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An Economic History of Twentieth-Century Latin America

Volume 1

The Export Age: The Latin American Economies in the Late Nineteenth and Early Twentieth Centuries

Edited by

Enrique Cárdenas
Professor of Economics and Rector
Universidad de las Américas-Puebla

José Antonio Ocampo
Executive Secretary
United Nations Economic Commission for Latin America and the Caribbean (CEPAL/ECLAC)

and

Rosemary Thorp
Reader in the Economics of Latin America
St Antony's College
Oxford

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Alteration, Crisis and Adjustment in the Cuban Export Economy, 1898–1939*

Antonio Santamaría García

'Without industry there is no nation.
Without sugar there is no country.'
(Cuban saying)

Introduction

This chapter focuses on the analysis of the period we have called the years of 'alteration, crisis and adjustment' in the Cuban economy. Paradoxically, the interwar period is one of the least-studied of the island's history and perhaps the most decisive to understand the country's later evolution. Cuba was one of the countries most affected by the 1930s crisis because of its dependency on the production and export of sugar, mainly to the USA. Nevertheless, this dependency was maintained long after the depression had passed. Authors such as Maddison (1988), Díaz-Alejandro (1989) and Zanetti (1983) point out that the island did not undergo a process of diversification as occurred elsewhere. The link with the US market since independence in 1898, and reinforced during the Great War, was, they argued, largely to blame. We take a different line. We will try to prove that the adjustment of the sugar sector to post-First World War market changes caused a structural crisis in the economic and sociopolitical system of the island. At the same time, it provided the means to confront this crisis, a thesis which involves approaching the problem from the supply side and from a comparative perspective.

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Our thesis offers elements to explain the peculiarity of the Cuban economy and its comparative evolution. Before the interwar period, it presented a level of development (per capita GDP, alphabetization or infant mortality rates) similar to that of the most diversified economies in Latin America and, at the same time, degrees of dependency on foreign trade, on a single product (sugar) and a single buyer (USA) which only could be compared with the less-developed countries in the region. This distinctiveness was maintained after the 1930s crisis (see Bulmer-Thomas, 1994, pp. 59 and 441), in our opinion because it was the best adjustment option to the changes in the world economic system.

The Great War resulted in a big increase in Cuban sugar production. This increase continued in the 1920s when world supply recovered. We think the increase was a direct consequence of the way in which the sugar industry responded to the reduction in the old continent production during the war, during what we are calling the period of alteration of the island's export economy. The market was rapidly saturated and prices began to fall prior to the 1930s crisis; consequently, the crisis occurred at a time when the Cuban economy was very dependent on the external sector. However, this was the necessary but not sufficient condition for the absence of structural change after the depression. The sufficient condition was the sugar industry's adjustment, allowing Cuba to reenter the world market as an exporting economy in a better situation than that of other competitors, to regain a growth rate similar to that of the most developed countries in Latin America and to restore the internal sociopolitical order, which had been destabilized by conflicts since the beginning of the 1920s, culminating in a revolutionary uprising in 1933.

Growth: from independence to the First World War, 1898–1913

No one would question the existence of a direct link between Cuba's independence and the increase in the supply of sugar, or that access to the US market was an underlying issue. Although it is difficult to place precise dates on the economy's evolution, it is fair to say that by the end of the 1830s, when the first railway was inaugurated, the island had become specialized in exporting sugar.[1] In 1847, 50 per cent of Cuban sugar was sold to North America and after 1877 very rarely less than 80 per cent. US demand was concentrated on raw sugar to feed its own refineries. From the 1860s onwards, island *ingenios* concentrated on this product. In Santamaría (1997b) we demonstrated that the commercial relationship with the USA was accompanied by a strong price convergence that was altered by the crisis of 1882–83 which depressed the price of sugar and reduced its buying power by 69 per cent in the next two decades. We also showed that Spanish policy was consistent with these circumstances. Indeed, two agreements were signed to facilitate Cuban–US trade. However, the problem remained unsolved, and in the middle of the 1890s a very high *zafra* coincided with renewed deflation and an increase in North American tariff duties, especially after the last of the agreements was concluded in 1894.[2]

In the nineteenth century, and especially in its second half, the modernization of the Cuban sugar industry resulted in its total mechanization. This was relatively slow and was carried out in order to maintain competitiveness in the face of the increase in world supply, while optimizing the allocation of resources in response to external dmand. Oversupply, caused by the development and protection of European sugar beet sector, which in the final decades of the last century was produced in greater volumes than sugarcane, resulted in falling prices. This led to the gradual concentration of Cuban exports to the USA, due to the closure of former European continental markets, and the consequent specialization in raw sugar production. The allocation of resources also determined certain distinctive features in the island *ingenios* in comparison to those of other producers. Until the last third of the nineteenth century, most sugar factories in the West Indies employed slave labour. When international pressure to abolish the slave trade, and finally slavery itself, prevented the continued use of this form of exploitation, the solution adopted in Cuba was to initiate a process of vertical decentralization which did not occur in other places. Indeed, labour was the scarcest factor of production on the island and alternatives such as the importation of temporary workers from Yucatán or China had not been overly successful.[3] There was a break with the traditional agro-industrial integration of the *ingenio* and cultivation was left in the hands of *colonos* (more or less independent cane growers), who rapidly satisfied most of the demand for raw material in the industry.[4] In contrast, the relative abundance of cane, owing to the ideal adaptation of this plant to Cuban soil, resulted in the introduction of high-yielding large-scale production technology, saving work and energy, and causing a parallel process of horizontal concentration known as *centralizacion*.[5]

Sugar manufacture requires continuous-process technologies to achieve economies of scale, and reducing costs is essentially a question of organization: of an optima coordination between the various parts of the productive chain, both agrarian and industrial, to ensure that there is a supply of cane in sufficient quantities and of the highest quality, and an uninterrupted flow of inputs within the mill. The *colono* system at first caused difficulties with this coordination, since it involved giving up, or at least sharing, control of the raw material with the farmer. This was solved by allocating to the *centrales* vast tracts of lands and private rail networks which allowed them a monopsony situation *vis-á-vis* the *colonos*. Finally, Dye (1998) has shown that the coordination of this complex organizational system had adjustment costs which translated into the underutilization of the optimum capacity of the mills for several years after their construction, and in Santamaría (1995b) we proved the same occurred after a remodelling to amplify the productive apparatus of a factory.[6]

We have discussed the workings of the process of sugar production at length because it is essential to understanding the supply-side story of the periods of alteration, crisis and adjustment in the Cuban exporting economy. Further, this discussion allows us to understand the reason why after 1890, with the abolition of slavery (1886), when many *ingenios* were transformed into *centrales* and *colonos* grew most of the cane, production increased slightly and was more than 30 per cent higher than the averages for the 1880s.[7] During a deflationary period, and in a context of cost reduction through economies of scale, the existence of the USA as a ready market, and the possibility of establishing trade agreements which would lead to reductions in that country's tariffs, the benefits of independence were obvious. In 1902, following North American intervention in the Spanish–Cuban War, the Republic of Cuba came into being. One of its first sovereign acts was the signing of the Reciprocal Trade Treaty, which reduced the tariff on island sugar exported to the USA by 20 per cent in exchange for a reduction in its import duties by between 20 and 40 per cent. This treaty, along with the Platt Amendment which allowed armed US intervention in the country, constituted the pillars on which the economic and sociopolitical system rested in Cuba.[8]

After 1898 a new legal framework was also established to facilitate the growth of sugar supply. Because land and rail were the key elements in the organization of the productive system, it is not a coincidence that the US Government of Occupation's most important laws should be to regulate the demarcation and division of communal lands and to liberalize the laying of railtracks – to open a railway all that was needed was to register with the National Commission of Railways. The new institutional framework provided the incentives for a territorial widening of the industry. In the nineteenth century, *ingenios* were concentrated in the Western half of Cuba, whereas the Eastern half was isolated, underpopulated and underdeveloped, and the Spanish government failed in its efforts to lay a railtrack which would cross the length of the island and overcome the problem of isolation. An economic reason was probably needed; that reason was sugar, but in order to open new areas for cultivation a market was necessary and this did not happen until independence. After 1898, the track was built in only two years – 1900–1902 – and modern *centrales* were founded in the East where virgin lands meant that in a short time the production of sugar there was greater than in the West.[9]

With a rail line which crossed the length of the Western half of Cuba, with branches extending to the ports in the North and South, together with the large North American investments on the island before the beginning of the First World War, mills stayed almost entirely in the hands of local capital.[10] Apart from this significant investment, another factor which was essential in the territorial integration of the country and in the commercial exploitation of the cane resources in the Eastern provinces was the great contribution to Cuban

economic growth made by both independence and the establishment of special trade relations between Havana and Washington. Without taking into consideration the opportunities for increasing sugar production given the availability of the US market and the effect that the reduction in their tariff duty had on the price, with the new tariff alone the island earned around US\$115 million more for its *zafra* between 1903 and 1913 than would have been the case without the reduction. This sum amounted to 3.6 per cent of the total value of nominal income in that same period of time. Real income per capita, in turn, increased at nearly 4 per cent a year.[11] The debate over whether the Reciprocal Trade Treaty caused or increased the structural deformity of the Cuban economy has until now been conducted in imprecise terms and has generally been ideologically prejudiced. Until we have studies which take the question to a more scientific level we will limit ourselves to highlighting some obvious issues. First, it is clear that the treaty consolidated the pre-existing mono-producer and mono-exporter structure. However, this was not so much the cause of independence but its economic reason. Secondly, the agreement jeopardized opportunities for diversification. But at the beginning of the century economic specialization was probably the best option for the development of countries such as Cuba and, surely, the only way to attract necessary investment. Finally, we have no basis for arguing that the lack of specialization would have led to more balanced growth. On the contrary, studies show that the diversification of Latin American economies was the result of the multiplier effects of the external sector during the period of upward movement in the cycle of primary-exporting production, and also of the response to the crisis in that cycle in each case.

Alteration (1914–25): from the First World War to the end of the sugar boom

With an expanding market and all of its productive capacity now free, Cuban sugar supply grew by an annual rate of 18 per cent between 1900 and 1913, rising out of step with North American demand (see Figure 10.1). The alternative in a situation such as this would have been to reduce the production or to look for new customers; however, the First World War eliminated the problem and replaced it with an urgent need to increase export due to the contraction of European supply. The island became the Allies' supplier of sugar, especially after the USA joined the war in 1917 and began to regulate trade. The way in which the sector responded to the new incentive of demand was similar to that observed in previous stages: by building 35 factories and, primarily, by increasing output per mill from 147 to 205 tons between 1913 and 1919. This was achieved by acquiring more land and laying more railways – in 1913 there were 170000 hectares and 4500km. respectively; by 1919, 270000

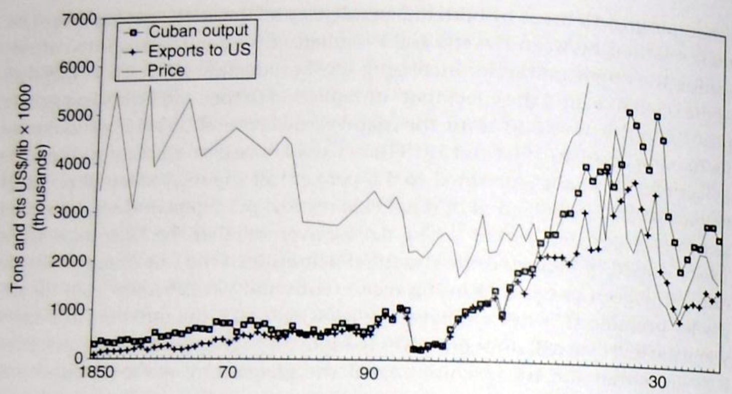

Figure 10.1 Cuban sugar: output, exports to the USA and price of raw sugar, 1850–1939[a]

[a] The price corresponding to 1920 – 11.95 cts/lb – is not shown due to its extreme value.

Sources: SACT (1903–36) and CEF (1937–40).

and 11 200. Finally, the endemic problem of labour shortage at harvest time was solved by importing the workforce from other West Indian islands.[12]

The speed of sugar expansion during the First World War altered three basic elements of the Cuban economic and export system, as well as its productive organization. First, the growth in supply became totally detached from US demand; second, the process of renewal of capital (vintage-capital) was interrupted.[13] Third, the sector had remained in the hands of local owners and the relative slowness with which it was modernized allowed it to be self-financing, but the urgent need to produce more sugar during the war resulted in a rapid concentration and modernization of the structure of ownership in order to facilitate entry of the necessary investment. Control moved away from industry towards financial capital, especially that of US origin.[14] The alteration of these elements continued on an even greater scale during the postwar period when the market situation varied radically. In 1919 Washington stopped regulating sugar trade, and the price increased from 5.96 to 11.95 cts/lb average between 1919 and 1920. Inflation, however, was caused by a mistaken perception of a supply shortage. Inevitably, a sudden deflation followed, lowering the price to 3.1 cts/lb in 1921, with serious consequences for the sugar sector and the Cuban economy. When prices rose, many producers obtained loans on futures pawned at an average of 10 cts/lb. They were unable to pay them back when they had to sell at 3.1 cts, and they lost their properties. Generally, these producers had only started to invest in the business in the war years or were simple speculators. Banks and financial groups who acquired their industrial and/or agricultural

companies by means of mortgage auctions also supported many enterprises experiencing difficulties with new injections of capital. Amongst these institutions the National City Bank of New York stood out. The banks and financial groups' intervention was motivated by an attempt to rescue the loans and investments they had made during the conflict, although they were mistaken in their perception of the market trend.[15]

The intervention of financial capital avoided the bankruptcy of many mills which would otherwise have stopped grinding, so that the productive capacity of the sector was not reduced. This is important, since what caused the crisis of 1920–21 was a process of worldwide economic adjustment due to the excess of sugar induced by the start of recovery in the belligerent countries and the protectionism now faced by the producers who had supplied their markets during the war, with a consequent fall in prices. For Cuba the most serious aspect was the increase in the US tariff from 1 to 1.6 cts/lb. These factors undermined the pillars on which the island economy and sociopolitical system rested in 1898 – namely, sugar production for export to the USA with a preferential tariff (see Santamaría and Naranjo, 1999, p. 243).

In the crisis of 1920–21 we can also find the precedents of the depression of 1930 and of the measures which would allow Cuba to withstand it. The key element here was state intervention in the regulation of the industry, to which end the Financial Sugar Commission (FSC) was established, with the responsibilities for selling the *zafra* if 70 per cent of the mill's owners were agreed, and the signing of an agreement with the other US suppliers. North American beet producers, who were most affected by the deflation since their production costs were higher, suggested to Cubans that they should exert pressure on Congress to reduce the tariff in exchange for a decrease of their exports to the USA to 2.5 million tons. Meanwhile, several mill-owning US firms on the island founded the Sugar Export Co. They rejected the aforementioned proposal and also the idea that the FSC should be in charge of selling the *zafra*. Instead, they bought 500 000 tons from the 1920 stock, which they initially intended to send to Europe but eventually placed in New York. Other Cuban sugar producers were at first in favour of limiting supply, but later they too opted for the same strategy. As a result, exports grew between 1921 and 1922 to over 2 million tons, of which 1.6 were destined for the USA. It is also noteworthy that this increase did not correspond to production, which had remained stable, rising in 1925 to more than one million tons in respect of 1924.

In Santamaría (1995b) we showed that Cuban mills profited from a very elastic section in the demand curve for sugar, which allowed them to increase their exports in 1922. Significantly, however, the rise in the *zafra* in 1925 is not explained from the demand side. US consumption and world imports were at this time at levels similar to those of 1922; in fact, market growth had reached structural limits. Furthermore, comparatively, the norm for other producers was a sustained increase in production between 1920 and 1925.[16] The sudden rise in the island's production must therefore be explained from the supply side, and by analysing the postwar period in the light of the logic of the industry's growth. Indeed, as we will see below, such an analysis is essential to understanding the preservation of the economic system based on sugar exports after the 1930 crisis. Nevertheless, and even though it may seem contradictory, before explaining this phenomenon, we must study its outcome.

In the introduction we stated that Cuba did not undergo a process of diversification similar to that which occurred in other Latin American countries as a result of the Great War. In general, that event gave rise to increases in exports, but reduced imports, favouring diversification. The stimulus to this on the island, where import supply was guaranteed by USA, did not happen in the same way, and after 1919, because sugar production did not decrease so as to leave resources for other activities, again the situation did not change.[17] The GDP estimates are constructed with figures heavily dependent on the evolution of the external sector, and are therefore not reliable as a measure of diversification. In 1913 exports appear to have represented 44 per cent of income; 66 per cent in 1919, and 55 per cent by 1924. In countries such as Chile or Argentina the per centage was lower – 11–15 per cent. Meanwhile, the proportion of industrial output in Argentina's GDP increased from 13 per cent to 17 and 18 per cent in this same period; and in Chile it surpassed 20 per cent by the mid-1920s exceeding exports in value.

For Cuba, indications such as the employment trend in each sector and the conclusions of Marqués (1998) show that the lack of structural change indicated in the income estimates reflect the reality. The war and the postwar period therefore reinforced the dependency of the island's economy on sugar and also on the US market,[18] in spite of the fact that in 1921, due to this double dependency, the Cuban economic system had shown signs of a structural crisis caused by the excess of supply of international sugar and the increase in the North American tariff.

Rising sugar exports from 1922 onwards and production in 1925 had counter-productive effects. In the medium and long term it worsened the structural problems of the Cuban economy, and in the short term the opportunity cost of this strategy was also negative. The following regression equation shows that the main factor determining the price between 1920 and 1924 was the tariff:[19]

$$\begin{array}{l} P = 3.49T - 0.58X - 0.20A + 1.78R + 56.29D20 \\ \quad (2.0) \quad (-3.6) \quad (-4.2) \quad (1.9) \quad (2.7) \\ N = 24;\ R^2 = \text{adjusted } 0.71;\ SE = 19.23;\ DW = 2.52;\ F = 12.59;\ PV = 0.0000 \end{array}$$

where P is the percentage increase in the average year-on-year value of Cuban raw sugar in New York; X and R, the island sugar sold and the *per capita* income

in the USA; the percentage which the North American tariff represented in this value, and T and $D20$, dummy variables to capture the effect of time – calculated via the rate of increase in price – and the alterations which the market underwent in 1920 due to other factors. According to the equation, *ceteris paribus*, and except in 1920, when other factors were of primary importance, the 500 000 tons sold in New York by the Sugar Export Co. depressed the price by 13 per cent. In response, the USA raised the tariff from 1.6 to 1.76 cts/lb; in other words, an increase of 0.76 cts in respect of the 1920 level, which alone caused a deflation of 50 per cent.

It was to be expected that an increase in Cuban sugar exports would have a negative opportunity cost in the short term, since the end of this course of action was to carry out dumping to eliminate competition and maintain the market achieved during the war. The financial backing from the USA for the island's industry in 1921 allowed it to happen, and further advantage was gained from a temporary cutback in world supply and the following price rise after 1922, due to the crisis in the Rhine which curbed the recuperation of European production, and to a *mosaico* plague which devastated many sugar-cane plantations in Puerto Rico and the North American South.[20]

However, as can be deduced from the previous equation, it was foreseeable that protectionism would rule out the success of dumping. Moreover, it would seem that this situation had a harmful effect on the banks' calculations of the market trend: as such, they prevented Cuban mills in financial difficulties from stopping grinding in 1921. Cleveland and Huertas *et al.* (1985) prove that this was what happened in the most important case, the National City Bank – it eventually controlled 37 factories, which produced 25 per cent of the *zafra* in 1927. In effect, the island sugar producers knew in 1924 that with the end of the exceptional conditions of the last triennium, European and US industry would again grow and depress the price. The curious thing is that they then decided to increase their own supply by 1 million tons, further saturating the market and worsening the deflation to the point that historiography considers 1925 as the date marking the end of the upward cycle in sugar production.[21] It was not necessary to continue dumping, since the maintenance or raising of the level of exports did not require producing more sugar – there was a large stock accumulated from earlier years. But, furthermore, that was not the aim, demonstrated by the fact that immediately after the sharp rise in the *zafra*, the same producers asked the Cuban state for the regulation which they had rejected in 1921.[22]

Crisis and adjustment, 1925–37

A 1926 law stipulated that the mills should reduce their supply by 10 per cent. There was also an attempt to sign an agreement with European producers and

Washington was asked to revise the Reciprocal Trade Treaty. This policy failed with respect to its external objectives. Cuba was unable to obtain a reduction in US tariffs, since exports to this country were not regulated, or to reach a consensus on a compromise in the old continent, to which Java – a Dutch colony – was opposed. Following the establishment of protectionist measures in Japan and India, both its traditional customers, Java had begun to send sugar to Europe, and consequently it was not possible to improve the price. In brief, in 1928 it was obvious that the island was capable of swamping the market and depressing the value of sugar, but incapable of promoting on its own an improvement in the latter or of reaching the necessary international agreement.[23] In the face of failure, regulation was eliminated and in 1929 the mills were allowed to produce freely again, worsening the saturation of the market. This occurred just before the beginning of the 1930 crisis which caused a new increase in North American tariff. Internally, the restrictive legislation was successful, since by limiting supply it prevented the larger and more efficient factories – especially those which were the property of refining companies in USA – from monopolizing the demand of these refineries, the main buyers of Cuban output and payers of better prices.

That the government should consider preventing the largest factories from monopolizing the market is explained by the changes in the sociopolitical situation in Cuba in the mid-1920s. We have pointed out above that the 1920–21 crisis undermined the pillars on which the system of domination rested and the later events contributed to the destabilization of the sociopolitical situation. Faced with growing conflict, the ruling class grouped together around a project led by G. Machado, who went on to win the elections in 1925. The project proposed revisions to the Reciprocal Trade Treaty, the regulation of sugar production to protect the smallest producers, the abolition of the Platt Amendment, a tariff reform and a public works programme. We have already discussed the first two objectives and the third did not materialize, but tariffs and expenditure did change. On average, budgets grew from US\$65.3 million in 1919–24 to US\$84.4 million in 1925–29 (from 8.2 to 13.6 per cent of GDP); in 1927 a new customs regulation was published and in 1925 the construction of the central highway began.[24]

Machado's project was coherent given the difficult situation in which the country found itself. Paradoxically, however, that very situation prevented its success in the short term. The alterations which the World War and the early postwar years had caused in the growth of sugar supply brought about a structural crisis in the Cuban economic and sociopolitical system. At the same time, the changes increased dependency on this product and on the North American market, reducing the options for adjustment. This was the necessary condition for the maintenance of the system, even after the 1930 crash, but the sufficient condition was that sugar also afforded the means for dealing with the situation. The key was to renew the trade agreements with the USA, hence the revised bill of the Reciprocal Trade Treaty and the threat to abolish the Platt Amendment and reform the tariffs to modify the concessions granted to its imports into Cuba in 1902. This also led to the restriction on sugar supply, thereby recognizing the responsibility of the island producers in the strengthening of North American protectionism. However, so that his policy would work, Machado had to make concessions which thwarted the achievement of that objective, since what prevented the legislation of 1927–28 from regulating exports to USA was the pressure exerted by its refiners.[25]

Machado's bill laid the foundations of what later became the policy to confront the depression. However, it also contributed to worsening its effect. The creation of the oligarchic block and the deferral of the presidential mandate in 1928, in violation of the Constitution, deinstitutionalized the channels for expressing opposition, especially that of the new social sectors – the workers' movement and the urban middle classes. These groups were most affected by the economic crisis, and they played a leading role in protests which led to the constitution of the oligarchic block in 1925. Civil confrontation increased as a result. Furthermore, the failure of short-term economic policy forced a resort to external credit to finance the rise in expenditure. Between 1900 and 1926 Cuba obtained US\$103 million in loans; between 1926 and 1929, US\$189 million and in 1932 another US\$20 million, so that the crisis of the 1930s found the country in debt and also heavily dependent on the flow of foreign capital, which broke down in 1929.[26]

We can now see the significance of the sharp rise in the *zafra* in 1925, since basically it caused the adjustment which provided the means to face the crisis and reinsert Cuba into the reorganisation of the post-depression world market as an exporting economy. Dye (1998) has shown that the costs of adjustment inherent in the coordination of the complex sugar production system meant that mill capacity was underutilized for a few years from its foundation or technological renewal, and to optimize costs it was necessary to develop this capacity later. In Santamaría (1995b) we should that the Great War gave rise to an accelerated increased in industrial infrastructure which had not become profitable by the end of the conflict. Fifty three percent of the *centrales* were in this situation in 1919. They were also, on average, bigger than the rest and almost all were acquired by new companies founded by the banks, which averted their closure in 1920–21, or belonged to firms backed by these banks. From these mills, 63 per cent stepped up their production in 1925 by more than 26 per cent – a per centage equal to the increase in the island's aggregate supply with respect to 1924 – and the rest had in the main developed their optimum productive capacity before that date. In short, therefore, it can be said that in 1920 Cuba was producing more sugar than the market could absorb, but less than existing infrastructure allowed.

The development of infrastructure had a harmful effect on the island's economic and sociopolitical system, but it also meant that Cuban *ingenios* were once again the most competitive in the world. The only question remaining unanswered is why 1925 was chosen for the increase in the *zafra*. We do not know whether the *mosaico* plague prevented the increase at the earlier date at which it ocurred in other islands of the Caribbean. However, the timing of that increase and the producers' knowledge in 1924 that the period of static European and US supply had ended could not be simple coincidence. With the failure of dumping, the alternative became a restrictive policy calculated on a pro rata basis according to mill production. In order to avoid penalty, those *centrales* still operating below capacity had to step up output. This thesis is also supported by the fact that the *zafra* in 1925 seems to have been carried out with unusual haste, since quantity was given priority over yields which were lower than those of later years when similar tons of sugar were supplied (1929 and 1930).[27]

Centrales developed all their productive capacity at the same time as starting a new stage of intensive growth, known as *intensivismo*. Both extensive and intensive growth coexisted in some years, and it is not a contradiction, since if the aim of the first one was to make the infrastructure incorporated during the war profitable, the second one was effectively a process of adjustment to confront the postwar market situation, process coherent with the logic of sectoral development. In Cuba sugarcane can only be ground for a few months a year (the rainy season – June–October – prevents grinding), and it is best done between January and May when most of the canes are at optimum ripeness.[28] It is important because *intensivismo* was characterized by a reduction in harvest days to save work and energy and further optimize the use of the raw material, cutting the link between obtaining economies of scale and the increase in total production per factory. Furthermore, it required little new technology and involved only a small investment cost.[29] Authors such as Chantez and Fernández (1985) analysed the phenomenon as something typical of the 1940s, and Zanetti (1996) dated its origin to 1926, coinciding with the restrictive legislation. However, Figure 10.2 leaves no room for doubt: intensification began in 1919, just at the end of the First World War, a time when the growth curves of output per mill and per day separate.

Several reasons explain the mistake of authores like Chantez and Fernández or Zanetti. Chronologically, their studies do not go back far enough. Indeed, in accordance with the logic of continuous-process technologies, because of the costs of adjustment described by Dye (1991) it is necessary to search for the beginning of a process of technical change prior to when the results materialize. The data in Table 10.1 support this thesis. The sharp increase in the sugar/mill/day quotient between 1913 and 1925 is not reflected in the yield, since for this to be effective coordination was required with similar advances in other parts of the productive chain, which did not happen until the second half of the 1920s

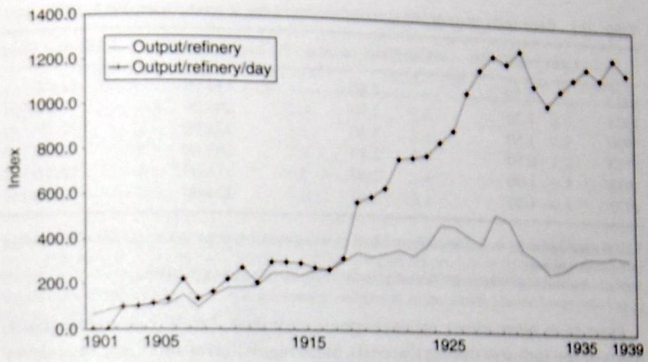

Figure 10.2 Index of sugar output per active mill and effective *zafra* day, 1901–39 (1903=100)

Sources: SACT (1903–36) and CEF (1937–40).

(until 1928 the yield did not rise above 12 per cent). Between 1913 and 1925, the cane cut/colony/day rose spectacularly, but not the cane transported by rail per day, whose growth came in 1925–30. Finally, Zanetti (1996) studied how the mills adapted their machinery to those changes and points out that in the 1920s most had adopted procedures which allowed them to absorb a greater inflow of raw material, solving what had been an endemic problem until then in the sector: intensifying the grinding damaged the yield.

Another reason why the *intensivismo* of the 1920s went unnoticed is that it slowed down in the 1930s, although this was due to causes of an institutional nature. After 1930, state regulation was widened to cover all the elements involved in the sugar industry. It fixed the dates for the start and end of the grinding, stipulated workers' wages and cane prices, and asigned *colonos* and *centrales* quotas of cane and sugar prduction and sugar export. This caused a standstill and factor price rises, which nevertheless were compensated by the intensification process. After an initial deterioration in the indicators in Table 10.1, even with lower *zafras* due to the crisis in exports after 1929, the sector regained efficiency levels greater than those of other competitors. Despite deflation, it operated only with losses in 1931–32, and after the renewal of the trade agreements with the USA (1934) it once again produced profits, made possible by a new reduction in the number of grinding days, the adoption of small technical innovations, more appropriate selection of raw material, improvements in the coordination of all the activities to avoid interruptions in the operation and an increase in the efficiency of work – these two last aspects had made little progress during the 1920s.[30]

Table 10.1 Basic indicators of the intensification of sugar production, 1913–39[a]

	Cane/*colono*/day	Cane/km. rail/day	Sugar/mill/day	Industrial yield
1913	0.70	2.80	147.00	11.27
1925	1.20	2.90	284.00	11.61
1930	1.50	3.30	331.00	12.39
1933	0.90	2.50	281.00	11.70
1935	1.00	2.60	315.00	12.33
1939	1.20	3.10	324.00	12.48

[a] 1000 *arrobas* of cane cut/*colono* and *arrobas* of cane transported; sugar in tons; yield: 100 *arrobas* of cane/*arrobas* of sugar.
Sources: Santamaría (1995b, chs. IV and VII); SACT (1913–35); and CEF (1939).

Apart from *intensivismo*, other elements contributed to the successful adjustment of the industry during the crisis. State regulation maintained the *colonos'* incentive to guarantee the mills' optimum yield, handing over enough raw material and of the highest quality, since they continued to receive a per centage of the sugar obtained from their cane. Furthermore, it allowed the *centrales* to give up their quotas to other factories, which meant that the most efficient mills produced more sugar than the amount assigned to them during the years when the lowest prices were being paid. In addition, the regulation altered the relative cost of factors of production, cheapening labour relative to cane. Thus sectorial employment levels were maintained, despite the reduction in supply and in the number of harvest days, a key element in an economy which depended so heavily on the sugar industry and which was also often paralysed by labour unrest in the 1930s. Finally, the sector was reorganized to solve the problems of overcapitalization caused by the intervention by the banks during the postwar period, and it complemented its income with product diversification.

Diversification was a response to the change in the relative price of refined compared to raw sugar caused by the step up in the US tariff and modifications in consumer patterns which increased the demand for sugar substitutes. Cuban sale of *refino* rose from 3000 tons in 1925 to 300 000 tons in 1929, and this growth continued afterwards.[31] The most important, however, was simply that the island industry had begun to refine. This changed North American refiners' attitude. Indeed, in 1927 they had helped prevent the regulation of exports to their country, but now, the threat posed by this new competition led them to lobby for a reduction in the tariff and the establishment of a quota system (see Ballinger, 1971, p. 34). There was also an effective generation of external economies. Already in the 1920s many mills rendered a public service through their private railways, and in the 1930s they began to use their estates in a more productive fashion, encouraging crops other than cane, and livestock, and giving land to the workers – the law allowed for part of the wages to be paid in food or in use of the land.

Table 10.2 Annual variation of GDP and its causes, 1930–34[a]

	Effect of tariffs and export reduction	Exchange rate effect	Variation in GDP (%)	Effect of paralysis In flow of capital
1930	−5.8	5.2	2.6	0.2
1931	−16.0	5.4	3.1	0.2
1932	−19.7	7.4	4.0	1.2
1933	8.1	10.8	3.6	−0.3
1934	17.5	5.6	3.1	−0.4

[a] Effects measured as per centages of GDP for each year. The tariff and export effects are calculated estimating the loss of income resulting from failure to supply 50 per cent of US consumption, following the 1929 tariff; the paralysis in the flow of capital was estimated on the assumption that Cuba in the 1930s had received the same amount of loans as in the 1920s. The exchange rate was assumed constant, at the level of 1929.
Source: Santamaría (1995b, ch. VII, and 1998a).

Studying this adjustment of the Cuban sugar industry is the key to understanding what happened in its economy in the 1930s. The data in Table 10.2 show that the main depressive factor in this decade and also the most important obstacle to recuperation was the US sugar tariff, which together with the decrease of exports reduced the GDP more than the paralysis of the flow of capital or the fall of exchange rates.[32] This is contrary to what occurred in other Latin American countries (see Maddison, 1988; Thorp, ed 1989; and Díaz Fuentes, 1994). This explains why the policy to confront the crisis was also different.

It was rational to expect that the island economy could reinsert itself in the new post-Depression world order as a sugar exporter. To this end, and in the light of this new order becoming increasingly determined by bilateral relations, it was even more necessary to renew the trade treaty with the USA and sign an international sugar agreement. In 1930 an attempt was made in Brussels, but it failed because the impact of the crisis on demand was underestimated and importers were not included. To the USA Cuba proposed a separate pact – the Chadbourne Plan – which was unsuccessful as it did not establish any binding obligations. Both agreements limited the signatories to supply and export quotas. While other countries did not comply with them, the island not only complied but produced and sold below the assigned levels for some years due to the underestimation of demand, and maintained this policy after the Brussels Agreement ended in 1935.[33] This form of behaviour, as we said, corresponded to rational expectations regarding the possibility of renewing the trade treaty with the USA. To achieve it, Cuban producers recognized their responsibility in the issue:

> The fault is ours, the market can carry 3 million tons yet we have sent them 4 million, causing a fall in the price and a defensive move on the part of the sugar beet producers.... [We put forward] as a solution that a commission be

> sent offering a pact limiting the production to be sold to the US, and legislation to prevent the producers from exporting above a previously established quota.
>
> (ANHCC, 1930, pp. 11 and 21; author's translation)

Producers also knew that they had to be united. In 1927, when US refineries succeeded in preventing the regulation of sugar exports, there had been no consensus in Cuba. We have already seen that when the island began to refine they changed their attitude.

The US attitude was also crucial: apart from considerations over the responsibility it acquired in Cuba in 1898, it had to protect many of its citizens' interests there, while at the same time its exports lost ground in the island market, one of the most important in Latin America yet one whose purchasing power had been severely affected by the crisis. Furthermore, a Pacific war was considered a likely scenario for the 1930s, in which case Cuban sugar would be necessary since this war would affect two of North America's suppliers – Hawaii and the Philippines.

All of these arguments, however, were of little use if US sugar beet producers did not change their stance. To this end, Cuba limited its *zafra* and exports in the hope that, since their increase had been the reason for raising the North American tariff in the 1920s, their decrease would now serve to reduce it. Indeed, in this sense there was one further advantage. Beet producers determined US trade policy, but they were not the ones who benefited most. Between 1919 and 1930, US sugar production was on average 2.8 million tons/year, a figure which increased to 4.3 million tons in 1931–9 (55 per cent) due to the drop in Cuban sales, but sugar beet production only increased from 990 000 to 1.13 million tons (14 per cent). The Philippines, Hawaii and Puerto Rico were the greatest beneficiaries; they operated with lower costs and even threatened to push sugar beet out of the market, especially given that the tariff's depressive effect on the price was forcing Cubans to accept increasingly smaller payments for their product in order to avoid the customs tariff.

Besides agreeing to stabilize the market, Cuba still needed to fulfil one more requirement to succeed in renewing the treaty with the USA: the restoration of the internal sociopolitical order. With the Depression, conflicts increased and often ended in violence largely because of the deinstitutionalization of the forms of expression of opposition to the regime. Unable to resolve them, Machado lost the backing of those who had supported him in 1925, and in 1933 a strike caused his resignation. However, the oligarchy no longer had control of the state and the revolutionary government which took over proved equally unable to restore order. Soto (1985) demonstrates that the revolutionaries lacked an alternative to Machado's economic programme. They did not go far beyond reinforcing its social justice component to meet the demands

of the middle classes and the labour movement. As a result, the need for agreements with the USA, which would help finance the new social expenditure, became even more pressing. The key, therefore, was the North American attitude. A speech by Roosevelt before becoming president defined it with precision:

> Due to the exceptional relations of our peoples the recognition of a government in Cuba implies, more than an ordinary measure, rather a material and moral support. We desire to start negotiations for a revision of the trade relations and the modification of the Reciprocal Treaty, but no progress will be made in these areas if there does not exist in Cuba a government which has popular support and which can count on the general co-operation, clearly demonstrating genuine stability.
>
> (Pichardo, 1973, vol. VI, p. 103, author's translation)

Meanwhile, the social conflict in Cuba had reached extremes which Thomas (1973) described as an *armed stalemate*, and the solution arose from that stalemate. For Tabares (1973) there were two forces:

> Irreconcilable, revolution and reaction, they remained in impotent balance. Neither one could overwhelm the other; there was no other option but to coexist and make mutual concessions.
>
> (Author's translation)

The pact was provided by the only institution which was unscathed in the crisis of legitimacy in the political system: the army; namely its middle ranks who took control in the so-called *Revolución of the Sergeants* (1933). From amongst them there also came the new strong man of Cuba: Batista, who managed to reunite the conflicting interests into a common programme:

> Now the Republic is born on an irrefutable basis because it will take the form which the country freely shows it wants. It will not be fascist, or socialist, or communist, it will take the form that the majority wants to give it.
>
> (Batista, 1933, p. 8, author's translation)

With this programme, post-revolutionary governments were able to guarantee the stability required by the USA. Cuba obtained a preferential quota in the North American sugar market and a new Reciprocal Trade Treaty was signed. With this treaty and the international agreement the island reinserted itself in the international market better than its competitors (for example Java), and it could restore the sociopolitical order since the strategy yielded enough profits to maintain a policy of more equal distribution of income which was the key to achieving a certain consensus in Cuban society.[34]

Conclusion: a comparative history perspective

The specific nature of the Cuban economy in the Latin American context at the beginning of the twentieth century – a strong dependency on sugar production and export to the USA, and at the same time levels of development similar to that of the most diversified economies – was reinforced during the First World War and the 1920s, despite the reorganization of the international market during the postwar period. These changes caused a structural crisis and a destabilization of the internal sociopolitical order, heightened by the Depression of 1930. However, the island reinserted itself into the market during the 1930s, maintaining its specialization in the production and sale of sugar, especially to North America. The lack of diversification was the necessary, but not the sufficient condition that explains this fact. The sufficient condition was the adjustment in the sugar industry to confront the structural crisis, and an economic policy concordant with the specificity of the Cuban economy and with this adjustment, which allowed the country to reenter the world market in a better situation than that of other competitors, and to regain a growth rate similar to that of the most developed countries in Latin America. This allowed the restoration of the sociopolitical order, thereby promoting a more equitable income distribution.[35]

This chapter has thus taken issue with the standard view of Cuba, which views the significance of the interwar years too simplistically in terms of continued and extreme dependence on the US sugar market. We have told a more complex story, which shows how the supply-side response to market developments in the period from the First World War to the 1930s resulted in an economic structure in the sugar sector which made expansion of production an imperative, while this fact and the oligarchy consolidated behind Machado created sociopolitical tensions only partially resolved after the Revolution of 1933, in a way which allowed political developments to reinforce the tight relationship with the USA. The successful continuation of the preferential relation with this country was a result of Cuba's competitiveness, of a stable political situation, and energetic negotiations. The outcome in the 1930s at least was a relatively good economic performance.

Notes

1 See Sanz *et al.* (1998, pp. 373–90), for the relation between the integration of Latin American economies in the world market and the construction of the first railways; Zanetti and García (1987, pp. 1–20) and Santamaría (1995a and 1998b) for the specific case of Cuba.

2 In the 1868–90 period, production stagnated somewhere between 579 000 and 775 000 tons due to the reorganization of the sector in those years. Between 1891 and 1897 it was always above 800 000 tons, reaching a record of 1.1 millions. The FOB price in the USA fell from 3.40 cts/lb to 2.07 between 1890 and 1897 and the tariff rose from 0 cts in 1890, to 40 per cent *ad valorem* in 1894 and to 1.685 cts/lb in 1897. See Moreno (1978) Vol. III. The last general published work on the years prior to Cuban independence is that by García (1996). *Ingenio* is the word for a Cuban sugar factory; *central* is a completely mechanized *ingenio*; *zafra* is the word for the cane harvest and it is utilized as a synonym of sugar production.

3 See Pérez de la Riva (1975) and García (1994b) regarding imports of Chinese coolies and Yucatán Indians.

4 See Moreno (1978), Vol. I and Deerr (1950) for an account of the technological evolution of the industry.

5 In Cuba cane takes between eight and 12 months to grow, whilst in other places in the world it takes 18. Furthermore, the shoots of each plant are normally used for six or seven years. See Martín *et al.* (1987).

6 The natural division between agriculture and manufacturing, explains the need for building a transport system which would communicate between the canefield and the *central* – a private railway. The industrial sugarcane process can be divided into three parts – grinding, evaporation and filtering – which must be perfectly coordinated. A technical improvement which, for example, increases the flow of cane juice – *guarapo* – from the mill to the evaporators is not efficient and causes a bottleneck if it is not used in conjunction with innovations to these evaporators to absorb the increase. For more on this subject see Dye (1998), pp. 102–49.

7 The construction of *centrales* meant a reduction in the number of factories and an increase in production per unit – 1365 *ingenios* and 328 tons in 1860; 850 and 445 in 1890, and 205 (all of them *centrales*) and 1464 in 1900. See Le Riverend, (1985: 490).

8 See Le Riverend (1973), Perez (1986), García, (1998) and Zanetti (1989 and 1998), for more on this subject.

9 For more on the new legal framework, see Jenks, (1928) and Le Riverend (1973). With regard to the expansion of the sugar industry in the Eastern half of Cuba, Hoernel (1976) and Luzón (1989). For more on the extension of the railway, Zanetti and García, 1998 and Santamaría, 1995a and 1998b.

10 The investment of foreign capital mainly in rail rather than in the sugar industry was not a phenomenon specific to the twentieth century, and nor was it confined to US investments. In Santamaría (1998b) p. 303, we explain that this was probably due to opportunities for self-financing which enabled a slow modernization of the mills. This did not happen in the rail sector, where large injections of capital were necessary, either to build a complete network of transport – Eastern provinces – or to consolidate in a single company a dozen lines which had emerged in the Western half of Cuba to satisfy local needs, and which over time had stopped making a profit due to competition amongst themselves. US investment did not rise above US$ 50 million in 1896 and of that amount 30 was placed in the sugar industry. Around 1911 the first figure had grown to approximately 200 million, whilst the second only rose to 50. Rail construction accounted for 40. See Pino, 1984: 342, Jenks, 1928, chs. I-VI, and López Segrera, 1973: 173.

11 Data from Brundenius (1984)

12 According to Zanetti and García, 1976: 212, the first official licence to import West Indian casual-workers was obtained by the United Fruit Co. in 1913. From that date and until the mid 1920s more than 500 000 entered Cuba in order to work in the sugarcane harvest, coming mainly from the other Caribbean islands and from Spain. See Pérez de la Riva (1975).

13 The excepcional increase of prices allowed inefficient mills to go on producing. See Santamaría, 1995b, fig. III.1 and Dye, 1998, ch. 4.

14 In 1913, 46 per cent of the mills were public limited companies and 36 per cent were the property of firms which owned more than one factory; by 1919 these per centages had grown to 69 and 46 respectively. A single enterprise, the Cuba Cane Sugar Co., founded in 1915, invested US$ 50 million in the sector – a sum similar to the total North American capital placed in the island until this date. The firm bought 19 *centrales* and in 1919 produced 14 per cent of Cuban sugar. Bank and financial groups representatives from US made up 63 per cent of the board of directors. See Santamaría, 1996: 246, Pino, 1984: 390, and García, 1994a: 45.

15 For more on the process known as the *Danza de los millones* see Pino, 1984: 60, Le Riverend, 1973: 165, and Collazo, 1994. Collazo explains the deflation and the bankruptcy in 1920–1921 of the main Cuban banks as a result of a confrontation between the island producers of raw sugar and US refineries; however, in Santamaría, 1994, we proved that the process was more complex, and formed part of a general downturn which did not affect Cuba alone, and therefore is difficult to describe in such manichaean terms.

16 In 1922 *per capita* consumption in the US rose to 103 kg./year, then fell, to rise to 109 in 1926 and then begin a decline which lasted for more than 15 years. See Santamaría, 1995b, appendix XII.4.

17 On the reduction of imports during the war and the relationship with economic diversification, see Thorp, ed., 1989. In Chile, for example, the value of imports fell by 60 per cent to constant price levels between 1914 and 1919, whilst in Cuba it rose by 88 per cent between 1913 and 1919 (Palma, 1989: 58, and Santamaría, 1995b, fig. III.1). Jenks, 1928, explains that the US not only guaranteed the supply of provisions to the island, but also used this as a weapon so that producers accepted their control of the sugar market and the prices imposed from 1917 onwards.

18 For the calculation of GDP, see Alienes, 1950, and Brundenius, 1984. The figures for Chile and Argentina are from Palma, 1989, Bulmer-Thomas, 1994, Díaz Fuentes, 1994, and Santamaría, 1995b and 1998a; those on sector employment are from the DGC, 1907 and 1919, and *Memorias inéditas del Censo de 1931*, 1978. The doctoral thesis by Marqués, 1998 indicates that even though there was industrial development apart from the export industry in Cuba, due to the multiplier effects of the external sector, this was of a complementary nature with regard to sugar. This characteristic was reinforced during the First World War and the post-war period.

19 Data from Santamaría, 1995b, appendices.

20 On the financial backing given to the sugar industry, according to Wallich, 1953: 106, bank loans during the inflation of 1920 rose to US$ 80 million; a figure which was maintained in 1921 (79 million) to finance the losses caused by deflation and the rise in the US tariff. Zanetti and García, 1976: 133, calculate furthermore that another 23 million should be added to that amount in direct investments.

21 On the producers' forecasts for 1925, see 'Balance económico', *Cuba Contemporánea*, 138, 1924: 162. On the end of the upward cycle in sugar production, Alienes, 1950.

22 Pino, 1984: 455.

23 On the tariff, from 1924 the US Tariff Commission was recommending to the US President that it should be reduced due to the damage which was caused to customers, USTC, 1926. According to Bernhardt, 1948: 76, the pressure of the sugarbeet producers, arguing that Cuba had not diminished its exports, prevented putting the recommendation into effect. For more on the refusal of Java to sign an agreement in Europe, see Ballinger, 1971: 31.

24 See López Segrera, 1980, and Thomas, 1973, vol. II. Pollitt, 1989, is the study which best explains the relation between the crisis of sugar production and the arrival to power of Machado. See also Santamaría, 1994, 1995b and 1998a, and IHC, 1998, vol. III: 240.

25 With regard to the tariff, Marqués, 1989 proves that it was a reaction to US trade policy and its objective was to alleviate the reduction in state income, heavily dependent on customs earnings which were depressed by the fall in the price of sugar, rather than a measure to encourage economic diversification.

26 On the effect of the depression on external credit see Kindleberger, 1985, Galbraith, 1989 and Fishlow, 1985; with reference to loans granted to Cuba, IHC, 1998, vol. III: 405.

27 For more on how in the second half of the 1920s the island industry became again the most competitive in the world, see Dye, 1993: 586, and USTC, 1926; about the sugar yield in 1925, Santamaría, 1994: 136.

28 Martín *et al.*, 1987: 567.

29 The effective length of the *zafra* – the average time taken by factories to do it – was reduced from 132 days in 1919, to 107 in 1925, 90 in 1930, 61 in 1935 and 62 in 1939. See CEF, 1940.

30 Martín *et al.*, 1987: 576 and Dye, 1991 show that the interruptions in the operation are the worst possible drawbacks for an effective production process.

31 Apart from sugar refined, the Cuban sugar industry began to produce rich molasses and syrups, and increase the distillation of rum, demanded by US consumers. See Santamaría, 1995b, ch. VI.

32 Dye and Sicotte, 1999, calculate that nearly 35 per cent of the losses in real export earnings between 1930 and 1934 was caused by the US sugar tariff.

33 On bilateralism in trade in the 1930s, see Kenwood and Loughed, 1972: 337–340. On the Brussels Agreement and the Chadbourne Plan, Zanetti, 1989: 133–135 and Ballinger, 1971: 37.

34 For more on all these aspects see Santamaría, 1998a and 1995b, ch. VI. In these studies we analyse the results for the Cuban economy of the international agreement and the new treaty with the US in a comparative perspective. This analysis confirms our conclusions about the relative success of the adjustment in this economy to the post-Depression market situation. Another aspect also analysed is why some measures thought to be to confront the crisis were maintained subsequently and what problems this meant.

35 We have not enough space in this chapter to explain in depth the adjustment in the Cuban economy and its results in comparative terms. In Santamaría, 1998a and 1995b, ch. VI, the reader may find the data about the more equitable income distribution and the island's macroeconomic statistics compared to those of other Latin American countries which prove our affirmations.

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