quota "entitlements" are not meaningful – because by October, the AAA demand estimates were not realistic. In this case, Figure 2B, which gives the contributions of supplier areas relative to initial quotas, is a more meaningful benchmark. Cuba contributed 930,000 tons more than its initial quota, and 760,000 tons more than it had averaged during the previous years of operation of the quota system – a 40 percent increase. By the end of 1941, Cuba's response was so effective that the US government entered negotiations to purchase the entire Cuban 1942 sugar crop. Cuban producers responded to the opportunity by producing 3.9 million

tons, which exceeded the 1941 crop by more than a million tons (Díaz Alvarez, pp. 938-39).

The tacit but significant role that Cuba played in the stabilization program is revealed in the events that led to the suspension of the program in 1941 and 1942. The reason for it is shown in Figure 4. Cuba stood out relative to the other participants in the program in two notable ways. First, it was the only major supplier area that saw a drastic reduction in its contribution to the U.S. market. Most of the drop took place before 1934, as a consequence of the increased sugar tariff. Second, even with a clearly permanent 50-percent reduction of its exports, few sugar mills were shut down, and there was no significant reduction in production capacity. The persistent excess production capacity in Cuba provided in effect a deep reservoir should a major positive shock to demand occur – as it did in 1941 and 1942. For most years of operation of the quota system prior to 1939, the Cuban reservoir was tapped only minimally. It was the exceptional year that demonstrated how Cuba stood ready to serve as a "producer of last resort" to stabilize the U.S. sugar market.

Things changed when the quota system was restored in 1948. Demand for sugar showed strong growth; but the beet sugar industry, the Philippines and Hawaii were in chronic deficit for years. Consequently, Cuba's capacity to fill deficits was tapped more substantively and on a regular basis (see Figure 2B).

Cuban Sugar Stabilization

Cuba's capacity to respond effectively to such a large positive demand shock depended on the large excess sugar production capacity observed in Figure 4. Why did Cuba maintain such excess capacity (or why was it willing to) especially when its exports under normal operation of the program were so much lower than capacity? My explanation consists of two parts. First, collective decision-making in Cuba, as the sugar crisis deepened, led to the adoption of controls in the 1930s that prevented the retirement of inefficient milling capacity. Second, the import quota coupled with a reduction in the tariff on Cuban sugar in the United States strengthened Cuba's political economic commitment to maximize its participation in the U.S. sugar program.

Figure 4 shows that Cuba retained excess capacity of about 100 percent of exports throughout the 1930s. It cannot be explained as simply a forecasting error. Cuban producers may have hoped vainly in a quick and complete recovery in the late 1920s. However, by 1930 or 1931 those hopes were not driving policy. By 1931, policy steps had been taken that artificially limited recovery to pre-1930 export levels, hoping to avert further losses of market share to beggar-thy-neighbor protectionism that was on the rise at that time. By 1931, Cuba had entered into two international agreements that together promised to restrict Cuban sugar production and exports to less that 80 percent of their 1929 levels. First, Cuban producers entered into (in fact, it led the negotiations for) an international sugar cartel from 1931 to 1935, which committed it to a fixed export quota not exceeding 1 million tons in markets other than the United States (Dye and Sicotte 2006). Second, they had committed to a "gentleman's agreement" with the major domestic sugar producers in the United States to limit its exports to the United States to 75 percent of its 1929 exports to the United States for a period of four years, if the domestic producers would halt any further increase in production (Pérez-Cisneros 1957. p. 28). The U.S. domestic producers did not honor the agreement (it clearly violated U.S. antitrust laws), but Cuba felt compelled, nonetheless, to stick to its end of the bargain. The reasons for this cannot be fully developed in the current paper. In brief, producers in Cuba perceived the U.S. sugar tariff as endogenous, and leading players in Cuba sugar policy believed that Cuba was seriously threatened with the possibility of continued tariff increases could continue to reduce their market access in the United States possibly even to nothing.

Compliance with these two commitments at the industry level to restrict production and exports required that the Cuban government impose controls on individual producers to prevent individual sugar mill operations from free-riding on the collective international agreements. Therefore, in 1930 and 1931, the Cuba government created two corporatist agencies to manage the national and international aspects of crop controls and the monitoring of the international agreements. These two agencies fully implemented internal production and export controls by assigning quotas for production for the production of sugarcane, raw sugar and refined sugar, and "identity certificates," that regulated how much could be sold in the U.S., other foreign, and internal markets.[7] These controls placed

[7] Cuban National Archives, Fondo ICEA; Braga Brothers Collection, R.G. 4, Series 10c.

rigid restrictions at all levels of intermediate and final production of sugar in Cuba, and enforcement of fixed production levels is known to have been effective.

When the U.S. Tariff Commission recommended the quota as a substitute for the tariff, the Cuban quota system had been in operation for two years, and the commissioners were familiar with it. As the possibility of a sugar quota in the United State began to be discussed, officials in the Cuban sugar control agencies, as well as most producers, supported it, believing that an import quota for Cuba could guarantee at least minimum access to the U.S. sugar market whereas continued endogenous tariff increases could very likely continue until sugar imports from Cuba were prohibitive.

Participation in the international cartel, export restriction to the United States, and the production controls, nonetheless, were controversial in the Cuban domestic political scene. In fact, the quota program probably would not have survived politically without combining crop restriction with a redistributive measure to prevent mass bankruptcy which otherwise threatened a large number of Cuban-owned sugar mills. The measures that were adopted to protect to national sugar producers included a moratorium on sugar mill debt repayment and a system of controls that protected inefficient mills (Dye and Sicotte 2006). About two-thirds of sugar milling capacity was owned by North American corporations, yet the mills that were most inefficient and at greatest risk of shakeout in the face of the permanent shock to sugar export demand were mostly Cuban-owned.

The protections to inefficient mills were in the form of quota assignments that had minimal transfer rights. Quota assignment rules in Cuba allocated quotas for production and exports to both US and non-US export markets in a *pro rata* manner, except for a guaranteed minimum to the smallest mills; production quotas were also assigned to growers of sugarcane which established rules about where they would grind. Transfers of quotas were limited. Restrictions made it such that quotas could only be exchanged locally (within a radius of about 30 km or so). But more important, any mill that ceased operations lost the right to future quota assignments.

Dye (2008) examines the effects of these institutional features of Cuban sugar controls more directly. Using data on the activities and performance of every mill that operated in Cuba during the period, I show that, despite wide disparities in technical vintages and production costs among mills, no mills exited after 1933, except for 9 mills

that later re-entered (see Table 3). The sum of the rated capacities of these mills is used to estimate aggregate milling in Figure 4. Despite the sharp drop in demand for Cuban sugar exports, the quota assignment rules prevented the rationalization of industry capacity and kept all mill establishments operating well below capacity. The slight decline in capacity, shown in Figure 3, came about primarily from exit that occurred before the 1933 Revolution.

The curious small rise in milling capacity after 1934, despite little recovery of exports, is explained by nationalist measures adopted after the Revolution of 1933 that encouraged the re-entry of inefficient, nationally-owned mills, by redistributing greater quota rights to smaller mills. The Revolution, more generally, brought major political changes that American onlookers, echoing New Deal rhetoric, referred to as the "New Cuba." The revolutionary government introduced a slate of decrees to institute labor reforms and modify sugar industry controls to meet the demands of workers mobilized during the crisis of the early 1930s. A most controversial law, decreed in November 1933, required that 50 percent of all jobs and 50 percent of all wages in any establishment should go to native Cubans. Other decrees included provisions for compulsory membership in labor unions, an eight-hour day, workers' illness and disability compensation and pensions, unemployment relief, and paid vacations.

Despite the proliferation of reformist decrees, hundreds of strikes, widespread violence, and seizures of property continued trouble the country and even escalate.[8] The revolutionary government found itself unable to suppress continued unrest. Its difficulties contributed to the rise of the emerging military strongman, Fulgencio Batista. The pacification that Colonel Batista achieved in the months to come depended on effective deployment of the military but also, in part, on his embrace of the revolutionary reform agenda. Most of the reforms initiated under the revolution were continued under his leadership. Moreover, subsequent decrees tended to extend the reforms in the populist spirit initiated by the Revolution. In the case of sugar regulations, measures were implemented to further assist smaller mills under the control system, which encouraged

[8] The US State Department counted 137 strikes in sugar mills between February 1933 and March 15, 1934; 36 mill seizures; 185 strikes in other industrial and commercial establishments, most of which occurred after September. Carr, 1996, pp. 138-40; Whitney, 2001, pp. 106-11; USNA R.G. 59 Decimal series 837.504/495, voluntary report by American Consul, Lee Blohm, June 5, 1934.

some reentry of smaller mills (as shown in Table 3), minimum wages, rights of permanency to tenant growers of sugarcane, and regulatory minimum payments to growers for sale of cane to sugar mills.[9]

The feasibility of these concessions to labor demands cannot be understood without highlighting a second feature of the U.S. sugar policy toward Cuba. As Cuba's role the U.S. Sugar Program was being molded in the Roosevelt administration from September1933 to May 1934, sugar interests in Cuba and officials in the State Department argued that the lost export volume Cuba suffered under the new quota regime, relative to its historical exports, would need to be combined with a reduction in the tariff if the policy was to be effective in restoring political stability in Cuba. The combination of the quota and the tariff reduction would create a price differential that effectively constituted a transfer of a portion of the rents of the U.S. sugar program to Cuba. It was argued that these rents were necessary to compensate for lost sales volume. Figure 5 demonstrates the logic. In the figure, S^{US} and D^{US} represent the supply and domestic demand for sugar in the Unites States, and imports from Cuba are represented by $q^{\text{Total}} - q^{US}$. If p^w is the price of sugar on the world market and t_o^C is the tariff on Cuban imports into the United States, then the market price of sugar in the United States is $p^w + t_o^C$ the market price of sugar in the United States. Now suppose a tariff-equivalent overall quantity restriction, q^{Total}, is substituted for a tariff, such as the market price in the United States does not change. If the tariff on Cuban sugar remains at t_o^C, then a per unit rent of t_o^C is appropriated by the U.S. government as customs payments for each pound of sugar imported from Cuba. However, if the tariff on Cuban sugar imports is now reduced to t_1^C, a portion of those rents, equal to $t_o^C - t_1^C$ per unit, is transferred to Cuba.

Roosevelt was on record in opposition to the sugar tariff because "under the heavy tariff on … sugar, the whole population is taxed in order to pay a subsidy to the beet sugar growers."[10] The President lowered the tariff on imports of Cuban sugar from 2 cents per lb. to 0.9 cents in two steps using two legislative mechanisms. First, he lowered the tariff to 1.5 cents under the flexible tariff powers of the Fordney-McCumber tariff of 1922,

[9] Díaz Alvarez, pp. 632-44; Zanetti Lecuona, 2004, pp. 147-80; USNA R.G. 59 Decimal series 837.504/456, "Cuban Labor Notes," Feb. 15, 1934, by American Consul, Lee Blohm.

[10] The quote is of Secretary of the Interior, Harold Ickes, describing the President's sentiments regarding the sugar tariff, quoted in Heston, 1975, p. 102, taken from Ickes, 1953, vol. 1, p. 147.

extended in Hawley-Smoot tariff act of 1930, on the recommendation of the Tariff Commission. Then he used another major plank of early New Deal legislation, the Reciprocal Trade Agreements Act to negotiate a revision of the trade reciprocity treaty between the United States and Cuba, the first reciprocal trade agreement under the 1934 legislation, signed on June 12, 1934 (Dalton 1937, pp. 252-53; Irwin 1998). The per unit transfer of rents to Cuba are visible in Figure 1 in the rise of price of Cuban sugar in NY net of duty (bold gray line) and price of Cuban sugar sold in London or on the world market.

In a well-known article, Krueger (1974) argues that quantity restrictions on trade often induce rent-seeking activities as different potential beneficiaries compete for a share of the restricted market. Rent-seeking can, of course, occur in many ways. In the case of this transfer of rents to Cuba, the benefits of higher net-of-duty prices went to the owners of sugar – sugar producers and cane growers, who were compensated by receive a share of the sugar produced. However, pacification of island was achieved only through legislation that raised the share of earnings that went to labor and to sugarcane growers. In a letter of June 1936 commenting on the effects that new legislation for minimum payments to growers would have, E. G. Miller, General Manager of the Compañía Atlántica del Golfo, complained that "the gross injustice of the colonos' proposal … is nothing but a thinly disguised confiscation," who noted that the profits demanded by growers under the proposed legislation, were double the operating profits of the company.[11] Similar comments were commonly made with regard to the concessions to labor. However, if the company and its growers had paid sugar duties to the United States at the old rate, no positive operating profits would be reported, based on a simple revision of the income statement included as an appendix to Miller's letter. In other words, the gains won by labor and sugarcane growers were, in effect, a capturing of rents transferred under the U.S. quota program.

One of the ironies of the new regime was that the sugar crop controls and governance structure was one of the few creations of the deposed Machado regime that survived the Revolution of 1933. As radicalized peasants' organizations seized land, and

[11] Braga Brothers Collection, R.G. 2, Confidential Letterbooks, vol. 3, folios 485-90, Letter from E.G. Miller, Vice President and General Manager of the Cía. Atlántica del Golfo, to J.J. Sample, of same company, Oct. 9, 1936.

sugar workers' syndicates seized and occupied sugar mills, representatives of the Cuban Sugar Mill Owners' Association, US interests, such as the American Sugar Refiners' Association, and various banker and broker interests in New York continued to press how important it was that the import quota be accompanied by a reduction of the tariff, and a widening of the differential. In the meantime, leaders of the New Cuba's reformist regimes saw the new differential as a resource that could be appropriated to fund continued transfers to popular constituents. The system of transfers, which also increased costs of sugar production, established a relationship of dependence upon the rents received from the American differential, therefore a commitment to the continuation of the quota system. At the same time, the rules for allocating the quotas in Cuba kept excess capacity at a level that made Cuba a "producer of last resort" able to respond swiftly to a sudden positive demand shock.

References Cited

Ballinger, Roy, *A History of Sugar Marketing*, U.S. Dept. of Agriculture, Economic Research Service, Agricultural Report No. 197, February 1971.

Carr, Barry, "Mill Occupations and Soviets: The Mobilisation of Sugar Workers in Cuba 1917-1933," *Journal of Latin American Studies* 28 (1996): 129-58.

Dalton, John, *Sugar: A Case Study of Government Control.* NY: Macmillan, 1937.

Díaz Alvarez, José, dir. Grupo de Investigaciones Económicas, *Un estudio sobre Cuba* (Univ of Miami Press, 1963).

Dye, Alan, *Cuban Sugar in the Age of Mass Production: Technology and the Economics of the Sugar* Central*, 1899-1929.* Stanford Univ Press, 1998.

Dye and Sicotte, "How Brinkmanship Saved Chadbourne: Credibility and the International Sugar Agreement of 1931." *Explorations in Economic History* 43 (2006): 223-56.

Dye, Alan, "Cleansing Under the Quota: The Defense and Survival of Sugar Mills in 1930s Cuba," Working Paper, 2008.

Foreign Policy Association, Commission on Cuban Affairs, *Problems of the New Cuba* (Foreign Policy Association, 1935)

Gellman, Irwin, *Roosevelt and Batista: Good Neighbor Policy in Cuba, 1933-1945.* University of New Mexico Press, 1973.

Heston, Thomas, "Sweet Subsidy: The Economic and Diplomatic Effects of the U.S. Sugar Acts—1934-1974." Ph.D. diss., Case Western Reserve University, 1975.

Ickes, Harold, *The Secret Diary of Harold L. Ickes*. Vol. 1, *The First Thousand Days, 1933-1936*.

Irwin, Douglas, "From Smoot-Hawley to Reciprocal Trade Agreements: Changing the Course of U.S. Trade Policy in the 1930s." In Michael Bordo, Claudia Goldin and Eugene White, eds., *The Defining Moment: The Great Depression in the American Economy in the Twentieth Century.* University of Chicago Press, 1998.

Kindleberger, Charles, *The World in Depression, 1929-1939.* Berkeley: Univ of California Press, 1973.

Krueger, Anne, "The Political Economy of the Rent-Seeking Society," *American Economic Review* 64.3 (1974): 291-303.

Krueger, Anne, "The Political Economy of Controls: American Sugar," in Lee Alston, Thráinn Eggertsson, and Douglass North, eds., *Empirical Studies in Institutional Change.* Cambridge Univ Press, 1996.

Libecap, Gary, "The Great Depression and the Regulating State: Federal Government Regulation of Agriculture 1884-1970." In Michael Bordo, Claudia Goldin and Eugene White, eds., *The Defining Moment: The Great Depression in the American Economy in the Twentieth Century*. University of Chicago Press, 1998.

Pérez-Cisneros, Enrique, *Cuba y el mercado azucarero mundial.* Havana: Úcar, García, 1957.

Perkins, Van L., "The AAA and the Politics of Agriculture: Agricultural Policy Formulation in the Fall of 1933," *Agricultural History* 39.4 (1965): 220-229.

Tapp, J.W., and E.W. Braun, "Marketing Agreements under the Agricultural Adjustment Act," *Journal of Farm Economics* 16.1 (1934), 99-109.

Whitney, Robert, *State and Revolution in Cuba: Mass Mobilization and Political Change, 1920-1940."* Chapel Hill: Univ of North Carolina Press, 2001.

Wolf, Arthur, "The United States Sugar Policy and Its Impact upon Cuba: A Reappraisal, Ph.D. diss., Univ of Michigan, 1958.

Zanetti Lecuona, Oscar, *Las manos en el dulce.* Havana: Ciencias Sociales, 2004.

Table 1. US Sugar Consumption by Supplier Area Contribution
(000s of tons of 2000 lbs.)

	Mainland		Insular Possessions			Foreign		
	Beet	**Cane**	**Hawaii**	**Puerto Rico**	**Philip-pines**	**Cuba**	**Other**	**Total**
1900	92	312	252	36	25	353	1343	2413
1905	335	390	416	136	39	1029	773	3118
1910	546	355	555	285	88	1755	205	3789
1915	935	139	640	294	163	2392	155	4718
1920	1165	176	550	413	146	2881	993	6337
1925	977	142	755	600	493	3923	33	6934
1929	1089	218	882	507	711	4149	28	7587
1930	1293	215	868	809	794	2645	53	6683
1931	1343	206	998	796	872	2482	28	6727
1932	1319	160	1048	940	1028	1791	12	6303
1933	1366	315	990	793	1249	1573	40	6331
1934	1562	268	948	807	1088	1866	30	6574
1935	1478	319	927	793	917	1830	11	6277
1936	1364	409	1033	907	985	2102	29	6833
1937	1245	491	985	896	991	2155	89	6860
1938	1448	449	906	815	981	1941	75	6619
1939	1809	587	966	1126	980	1930	62	7466
1940	1550	406	941	798	981	1750	17	6443
1941	1952	411	903	993	855	2700	190	8009
Growth index, 1929 = 100								
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	118.7	98.6	98.4	159.6	111.7	63.8	189.3	88.1
1931	123.3	94.5	113.2	157.0	122.6	59.8	100.0	88.7
1932	121.1	73.4	118.8	185.4	144.6	43.2	42.9	83.1
1933	125.4	144.5	112.2	156.4	175.7	37.9	142.9	83.4
1934	143.4	122.9	107.5	159.2	153.0	45.0	107.1	86.6
1935	135.7	146.3	105.1	156.4	129.0	44.1	39.3	82.7
1936	125.3	187.6	117.1	178.9	138.5	50.7	103.6	90.1
1937	114.3	225.2	111.7	176.7	139.4	51.9	317.9	90.4
1938	133.0	206.0	102.7	160.7	138.0	46.8	267.9	87.2
1939	166.1	269.3	109.5	222.1	137.8	46.5	221.4	98.4
1940	142.3	186.2	106.7	157.4	138.0	42.2	60.7	84.9
1941	179.2	188.5	102.4	195.9	120.3	65.1	678.6	105.6

Data source: US Congress, Committee on Agriculture "History and Operations of the U.S. Sugar Program," Washington, DC, GPO, 1962.

Table 2. Sugar Quotas under the U.S. Sugar Program
(000s of tons of 2000 lbs.)

	1934	1935	1936	1937	1938	1939	1940	1941
US Mainland Beet Sugar								
Initial AAA quota	1556	1550	1550	1633	1591	1585	1560	1550
Entitled final quota	1556	1550	1643	1633	1572	1567	1550	2088
Final adjusted AAA quota	1556	1550	1342	1417	1584	1567	1550	2230
Actual deliveries	1562	1478	1364	1245	1448	1809	1550	1952
US Mainland Cane Sugar								
Initial AAA quota	261	260	260	443	431	430	423	420
Entitled final quota	261	260	276	443	426	425	420	566
Final adjusted AAA quota	261	260	392	472	429	425	420	445
Actual deliveries	268	319	409	491	449	587	406	411
Hawaii								
Initial AAA quota	917	895	941	989	963	959	944	938
Entitled final quota	934	896	982	989	952	948	938	1264
Final adjusted AAA quota	916	926	1033	984	922	948	938	994
Actual deliveries	948	927	1033	985	906	966	941	903
Puerto Rico								
Initial AAA quota	803	784	801	841	819	816	803	798
Entitled final quota	811	777	852	841	810	807	798	1075
Final adjusted AAA quota	803	788	909	897	816	807	798	1011
Actual deliveries	807	793	907	896	815	1126	798	993
Philippines								
Initial AAA quota	1015	991	998	1085	1057	1053	1036	1007
Entitled final quota	1010	968	1061	1085	1045	1041	956	1387
Final adjusted AAA quota	1015	899	1001	998	991	1041	982	983
Actual deliveries	1088	917	985	991	981	980	981	855
Cuba								
Initial AAA quota	1902	1857	1853	2015	1963	1954	1924	1869
Entitled final quota	1874	1797	1969	2014	1939	1932	1775	2575
Final adjusted AAA quota	1902	1822	2103	2149	1954	1932	1750	2887
Actual deliveries	1866	1830	2102	2155	1941	1930	1750	2700
Full-duty Foreign								
Initial AAA quota	17	17	26	28	27	27	27	26
Entitled final quota	26	25	27	28	27	27	25	36
Final adjusted AAA quota	17	25	29	115	81	27	24	440
Actual deliveries	30	11	29	89	75	62	17	190
Total consumption and AAA demand estimates								
initial AAA estimate	6476	6359	6434	7042	6862	6832	6725	6617
final AAA estimate	6475	6276	6813	7043	6781	6755	6471	9003
final (actual)	6574	6277	6833	6860	6619	7466	6443	8009

Data source: Willett & Gray, *Weekly Statistical Sugar Trade Journal*, *passim*.

Notes: The 1937 legislative revision of the quotas was not finalized until September 9, 1937. Initial quotas based on the 1934 legislation were announced, but the 1937 quotas appear to have been anticipated. The table uses the quotas based on the 1937 revision. The "final adjusted quotas" for 1939 are for September, after which the program was suspended.

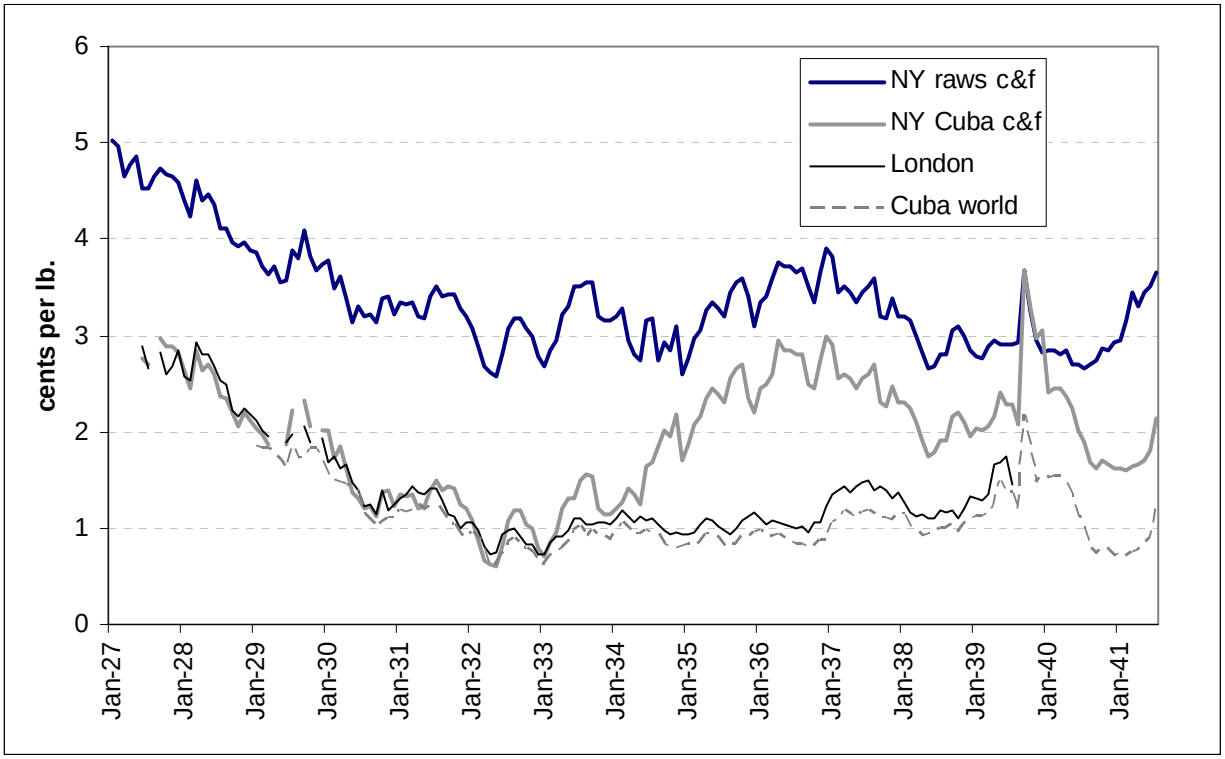
Table 3. Entry, Exit, Temporary Closure and Reopening of Sugar Mills in Cuba

(no. of mills)

year	entries	exits	temp. close	reopen	year	entries	exits	temp. close	reopen
1920	1	-5	-1	0	1930	0	-1	-6	0
1921	5	-1	0	1	1931	0	-6	-13	3
1922	7	-11	-6	0	1932	0	-2	-8	3
1923	1	-8	-3	4	1933	0	-1	-13	6
1924	1	-2	-4	3	1934	0	0	-4	14
1925	3	-2	-3	5	1935	0	0	-5	3
1926	0	-4	-4	1	1936	0	0	0	13
1927	1	-3	-1	4	1937	0	0	0	11
1928	0	-7	0	2	1938	0	0	0	1
1929	0	-3	-7	1	1939	0	0	-1	0

Source: Rep. of Cuba, Sec. de Agriucultura, Comercio y Trabajo, *Memoria de la zafra*, annual series, 1919-1939.

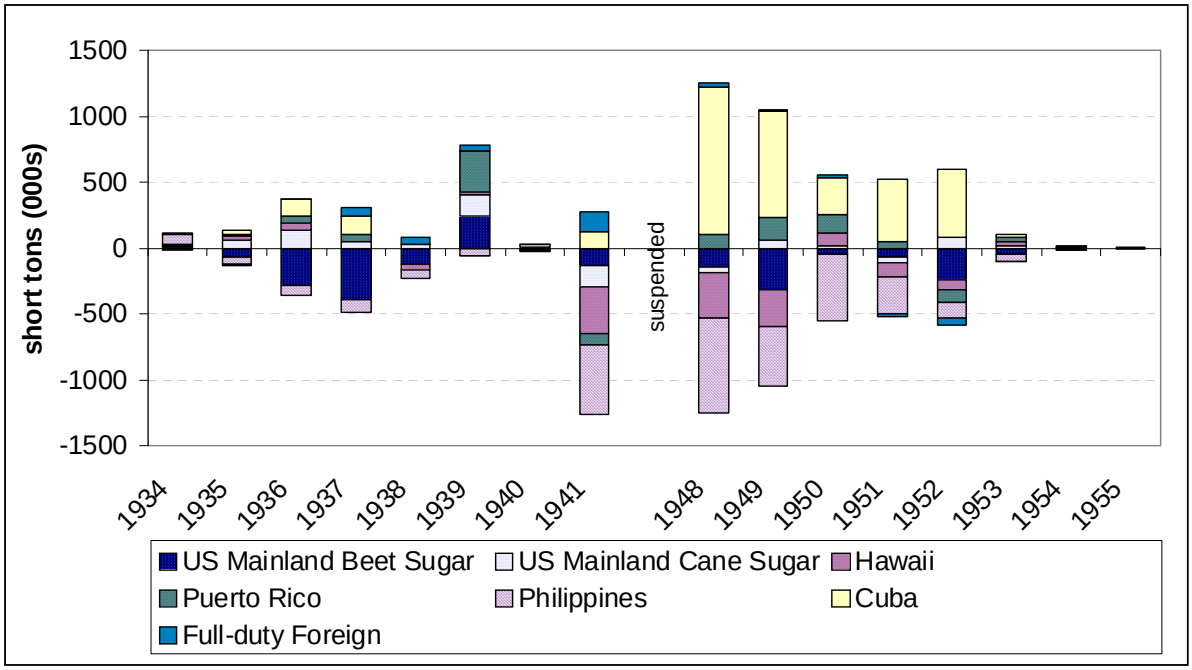
Figure 1. Prices of Raw Sugar, NY, London and Cuba



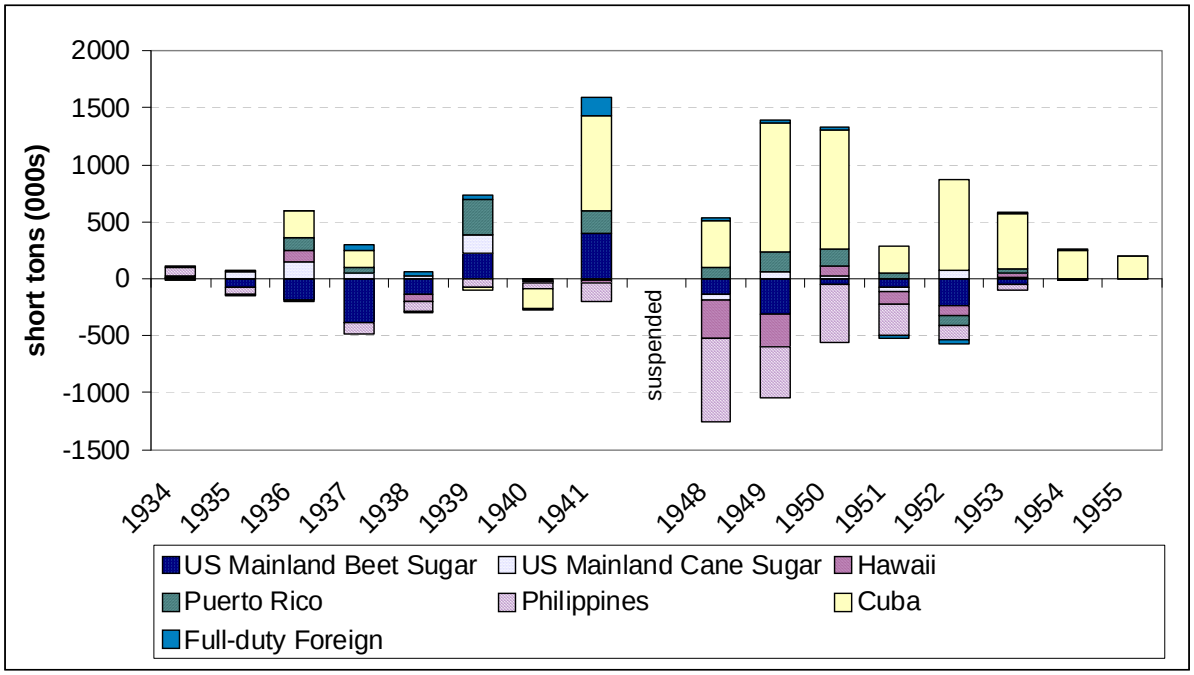
Sources: *Journal of Commerce*, *passim*; Willett and Gray, *Weekly Statistical Sugar Trade Journal*, *passim*; USDA Agricultural Stabilization and Conservation Service, *Sugar Statistics and Related Data*, Statistical Bulletin 293, Feb. 1970, pp. 144-45.

Figure 2. Quota Deficits and Reallocations of Deficits

Panel A. Actual deliveries minus rule-based quotas using final demand forecast

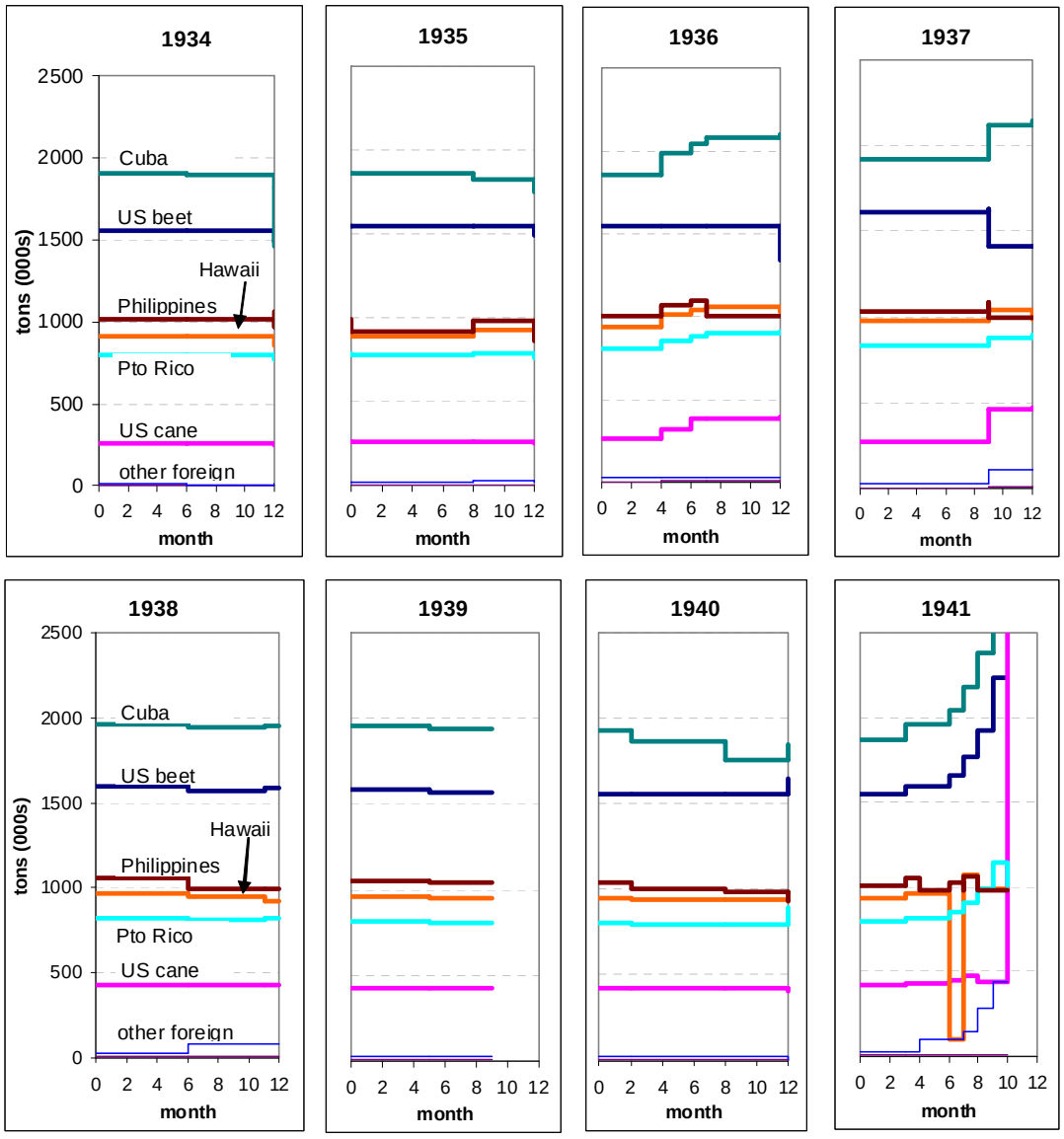


Panel B. Actual deliveries minus rule-based quotas using initial demand forecast



Source: Author's calculations using data from Willett & Gray, *Weekly Statistical Sugar Trade Journal*, *passim* 1934-1956.

Figure 3. Mid-Season Revisions to Quota Assignments, 1934-1941



Source: Author's elaboration based on data from Willett and Gray. *Weekly Statistical Sugar Trade Journal*, *passim* 1934-1941.

Figure 4. Production and Grinding Capacity in Cuba, US Mainland and Puerto Rico

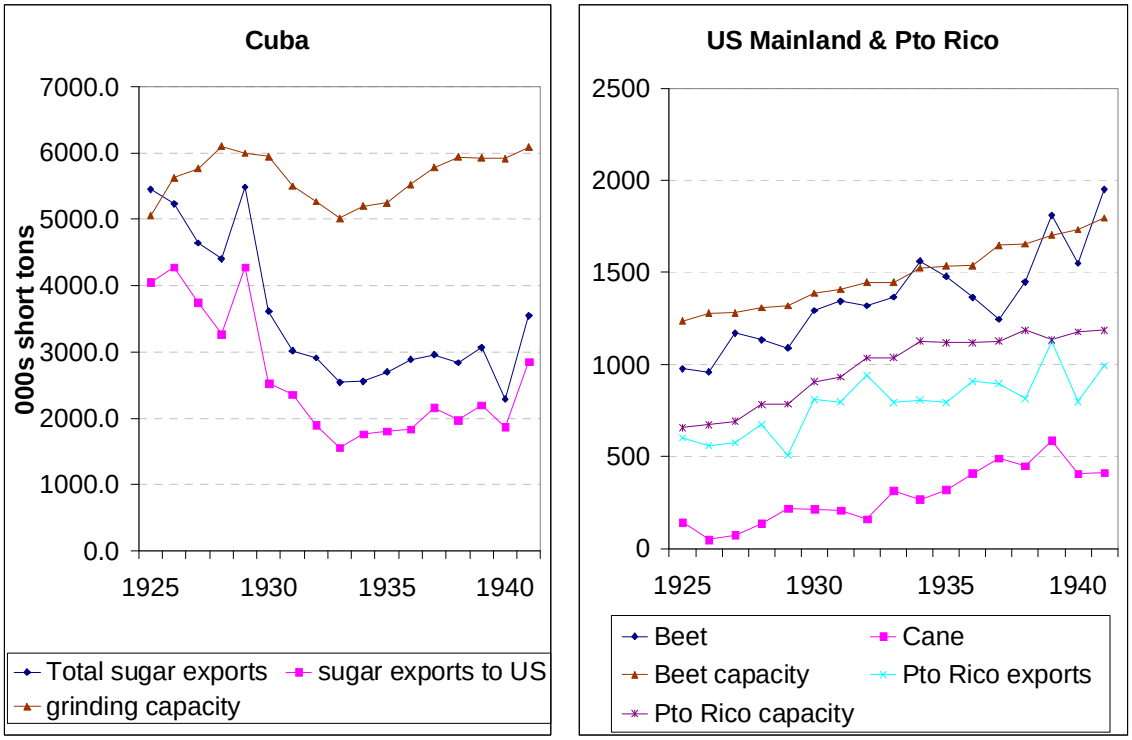


Figure 5. Quota Rent Transfers from the United States to Cuba