

AGRARIAN HISTORY OF PUERTO RICO, 1870–1930*

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The broad nature of the task of summarizing the state of our knowledge of the agrarian history of Puerto Rico in the late nineteenth and early twentieth centuries is counterbalanced by the scarcity of literature on the topic. In many cases it has resulted in generalizations and over simplifications that cannot be avoided at this time. This survey is restricted to the commercial agricultural activities—sugar, coffee, and tobacco—since these industries shaped the economic history of the island in the period under consideration. More questions are raised than are answered. As a result, it is hoped that the topical areas touched upon will become objects of future research.

PUERTO RICAN AGRICULTURE IN THE NINETEENTH CENTURY: A DEVELOPMENTAL OUTLINE OF SUGAR AND COFFEE

The agrarian history of Puerto Rico in the nineteenth century was marked, in the broadest sense, by the continual expansion of export agriculture at the expense of subsistence farming. The following statistics illustrate and emphasize the dominant character of this trend. In 1830, 29.1 percent of all cultivated acreage was devoted to export crops. By 1862 this had increased to 51.3 percent, and in 1899, the year after the U.S. invasion, 68.4 percent of the island's total cultivated acreage was dedicated to commercial farming.¹ However, the growth of cultivated acreage from 6 percent of total land area in 1830 to 14 percent in 1897 did not keep pace with the rise in population. Thus per capita crop land declined over the century.²

The growth of agricultural exports had widespread effects on Puerto Rican social structure. Among the most important long-term features was the transfer of most social sectors out of the narrow confines of local subsistence farming and into the broader activity of market place participation. Land as a productive resource underwent vast changes, acquiring monetary value with the expansion of trade, while becoming a critical factor of exchange both in direct buying and selling and in the provision of collateral for credit. Labor and capital were converted into active productive resources serving the export sector, sharing the common denominator of scarcity in nineteenth-century Puerto Rico.³ While these phenomena apply to Puerto Rico they are obviously general characteristics

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resulting from the growth of trade and expansion of market mechanisms. The precise structural impact of the development of commercial agriculture varies in part with the type of export crop grown and, more importantly, with the productive organization of land, labor, and capital resources. The number of people brought into the market economy, in independent positions as owners of productive resources or dependent positions as laborers, influences the type and pace of future economic development as well as forms of political organization.

In the nineteenth century, Puerto Rico went through two major economic cycles based on different crops and distinct patterns of resource organization. The first cycle ran a "natural" course, as sugar culture rose and declined with market forces dictating the pace of development and contraction. The second cycle, that of coffee, began in response to market conditions, but declined because of the political and economic intervention of the United States in 1898.

The Rise and Decline of Sugar: An Analytical Framework

Favorable external market conditions for sugar in the early nineteenth century stimulated the rapid development of cane production throughout the Caribbean. Although Puerto Rico was part of this general trend, the growth of sugar cane cultivation had rather slow beginnings and a relatively short-lived period of prosperity. In Cuba the dynamic expansion of sugar dated from the 1790s (in the immediate aftermath of the collapse of Haitian sugar production and the rise in world sugar prices) while the Puerto Rican industry did not grow dramatically until the 1820s.⁴ Commercial opportunities produced different reactions on the part of the Cuban and Puerto Rican elites. The immediate response of Cuban entrepreneurs to favorable market conditions in the 1790s resulted in almost frantic efforts to clear more lands, import more slaves, construct more mills, and transport sugar to the docks for export.

In Puerto Rico, however, a general impression of inactivity is conveyed, with little economic development until the arrival of political refugees from the Haitian Revolution and the Spanish American Wars of Independence, who brought with them both the capital resources and the necessary technical knowledge for sugar production.⁵ These differences are important for both their economic and social implications. The Puerto Rican elite in the late eighteenth and early nineteenth centuries lacked a certain commercial vitality that, combined with other factors, was to lead to stagnation and eventual recession as competitive forces grew. In contrast to this, the Cuban industry was able to thrive and prosper, adapting to the productive transformations of the nineteenth century while becoming the motor force of vast social changes in Cuban society.⁶ The Puerto Rican sugar industry rose to a peak of prosperity around mid-century, declining slowly to a secondary position in the insular economic world on the eve of the U.S. occupation. An important question then is why this industry literally died in the second half of the nineteenth century, precisely when world demand and consumption of sugar was increasing enormously.

It is clear that a complex range of variables determines long-term economic cycles. However, in the case of Puerto Rican sugar in the nineteenth century, the

critical factor was undoubtedly a lack of finance capital for modernization. Two general factors affected the international market relations of sugar in the nineteenth century. The first was the growing competition of the European beet sugar industry. In the 1820s, beet sugar's share of the world market was negligible, but by the 1880s it accounted for over half of world sugar consumption.⁷ This competition drove market prices continually downward, requiring more efficient production methods. The major technical advances came at the *ingenio* in the form of more sophisticated refining devices. Related to this were the increased capital demands of new equipment. There was a compelling need for large short-term capital expenditures that would both increase sugar yields and decrease production costs. The failure to invest meant stagnation and decline, and this seems to have been the case with Puerto Rican sugar development after 1850.

There are several indicators of chronic capital scarcity in nineteenth-century Puerto Rico, the most striking of which is the low number of slaves imported by the island's commercial elite. In Puerto Rico slaves never accounted for more than 12 to 14 percent of the total population, while in Cuba slaves made up over 50 percent of the island's inhabitants at one time during the century.⁸ The explanation for this difference lies neither in humanitarian considerations on the part of Puerto Rican planters nor in abundant availability of free labor. Indeed labor scarcity seems to have been a perennial problem. This is indicated by the antivagrancy laws passed in the 1830s and 1840s, designed to secure permanent labor sources for commercial farmers.⁹ The failure to develop slavery as the dominant basis of labor organization in Puerto Rico, in an era of labor scarcity, slave availability, and favorable external market conditions for sugar, indicates that Puerto Rican planters simply did not have the available cash or credit facilities to purchase slaves. Complaints about inadequate credit sources dominate the hacendados' *memorias* that I have inspected.¹⁰

Another important indicator of capital scarcity was the failure of Puerto Rico's planters to modernize technologically. Efficient sugar extraction increasingly demanded more sophisticated machinery and larger specialized productive units. One faulty interpretation of the nineteenth-century sugar industry sees the decrease in the number of mills as a sign of modernization—concentration of production and increased refining capacity.¹¹ That there were 1,552 mills in 1830, 553 in 1870, and 325 in 1880 is taken as evidence of this.¹² The argument ignores the fact that the dollar value of sugar exports declined continually from 1871 to 1897, along with the decreasing importance of sugar in relation to total exports. In 1871 sugar exports were worth \$6.2 million and 68.5 percent of total export value, while in 1897 sugar accounted for \$2.41 million and 21.6 percent of all exports.¹³ By 1899 Puerto Rican sugar productivity was so low that the 345 sugar mills had a collective refining capacity equal to one-tenth of the 207 Cuban mills, and an average capacity of one-fifteenth that of the Cuban *centrales*! Added to this is the fact that by 1899, nearly half of the cane grinding machines in Puerto Rico were still worked by oxen while in Cuba all sugar refineries were powered by steam or electricity.¹⁴ That there was a great decline in the number of ingenios does not imply that there was general modernization of the mills

that remained, although there were clearly some exceptions. The valuable descriptive material provided by Andrés Ramos Mattei on Hacienda Mercedita contrasts the general trend. Founded by the Serrallés family of Ponce, Mercedita slowly accumulated the most advanced refining machinery and by 1890 was a fully modernized mill. Production increased almost threefold from 1877 to 1899.¹⁵ In 1873, Central San Vicente was inaugurated in Vega Baja on the north coast, and by 1880 Central Canóvanas had the capacity to produce sixty thousand pounds of sugar a day.¹⁶ Thus pockets of modernization existed while the industry as a whole stagnated.

That the central would have to replace the ingenio was a fact recognized by the most farsighted planters. The memorias and informes flowing to Spain in the 1880s attest to the frustrated ambitions of this stratum. One of the more articulate observers of 1880 saw the "central factory [as] the only solution for the ruined and decadent agriculture of Puerto Rico."¹⁷ In 1881 one project envisioned the creation of an Empresa de Factorías Centrales in Puerto Rico, but the results were negligible.¹⁸

The increased refining capacity implied by the establishment of central factories meant greater cane requirements for maximization of the new productive potential. This required greater extension of landed resources and, indeed, Hacienda Mercedita constantly acquired more land after 1880. Extended land area meant that fields were located farther from the central, enhancing the need for transportation improvements in order to assure the rapid transfer of cane to the refinery. Railroads were the mechanism best suited for this. Here we find a further indicator of capital scarcity in nineteenth-century Puerto Rico: in 1837 the first railroads were functioning in Cuba, built specifically by and for the sugar oligarchy; but it was not until 1878 that construction began on railroads in Puerto Rico, and it seems that these lines served coffee exports more than sugar. Central Mercedita had three miles of track by 1898 but the cars were pulled by oxen since there were no locomotives. Such an important cost-reducing improvement as railroads was not possible without large capital resources and it was here that the sugar interests faltered. The failure to adopt railroads meant the productive units necessarily remained small scale as cane could not be transported to the refinery from any great distances without substantial losses in sucrose content.

The general inability of Puerto Rican sugar producers to adapt to the technical transformations of the industry in the second half of the nineteenth century meant the decline of sugar cultivation. By the late 1870s coffee exports surpassed sugar in monetary importance as the island's agriculture began a period of reorganization that lasted until the U.S. intervention. By 1898, 15 percent of cultivated acreage was devoted to sugar cane, while 41 percent was sown in coffee.¹⁹

From these general comments it can be noted that little is really known about the internal dynamics of the nineteenth-century sugar economy. Aside from a few important articles by Sidney Mintz, practically nothing descriptive or interpretative has been published.²⁰ Who precisely were the sugar entrepreneurs? How many were immigrant Spaniards, the group that, in the Cuban

case, provided the impetus for modernization? An interesting insight on the make up of the sugar planters is provided by the notes on a meeting held in San Juan to discuss the project for the creation of an *Empresa de Factorías Centrales*. Of the sixty-two participants at the Conference, twenty-six were described as merchant-capitalists, eleven as *propietarios*—probably urban property owners—and only one was classified as a *hacendado*.²¹ The implications are that urban sectors were involved in, if not already in control of, agricultural aspects of sugar production. Yet the changing role of merchants in financing sugar cultivation over time remains unknown. What in fact were the exact credit mechanisms that functioned in nineteenth-century Puerto Rico, apart from the generalization that merchants had a stranglehold on capital resources?

The changing patterns of land accumulation and tenure are other important variables. What was the role of the state in the distribution of Crown lands? How widespread was the use of debt and foreclosure as a mechanism for land accumulation? If we know little about the elite, then practically nothing is known about the exact process of peasant displacement and the creation of a servile labor force. The labor basis of sugar plantations before and after abolition must be investigated at the local and general levels. An important contribution has been made by Gervasio García in discussing the first stages of worker organization in Puerto Rico. He points out the difficulties of adjustment faced by the labor force during the transition from the traditional patron-client relations of the *hacienda* to the emerging corporate order of the plantations where labor took on a more industrial character.²² This clearly intensified after 1898. Angel Quintero discusses *hacienda* social relations in an important and controversial article that is concerned with the theoretical issue of economic organization. The *hacienda* of the nineteenth century, no matter what crop it was growing, is seen as a precapitalist form of economic organization. Traditional values such as local status are considered more important than profit maximization.²³ This is clearly debatable given the rapid shift to coffee production when market conditions became favorable. It is evident that the relation of *haciendas* to markets over time must be examined. Marketing mechanisms of the interior have never been discussed, and stratification among the “peasantry” is another area for future research. In posing some of these problems with respect to sugar expansion it becomes clear that the agrarian history of Puerto Rico in the nineteenth century remains largely unwritten.

The Rise of Coffee

The sugar industry in Latin America in the nineteenth century faced a series of general problems that varied slightly with respect to local conditions of production. In order to remain competitive there were few alternative methods of resource organization. Large scale, increasingly capital intensive operations with inflated seasonal manpower requirements typified productive needs over the century.²⁴

Coffee, on the other hand, did not present such a homogeneous picture in this respect. Land, labor, and capital organization were diverse, ranging from

the large-scale slave plantations of Brazil, to the medium-sized family farms of Colombia, to the small holders of Costa Rica.²⁵ These differences were possible because of the flexible and varied conditions under which coffee could flourish profitably. While coffee is a cash crop its cultivation requires neither the extensive land area nor the intensive capitalization demanded by sugar. Labor needs thus vary with the size of the operation and can adequately be fulfilled on small holdings by the immediate or extended family. Harvesting and processing present none of the technical complications or problems of scale posed by sugar.

The greatest advantage of coffee production to small holders is that although the coffee bush takes four years to bear an adequate quantity of fruit, it can be grown in mixed farming operations with food crops. The coffee plant in fact needs shade to flourish, and this is usually provided by bananas, *plátanos*, guava, or other food-bearing fruit trees usually planted between the rows of coffee bushes. In this way coffee can function as an important gateway to the market place, for it is a cash crop that can be grown with little sacrifice of food staples. Another general advantage is that coffee can be grown on partially cleared land that may not be suitable for other crops. It also has a relatively high value in relation to weight, making excessive transportation costs more tolerable than for other agricultural commodities.²⁶

Coffee was introduced to Puerto Rico early in the eighteenth century as part of the general spread of the African plant through the Antilles. By the 1790s the main areas of production had been established in the western part of the island, in highland areas that were easily accessible to ports. The *partidos* of Mayagüez, San Germán, Ponce, and Coamo were most important.²⁷ The western mountain area of the island receives more rainfall than the eastern end, thus explaining to some degree why coffee never became a major activity in the eastern cordilleras. In 1830, on the eve of sugar expansion, coffee was sown on 17,200 cuerdas (1 cuerda = 0.9712 acres), while sugar cane accounted for 15,200 cuerdas of cultivated acreage.²⁸ However, with the boom in sugar, coffee took a clearly secondary position until the 1870s.

As in the case of sugar, Puerto Rican coffee prosperity was directly tied to external market conditions. The critical factor was the decision of the United States to open its market to duty-free coffee imports in the mid 1870s. The principal beneficiary of this development was the Brazilian industry, as its cheaper coffee was able to shift market orientation from Europe to the larger market of the United States. This left a large portion of European demand unsatisfied and here is where Puerto Rican exporters were to find the market stability that led to coffee prosperity.²⁹ An examination of statistical sources on trade gives strong supporting evidence: in the early 1870s coffee exports varied between 1.25 and 1.57 million U.S. dollars; in 1876, the year that free coffee imports into the United States were begun, Puerto Rican coffee exports were worth \$1.25 million, with Cuba and Spain absorbing approximately 75 percent of exported volume.³⁰ If the productive year of 1881 is examined, when bushes planted in 1876 and 1877 would have reached maturity, it can be noted that coffee exports, using 1879 as a base year, increased six times in value to \$6.4 million, and that new markets had suddenly gained great importance. In 1881,

40 percent of coffee volume was shipped to Britain, France, Germany, and Italy. France, which had purchased 90,000 pounds in 1876, imported 8.3 million pounds in 1881.³¹ Cuba and Spain remained critical markets, absorbing approximately 43 percent of Puerto Rican coffee exports. The importance of non-Spanish European markets, as well as those of Cuba and Spain, continued up to the American occupation. The United States, on the contrary, never played an important role as a consumer of Puerto Rican coffee. From 1883, an exceptionally rare year when the U.S. purchased 17 percent of exported Puerto Rican coffee, until 1898, purchases steadily declined and during the last ten years of Spanish sovereignty the U.S. never consumed more than 2 percent of Puerto Rican coffee exports.

In relation to other export crops, the importance of coffee grew rapidly. In 1876 coffee accounted for 17.6 percent of total exports in value, while sugar earned 62.5 percent of Puerto Rico's foreign exchange. By 1881 sugar had declined substantially to 28.9 percent of total exports, to coffee's 54.5 percent.³² In fact, coffee exports had exceeded those of sugar in 1879, steadily increasing to a peak in 1896 when they were worth three times those of sugar.³³

If we consider the importance of the coffee industry in the economic life of the island in the last quarter of the nineteenth century, it is striking that this topic has received so little scholarly attention. Eric Wolf's article, published in 1956, remains an important piece.³⁴ In dealing with land tenure and class stratification in the 1940s, Wolf distinguished four strata, which seem to be within the confines of a model that may be valid for the late nineteenth century. The landowning sector had three clear groupings. At the bottom a "peasantry" consisting of two subcategories: (1) owners of less than 10 *cuerdas*, classified as small holders relying strictly on family labor; and (2) small farmers, owning 10–30 *cuerdas*, who relied on family labor, although they often employed day laborers during peak seasons. Both groups performed supplemental labor on large estates although even this extra income offered little possibility of capital accumulation. Next were middle farmers, owners of 30–100 *cuerdas*. This sector relied on wage labor and had the ability to accumulate capital beyond subsistence needs. The third group of land holders owned more than 100 *cuerdas*, specializing in the production of cash crops. This group clearly dominated the rural social structure of the municipality. Lowest in the social order were landless wage earners, numerically the broadest grouping.³⁵ Wolf's article does not consider economic relations among the groupings, nor are the details of small holder operations outlined. For example, the ratio of cash to subsistence crops is not discussed.

While this typology of rural social structure was constructed for the 1940s, it seems to fit in with general land use patterns documented in the 1899 census. In that year 87.7 percent of all farms on the island were under 20 *cuerdas*. Controlling only 33 percent of total cultivated acreage they fell within the general category of *minifundia*. Medium-size holdings in 1899, ranging from 20–100 *cuerdas*, made up 10 percent of farms and 31.1 percent of land area. Finally, *hacendados*, owners of over 100 *cuerdas*, controlled 2.2 percent of farms but 35.9 percent of farm area.³⁶

With respect to rental forms of usufruct, Puerto Rico seems to be exceptional in that only 8 percent of the cultivated area was rented in 1899, with 92 percent of the land worked by owners. This can be contrasted with Cuba where 43.6 percent of cultivated area was owner operated and 52.4 percent rented in 1899. If we consider the major coffee producing regions, the departments of Arecibo, Mayagüez, and Ponce, the percentages of ownership are even higher than the national average. In Arecibo, where over 50 percent of cultivated acreage was in coffee, 97 percent of farms were occupied by owners. In Ponce and Mayagüez coffee was also the dominant crop and owners operated 96 percent and 93 percent of farms, respectively, in these departments. The tenure situation in coffee country can be sharply contrasted with those areas dominated by sugar. In the department of Humacao for example, where sugar cane was grown on over half of the cultivated land area, 70 percent of farms were owner operated, 30 percent rented. In another area of sugar dominance, the department of Guayama, the difference was apparent but not as extreme. There, 85 percent of farms were worked by owners, the remainder rented.³⁷

That coffee cultivation was in the hands of owner/producers seems to be beyond question. Yet the impression of rural egalitarianism can be misleading. If we examine the tenure situation in the departments of Arecibo, Ponce, and Mayagüez, we find that holdings below 10 cuerdas accounted for an average of 71.4 percent of all farms for the three departments. However, they only controlled an average of 16.9 percent of all land. At the other end of the social scale, farms over 100 cuerdas were 3.1 percent of the total, but controlled 39.0 percent of the land, a figure slightly higher than the island average.³⁸ Using land control as an indicator it is clear that the large-scale holders dominated the landed resources of the coffee districts in the same way as in other areas of the island, although the lands of medium and small holders were probably important contributors to production.

This conclusion is supported by an important unpublished study conducted by Vivian Carro. Using archival sources she has constructed a model of Hacienda Pietri, a family-run system of coffee haciendas that dominated rural Adjuntas during the coffee boom. Carro documents the process of land accumulation by this Corsican family, from 1858 to 1898. Most land seems to have been acquired by purchase, although the author makes clear that debt led to many transactions. Debt functioned through the *tienda de despacho* as a key mechanism of social control, a general experience throughout Latin America. The Pietri family's business operations extended beyond the production of coffee. They were urban warehousemen, local merchants, and exporters. In this way reliance on usurers for finance capital and middlemen for marketing was avoided. The Pietris owned land in most of the barrios; over 30 percent of cultivated acreage in two of them was under their direct control; and in one barrio, they owned 55 percent of the land.³⁹ The reader of Carro's study must above all ask whether the Pietri family's accumulation of land and extended business interests were typical of most coffee hacendados. This was probably not the case.

Apart from this pioneering work, the process of land accumulation from the 1870s to 1898 is generally unknown. Municipal and notarial archives, re-

sources used by Carro in her study, must be investigated to reconstruct the process of land acquisition. A fundamental question is who precisely were the coffee entrepreneurs? Were they criollos, Spanish merchants moving to the agrarian sector, or foreign immigrants, as in the case of the Pietri family? It has been suggested that for the Utuado region the coffee elite were newcomers, Spaniards who, beginning in the 1870s, slowly displaced the local Creole elite.⁴⁰ Another author says that the most productive farmers, those able to invest in hulling machinery, were mainly outsiders, natives of Spain, Mallorca, and Corsica.⁴¹ This is supported by the Hacienda Pietri study.

Perhaps the most important factors for coffee production were credit and marketing arrangements. These functions were invariably monopolized by urban merchants, mostly peninsular Spaniards. As in the case of most of Latin America, Puerto Rico was unable to develop a viable banking system in the nineteenth century, despite prosperous export cycles. By the 1890s there were only four functioning banks, two in the capital and one each in Ponce and Mayagüez. There was also a credit association in San Germán.⁴² None operated before the 1880s, and all seem to have played secondary roles in the provision of rural credit. The bulk of credit was distributed in the form of goods. Importers usually bought merchandise in Europe at 4 percent annual interest on wholesale prices. These goods were sold to the smaller merchants of the interior at “wholesale prices” that were usually higher than the retail prices of San Juan. Interest rates in these transactions fluctuated between 8 and 12 percent annually. In turn the interior merchants, in many cases hacendados operating *tiendas de despacho*, distributed merchandise to consumers on credit at monthly interest rates of between 1 and 2.5 percent. Debt was a means to both gain and lose land, for the smaller merchants were not only lenders but were themselves constantly in debt to the larger urban interests. Many lost land through foreclosures.⁴³ In this manner small-scale interior merchants may have served as advance men for penetration into the coffee regions by urban based import/export houses.

The precise finance mechanisms operating between urban middlemen and the coffee hacendados must be investigated thoroughly. Merchant/exporters probably exercised considerable control over coffee production because of capital monopolization and control of trade. The Pietri family’s extended network may have been exceptional. Late in the century we know that large drying and hulling mills were constructed in Mayagüez and Ponce so that processing would be more efficient.⁴⁴ This is a clear indicator of increased urban participation in production which undoubtedly meant increased dependence for growers.

At another level, perhaps more important for the social history of coffee, was the manner in which debt was used to insure permanent labor sources to the coffee planters. The precise relations between *agregado* and coffee farmers need to be investigated. What was the spectrum of obligations and variations in contractual arrangements to which landless laborers were subjected by the hacendados?

It is clear that the state of research on the Puerto Rican coffee boom of the nineteenth century is as poor as that of the sugar sector. Apart from statistical sources on trade, the 1899 census on land tenure, and the study by Vivian

Carro, there are no published sources on the internal dynamics of the coffee boom. Beyond the need for descriptive material, Puerto Rican historiography lacks an analytical work that would evaluate the impact of coffee expansion on Puerto Rican society and the related effects of its decline after the change in sovereignty. For on the eve of the North American invasion, coffee was supreme in Puerto Rico; sugar was characterized by American officials in 1898 as a crop of secondary importance.⁴⁵

PUERTO RICO ON THE EVE OF THE CHANGE IN SOVEREIGNTY

The population of Puerto Rico in the late 1890s, almost one million, was distributed in a remarkably even pattern throughout the island. Urbanization was minimal, indicated by the fact that the largest urban concentration of people, the San Juan-Río Piedras area, accounted for only 4.8 percent of total population.⁴⁶ Population concentration in the mountainous western end of the island was greater, but not overwhelmingly, than either the coastal areas or the eastern highlands. This was directly related to the importance of coffee in this region.

The island's agrarian structure revolved around the hacienda and indications are that land accumulation was leading to the formation of large-scale latifundia, although medium farmers seem to have been able to resist absorption. The sugar industry accounted for 15 per cent of cultivated acreage in 1899 although it exhibited few signs of general modernization. Major sugar producing areas were Vega Baja, Ponce, Humacao, Carolina, Loiza, and Fajardo. According to one source, twenty-two centrales existed by the U.S. occupation, but these were not the large agro-industrial complexes that would develop after 1900.⁴⁷ This is indicated by the low refining capacity figures cited above.

Coffee cultivation, the island's most important productive activity, seems to have been concentrated in the hands of medium- and large-scale farmers, although nothing approaching the size of Brazil's *fazendas* was found in small, mountainous Puerto Rico. Tobacco was of little importance before the 1870s although areas in the eastern highlands, particularly around Cayey, were being cultivated in very small holdings by 1899. This was stimulating the rise of tobacco manufacturing in urban areas, an activity that would develop rapidly after the turn of the century. Institutional supports to agriculture were minimal. That there were few banking or credit facilities can be linked to the critical position of Spanish merchants and their control over the state apparatus. Banks would have provided a threat to their hegemonic control over credit and trade.⁴⁸ On the other hand, two agricultural experimental stations had been founded by 1890 and by the end of the century agricultural associations were functioning throughout the island.⁴⁹

With respect to internal transportation the situation was deplorable. This may have been related to the fact that productive interests had little control over administration, thus state resources were not devoted to infrastructural development.⁵⁰ The only macadamized road was the military highway from San Juan to Ponce built with strategic rather than economic interests in mind. The rest of the island was covered by dirt trails, few wide enough to support ox carts, and

all useless after heavy rains. Mule trains were used for the transportation of agricultural products from the interior to the coast, although little is known of this activity or the lives of the muleteers. Transportation costs were a restraint to agricultural development. In 1899 planters in Utuado told Henry Carroll, the special commissioner from the U.S., that freights from that district to the nearest port were as much as from the coast to Liverpool.⁵¹ Complaints by agriculturalists about inadequate transportation were a constant theme.⁵²

Railroad construction had begun late in the century. Although a plan was adopted in 1880 to circumnavigate the island, this had not been completed by the time of the U.S. occupation. The north coast was connected by rail from San Juan to Camuy, but there was a sixty-two mile break to Aguadilla, where the track began anew and extended to Hormigueros. The major coffee region of Yauco was connected by rail to the port of Ponce. Another line to the interior was pushing its way from Añasco to Lares, in the heart of coffee country, but had only reached the barrio of Alto Sano when the island changed owners. Railroad lines near the capital connected San Juan with Río Piedras, Bayamón, Cataño, and Carolina. Traveling speed on these narrow gauge lines averaged approximately fifteen miles per hour.⁵³

Because of poor communications to the interior from any one area, port facilities were dispersed along the island's coast, rather than concentrated in the capital. Ponce and Mayagüez were the leading coffee export centers, and Arecibo, Aguadilla, Guayama, Guánica, and of course San Juan, were also important focal points of the import/export trade.⁵⁴

Puerto Rico's external trading partners were fairly diversified in the late 1890s, especially if compared with total dependence on the United States immediately following the occupation. Spain, the U.S., and Great Britain provided Puerto Rico with 65 to 75 percent of total imports from the 1880s to 1900, with a roughly equal percentage distribution among the three. Puerto Rican exports went to these three countries plus Cuba, France, and Germany. Again there was no dominant purchaser of Puerto Rican products, although it seems that specific commodities went to specific areas.⁵⁵

Manufacturing was of little importance to the island's economy in 1899 as there was no tariff on incoming foreign manufactures. However, with the slow beginnings of urbanization artisans were becoming more important.⁵⁶ Most manufacturing establishments were for the processing of agricultural products and there are no indications of even the most rudimentary textile industry. This is understandable given the limited development of an internal consuming market, the poor distribution system implied by inadequate transportation, and little circulation of currency.

PUERTO RICAN AGRICULTURE IN THE EARLY TWENTIETH CENTURY:
THE IMPACT OF U.S. HEGEMONY, 1898 TO 1930

General Characteristics

The change in sovereignty was responsible for rapid shifts in the economic and social structure of the island. A decadent and declining mercantile colonialism

was replaced by the dynamism of an efficient and expanding imperialist system. Spain's dominance of the island in the nineteenth century was characterized by commercial and administrative control, as production was largely in the hands of native producers. After the occupation, U.S. business interests moved quickly to dominate all forms of economic activity. Direct corporate investment in large-scale agricultural production was the decisive factor in shifting the Puerto Rican economy from its rural matrix, the hacienda, to the urbanizing axis of the modern plantation.

Trade statistics illustrate the swiftness of the process. In 1897 sugar exports accounted for 21.6 percent of foreign trade while coffee made up 65.8 percent of export value. By 1901 coffee had declined to 19.6 percent and sugar had risen to 55.0 percent of Puerto Rico's exports.⁵⁷ The short-term fall of coffee can partially be explained by the devastating hurricane San Ciriaco that swept the island in 1899 destroying most of the coffee crop. However, in the long run, foreign investment patterns and the legal framework imposed by the United States were the critical variables.

The economic policies of the new colonial administration were designed to facilitate land accumulation by North American business interests. Political decisions created economic conditions that forced many owners to sell land. At the same time a long-term crisis in traditional agriculture assured a large labor market for the emerging sugar plantations.⁵⁸ Both developments were related to legislation applied to Puerto Rico by the new authorities.

In early 1899 all legal proceedings with respect to land were frozen by a suspension of laws on foreclosures, supposedly designed to avoid land losses by indebted farmers. In a functional sense this meant a complete freeze on credit operations. If there could be no land guarantees for loans, credit would not be extended to farmers.⁵⁹ For commercial operators whose production had traditionally been financed by short-term credit arrangements, this was disastrous. Either commercial production would cease or another mechanism to generate cash had to be found. Land sales became one way to raise productive capital and continue operations. Tax laws approved in 1901 aggravated capital shortage problems as taxes were levied on property value rather than production earnings. This meant that landowners were presented with tax obligations requiring liquid capital resources. Farmers whose commercial production had declined because of the general credit shortage faced the prospect of mounting debt. The disposal of land became a way to avoid indebtedness.⁶⁰ The scale of these land sales is entirely unknown. Many property transfers may have been of previously underutilized land tracts or pastures. This is an area that obviously requires investigation.

Land accumulation by absentee sugar companies also came about because of their large capital reserves and ability to turn land previously considered useless into valuable productive areas by the application of irrigation and fertilizers. Sidney Mintz found that on the south coast in the Santa Isabel area, hacienda owners acted as advance men for an expanding American sugar company. Dry range near their haciendas was purchased at low prices and later resold in large

tracts to the company at great profits. This corporation, through well drilling and irrigation, turned unused land into rich cane fields.⁶¹

The problem of commercial capital availability in the short term was also affected by the arbitrary decisions of the U.S. authorities concerning the currency problem. The functioning currency of the island at the time of the occupation was the Puerto Rican peso, which on international money markets was valued at 75 cents in U.S. dollars.⁶² However, the peso was valued in Puerto Rico at .60 to the U.S. dollar, which by legislative fiat became the island's only legal tender in 1899. This forced devaluation reduced the amount of circulating currency by 20 percent and inflated prices because of the ensuing cash scarcity. At the same time, while salaries were lowered to coincide with the new exchange rates, island merchants maintained the same price structure in dollars as in previous pesos. Rice, which sold at 4 centavos per pound before 1898 was sold at 4 cents per pound after devaluation, which meant a 40 percent rise for this dietary staple.⁶³ Island consumers bore the brunt of the new monetary policies.

The rapid land accumulation by absentee sugar companies early in the century must be understood within the above context of monetary dislocation and capital scarcity. That land was acquired through the market, rather than seized, is beyond question. However, the material conditions of the island's agriculture determined the willingness of Puerto Rican farmers to dispose of land. These were directly related to the legislative superstructure imposed by the colonial administration. Perhaps the most important factor in shaping the new agrarian order was the inclusion of the island in the U.S. tariff system.

In 1901 by presidential proclamation, Puerto Rico was declared a customs area of the United States, functioning like the states of the union with respect to internal or external trade. There would be no tariff barriers on the movement of goods to and from the mainland, while foreign products shipped to the island would be subject to the same import duties as if entering any mainland port. Functionally this meant that Puerto Rican agricultural commodities enjoyed the same tariff protection in the U.S. market as domestic products. This brought direct benefits to sugar and tobacco exports, since these crops were produced in the continental United States and were protected from foreign competition by high import tariffs. Coffee, the major Puerto Rican export after 1880, was not protected, however, since it was not a product of the mainland. Thus while the relations of sugar and tobacco with U.S. consumers changed favorably after 1901, coffee remained exactly as before—"free" to compete with other producers.⁶⁴ If Puerto Rican coffee, more expensive than the Brazilian or Colombian varieties, could not penetrate the U.S. market before 1898, then it fared no better after the change in sovereignty.

Two factors directly related to Puerto Rico's new position behind the American tariff wall were responsible for the decline in coffee exports. First, Cuba and Spain, traditionally the largest importers of coffee from the island, classified Puerto Rico as a foreign country and subjected the island's coffee to import tariffs that were nonexistent prior to 1898. Thus while Puerto Rican coffee was once protected in these favored market areas, it was now subject to

free market conditions everywhere. Second, the fact that European imports to the island were subjected to U.S. customs regulations meant a drastic reduction in trade between Puerto Rico and Europe. In 1897 the United States absorbed 19.6 percent of Puerto Rico's exports and supplied the island with 18.5 percent of its imports. By 1905 these figures had increased to 84 percent and 85 percent, respectively, and they were growing.⁶⁵ Fewer European ships were docking in Puerto Rico making exports to European markets more difficult. Commercial contacts with the Old World were slowly eroding. The newfound coffee buyers of the 1880s were being excluded from contact with the island.

The economic crisis that was fomented in the coffee producing regions of the island functioned favorably for the development of coastal sugar plantations. Large-scale sugar production meant extensive labor requirements, which were provided by migrants from the island's interior whose work opportunities declined as the fortunes of coffee plummeted. One study indicates that in Guánica, where the central with the largest refining capacity in the island was established soon after the invasion, population increased 121.4 percent between 1899 and 1910, while the general population rose 17.3 percent. At the same time, in seventeen municipalities characterized by intense sugar-cane cultivation, the average population expansion between 1899 and 1910 was 45.4 percent, while in coffee municipalities there was a population decline of 4.2 percent.⁶⁶ Another local study indicates that prior to the rise of large-scale sugar plantations, coastal hacienda workers departed seasonally for the highlands to work in the coffee harvest. The collapse of coffee reversed this trend as workers moved from the mountains to the sugar areas of the coast, many remaining permanently.⁶⁷

Land Use and Tenure

Land use statistics indicate the enormous expansion of sugar cane. In 1899, 72,000 cuerdas were sown in cane; by 1909 this had doubled to 145,000 cuerdas; and in 1929 sugar cane was grown on 237,600 cuerdas of Puerto Rican farmland, representing 30.2 percent of total cultivated acreage. In the same period, coffee cultivation stagnated, with 197,000 cuerdas planted in coffee in 1899, and 191,000 in 1929. Coffee's share of cultivated crop land declined in these years from 41 to 24 percent. Tariff protection also stimulated the expansion of tobacco farming in the eastern highlands. From 6,000 cuerdas in 1899, tobacco increased to 22,000 cuerdas in 1909 and doubled to 45,700 cuerdas by 1929.⁶⁸

The argument that sugar's expansion led to decreased acreage in food crops is not supported by statistical sources.⁶⁹ In fact, the increased internal market opportunities provided by urbanization seem to have stimulated the rise of truck farming operations to feed the growing cities. In 1899, 147,600 cuerdas were devoted to food crops. By 1929 this figure had grown to 192,000 cuerdas although there was no expansion of per capita cultivated acreage between these years.⁷⁰ Also, when considering domestic food production, it must be noted that the most productive lands were devoted to export crops, mainly sugar. The bulk of the island's domestically produced food supply was grown by small farmers with limited resources that were applied to low yielding soil areas.⁷¹ At

the same time, Puerto Rico continued its traditional dependence on foreign sources of food, although it is interesting to note that this dependence declined in the period under consideration. In 1883, 35.2 percent of Puerto Rican imports (by value) were food products; in 1895, this figure had risen to 53.7 percent; and in the period 1901–1905, the average yearly foreign exchange devoted to food equalled 44.8 percent. From 1905 to 1930, however, this figure constantly declined and in 1930, 33.5 percent of imports were food products, a figure not much higher than that of contemporary Cuba, Peru, or Chile.⁷²

The rise and expansion of plantation agriculture naturally affected tenure patterns. Increased concentration of huge land areas in the hands of the sugar companies meant significant changes in rural social structure. This is indicated by table 1.⁷³

T A B L E 1 Land Area Controlled by Size of Farm, in Percentages

<i>Cuerdas</i>	1899	1909	1919	1929
0–9	20.7	5.9	—	6.6
10–19	12.3	6.5	10.6*	7.5
20–49	17.5	12.9	12.6	13.4
50–99	13.6	12.0	11.6	11.4
100–174	35.9**	10.6	10.4	10.2
175–499	—	20.3	19.3	17.1
500–999	—	10.5	10.0	8.5
1000+	—	21.3	25.5	25.2

*This includes all farms under 20 cuerdas.

**This includes all farms over 100 cuerdas.

Accompanying the tenure changes indicated above was the question of resource control. Puerto Rican farmland was passing out of the control of owner/producers and into the hands of absentee corporations. In 1910, 69.9 percent of cultivated land area was operated by owners; by 1930 this figure had fallen to 56.4 percent while 34.1 percent of all crop land was administered by managers. Only 6.9 percent of land was occupied by tenants in 1930.⁷⁴ The tenure data indicate that after 1898 a growing system of large-scale latifundia came to dominate the agrarian structure of the island. The revival of the sugar industry and plantation agriculture by foreign capital was responsible for this development.

The Sugar Industry, 1900–1930

The inclusion of Puerto Rico within the tariff wall of the United States can be seen as the stimulus for the influx of investment capital in sugar. Tariff protection meant that the Puerto Rican sugar industry was subsidized by the amount of the import duty on sugar. This occurred because of the way in which sugar prices were quoted in mainland markets. Buyers in the United States purchased

sugar at prices that were determined by adding the import tariff to the market price of sugar. Sellers received this amount and were then required to pay import duties to U.S. customs officials. If there were no import duties then the seller remained with the entire purchase price, or the market value plus the import tariff. Thus, for example, in 1903 the full import duty on raw sugar was 1.685 cents per pound. Puerto Rican exporters received the market price for sugar plus this tariff, while other foreign producers received only the market price, as the tariff was paid to the U.S. government.⁷⁵ Because of high production costs, Puerto Rican sugar could not compete internationally without this subsidization. In this sense the sugar industry of the twentieth century was artificially created, incapable of free competition, and totally dependent on protection by the tariff.⁷⁶

It seems that tariff protection was anticipated by investors. As early as October 1898, a Boston company began investing in the Aguirre estate by Jobos Bay. In 1899 the Central Aguirre Syndicate was founded, and by 1900 large-scale operations had begun. In 1900 the South Porto Rico Sugar Company was incorporated and began land accumulation in the Guánica district. By 1903 Central Guánica was grinding. In 1905 the Fajardo Sugar Company of Porto Rico was incorporated, becoming the major land holder in the northeast.⁷⁷ These three companies were the exclusive North American participants in the Puerto Rican sugar industry until 1926 when the United Porto Rican Sugar Company was organized.

Despite the provision in the Foraker Act, prohibiting any individual or corporation from controlling over five hundred acres of land, these corporations gained control of huge land areas (see table 2.)⁷⁸

TABLE 2 Land Owned and Controlled by Four U.S. Sugar Companies in Puerto Rico, 1929, in Acres

<i>Company</i>	<i>Owned</i>	<i>Controlled</i>	<i>Total</i>
United Porto Rico	28,843	15,187	43,930
Fajardo	25,741	12,000	37,741
Aguirre	22,269	17,000	39,269
South Porto Rico	<u>17,635</u>	<u>32,000</u>	<u>49,635</u>
Totals	94,488	76,187	170,675

The total land area controlled by these four companies represented 68 percent of all land sown in sugar cane. In addition, four Spanish companies, with participating Puerto Rican capital, controlled 26,060 acres of cane land bringing absentee control of the sugar industry's landed resources to 78 percent.⁷⁹

While these global figures indicate the land control of absentees in 1929, the mechanics of land accumulation are generally unknown. They must be examined for a more complete picture of the impact of this process on local society. How did those selling land become integrated into the new social order?

If they moved from the countryside to the towns, then what were the effects of the large gaps created in rural social structure by the disappearance of the traditional local elites?⁸⁰ One study indicates that the breakdown of hacienda social organization, the rise of urbanization, and the emphasis on bureaucratic efficiency by the new authorities led to the greater importance of professional occupations. This meant that capital generated by land sales was used for relocation to urban areas and assurances of professional educations for the children of the old hacendado class. The separation from agriculture and production and integration into the service sector of the economy is implied here.⁸¹ For the subject of class formation this assertion is pregnant with analytical possibilities. If the native elite of the early twentieth century based their class positions on education rather than production, then the lack of any coherent Puerto Rican national bourgeoisie on the eve of the great depression can be readily understood. Answers to these questions depend upon future research.

One of the immediate effects of the introduction of modern sugar factories was a more productive division of labor. As inefficient ingenios were displaced by the large centrales, new relations emerged between growing and refining. The bulk of cane was grown on company land, but an important portion was supplied by a new social type in the Puerto Rican context, the *colono*. It has been estimated that in 1930, 25 percent of all land sown in cane was cultivated by colonos with 50 percent owned directly by the sugar companies. The rest was leased by these companies from private owners.⁸² The colono grew sugar but did not refine, as his product was sold to the nearest central factory for processing. His origins were diverse. He may have been a hacendado, an owner of a small ingenio that could no longer compete with the capital intensive factories built by the foreign corporations. His control of landed resources may have been comparatively large before 1898, although his position as a property owner declined in relation to the estates accumulated by the absentee companies after the change in sovereignty. At the other extreme he may have been a small holder of coastal property that was devoted to subsistence crops before 1898. With the opportunities presented by the expansion of sugar and demand for cane by the centrales, he shifted to cane growing as a cash crop.

While the Puerto Rican colono of the early twentieth century has not been investigated, it is clear that this social group was highly stratified with all levels entirely dependent on the central factory to varying degrees, depending on hierarchical position. Whether cash tenant, sharecropper, or independent farmer, most colonos shared the similar problem of capital shortage. The inability to self-finance their operations meant the need to borrow. Logically the central became the major creditor. If credit operations passed from the hands of individual merchants to corporate enterprises after 1898, functionally there was little change. Debt was used to insure labor power, although in a more efficient and impersonal way by the new monopolizers of capital. The "colono contract" became the legal tie that bound the growers to the mills. The most important provision was the manner in which payment was to be made. There were several formulas for the division of refined sugar between processor and grower, all with built in disadvantages to the colono. The older method was to pay a

given number of pounds of sugar for each one hundred pounds of delivered cane, regardless of sugar yields. This varied from five to seven pounds when yields were often 10 to 12 percent. The central sold the colono's sugar at New York prices paying the colono this amount minus transportation and commission costs.⁸³

The newer method called for an analysis to be made of delivered cane, with a percentage of sugar content (usually 62.5 to 65 percent) credited to the grower. Theoretically this would compensate the producers of higher yielding cane and would act as an incentive for improvement in yields. However, the system generated a great deal of mistrust and suspicion, as the chemical analysis was always made by company employees. A study of seventy-two such contracts in 1927 and 1928 indicated that the average gross sugar receipts to colonos with newer contracts was 7.41 pounds per 100 pounds of delivered cane. After deduction of freight and brokerage charges these colonos received an average of 5.90 pounds of sugar, when actual yields were twice that amount.⁸⁴ The differences between the older method and the newer one were of form and not quality. Another disadvantage to the colono was that he was not able to capitalize on the varied uses of delivered cane. Each ton of cane also yielded approximately five gallons of molasses along with a great deal of bagasse which was used for fuel by the central. The grower was never compensated for these important by-products.⁸⁵

While the colono emerged as an important, if little studied, social type, the most important producers of sugar cane were salaried laborers. The decline in the fortunes of coffee and the subsequent rise in labor demand of the sugar industry attracted migrants from the island's interior to the coast. While migration patterns and labor recruitment again remain to be investigated, it is clear that on the coast, life for the plantation workers changed dramatically. Although the plantation functioned in a rural environment, social and economic relations took on the characteristics of urban living. Resident workers lived clustered together in villages, rather than dispersed throughout the countryside. The personal relations between patron and client that typified the hacienda were replaced by the new corporate order of employer and employee. The agricultural day laborer, who in the highlands usually maintained a subsistence plot, now was converted into a proletarian with few alternatives for survival other than the sale of his labor power. Money became the only mechanism for the satisfaction of all needs. Levels of consumption became the new measure of status, success, or failure. At the same time the nature of work shifted from the individualism of the dispersed rural farmer to the collectivism of a modern proletariat. Work schedules became regimented and labor habits were regulated and standardized. In the broadest sense the self-sufficiency of the hacienda was replaced by a new social order characterized by dependence on the external world for the necessities of survival.⁸⁶ The cultural changes were drastic. Yet the process of proletarianization has received little consideration either on the micro or macro levels.⁸⁷

The creation of these new social types, the colono and the sugar proletarian, was one specific result of the spread of modern sugar cultivation. At a

more general level, the global economy of the island became subject to the needs of sugar. The productive elite had assumed control of the state apparatus and public administration. The problem for Puerto Ricans was that the new ruling class was made up of foreigners, who assured that government functioned for the sugar interests, not for the island's people. Publicly funded railroads and roads went to the areas of the new plantations rather than to the traditional areas of coffee production.⁸⁸ Port facilities, as well as banking and credit operations, were developed to serve sugar more than any other economic activity.

A great deal of social dislocation is implied here. Old trading centers declined because of the new infrastructural developments. The ports serving coffee exports lost their functions with the demise of that crop and the growth of sugar company controlled port facilities. More efficient communications with the United States meant an entire reorganization of the internal trading system as the easy access to mainland manufacturers and jobbers eliminated the many wholesalers that previously supplied the island's merchants. Company stores run by the sugar interests and open to the general public displaced not only the old hacienda *tiendas*, but also other retail outlets because of their ability to undersell.⁸⁹

By the great depression the island had been converted into a monocultural factory, dependent on one principal crop for economic survival. In 1930 sugar accounted for 53.9 percent of total exports, and dominated both the agrarian and employment structure of the island.⁹⁰ While it is possible to argue that before 1898 the economic importance of coffee was relatively as great, the critical difference revolves around resource control. The coffee industry was in the hands of residents, with concentration at a relatively low level compared to the development of sugar after 1898. By the depression, absentee corporations controlled the bulk of sugar production along with the most important supportive economic activities such as banking, transportation, communications, public utilities, and most important of all—government.

The Tobacco Industry, 1900–1930

While foreign capital flowed to sugar, it was also responsible for the growth in tobacco cultivation. The organization of production was different but the level of dependence on external factors was as great. By 1930 tobacco products were the second leading export crop of the island. Cultivated acreage in tobacco expanded from 6,000 cuerdas in 1899 to a peak of 81,900 cuerdas in 1927, although by 1930 this figure had fallen to 43,312.⁹¹ As with sugar, the tobacco industry owed its prosperity to the guaranteed mainland market areas provided by tariff protection and large investments of foreign capital. The similarities end here, however, as the internal structure of the tobacco industry differed from sugar with respect to productive methods and the mechanisms of external control.

The major distinction was that tobacco processors and distributors did not dominate the agricultural side of production although they controlled the industry.⁹² North American tobacco corporations never sought to gain control of land, as was the case with sugar companies, but confined their activities to the

monopolization of manufacturing and marketing. The actual farming operations were left in the hands of small-scale owner/producers who were overwhelmingly natives. In a sense their position was analogous to the sugar colonos in terms of dependence on manufacturers or intermediaries for credit and crop purchases.

The greatest manufacturing conglomerate was the Puerto Rican-American Tobacco Company, which was established on the island in 1899, becoming in a short period the leading purchaser of raw tobacco from Puerto Rican farmers. This company maintained an island-wide network of cigarette and cigar factories, along with stateside plants that received exported Puerto Rican filler tobacco. It has been estimated that it controlled over 80 percent of tobacco purchases from farmers over most of the period under consideration.⁹³ The main, though not exclusive, tobacco growing areas were in the eastern highlands in the region of the San Lorenzo, Cayey, Comerio triangle.

It has been difficult to determine land tenure and labor patterns in tobacco country. One local study, conducted by Robert Manners in the late 1940s, indicated a steady decrease in average farm size from 38.4 cuerdas in 1898 to 27.7 cuerdas in 1930.⁹⁴ Fragmentation was accompanied by instability in ownership patterns. Manners found that population in the municipality he studied was continually departing for other parts of the island with new farmers entering the area as land became available. Land turnovers meant that it was rare to encounter a grandson working the same land once owned by his grandfather. Labor was supplied by the immediate or extended family on small holdings although larger units used a sharecropping system. Tenants generally bore productive costs, with capital borrowed from the landholder who was responsible for providing curing sheds and marketing facilities. The use of day laborers was common but not as widespread as in coffee country. The traditional hacienda store functioned as before, with debt an important factor in binding tenants to particular hacendados.⁹⁵

The Brookings Institution report of 1930 included a study of 120 tobacco farms in the municipalities of Cayey, Comerio, and San Lorenzo. Again, the small-scale nature of tobacco farming was revealed, as 86 of these farms had under 27 cuerdas sown in tobacco while only 13 had more than 63 cuerdas devoted to this crop. The study also indicated that 75 percent of farms were exclusively devoted to tobacco; another 18 percent were mixed farming operations with coffee growing on marginal lands not suitable for tobacco; and the remainder mixed tobacco with subsistence crops.⁹⁶

Another study examining credit arrangements found that 20 percent of tobacco growers were self-financed, dealing directly with manufacturers and receiving the full farm price for their crop. The remaining 80 percent relied on middlemen for credit and marketing. This meant that not only were they charged higher interest rates for working capital but they also received considerably less than the market price for their products.⁹⁷ The source and interest rates on borrowed capital varied directly with farm size. Farms with 6 cuerdas or less sown in tobacco borrowed 88.1 percent of their funds from merchants or individuals at average interest rates of 10.15 percent. At the other end of the spec-

trum, farms with tobacco in over 63 cuerdas procured 65.0 percent of their loans from banks at average interest rates of 7.65 percent.⁹⁸

The physical nature of the productive environment allowed tobacco farmers to resist the specter of proletarianization, although their dependence on exogenous forces was as great as that of sugar workers. The individualist dispersed nature of highland farms distinguished them from the collectivist milieu of the coast. In this sense we can discern two distinct social classes—a peasantry and an emerging proletariat. On the other hand, the shift to cash farming implied by the spread of tobacco cultivation meant great similarities between these two social groups. For the tobacco farmer, like the sugar worker, came to depend on cash as the vehicle of survival. The slow but steady integration of the highland farmer into a world that was governed by the modern impersonal forces of the market place laid the groundwork for the migration to the coast that occurred after the collapse of tobacco during the great depression.

Dependence also took other forms. Both the sugar and tobacco industries were entirely dependent on consumption patterns in the mainland market, the exclusive consumer of both crops. Between 1920 and 1933 per capita cigar consumption in the United States declined by 50 percent because of the upsurge in cigarette smoking.⁹⁹ This meant not only a drastic change in the composition of tobacco exports, but the dislocation of many workers in the manufacturing end of the tobacco industry. In 1915, 64.4 percent of tobacco exports were made up of cigars and 35.3 percent of unmanufactured tobacco. By 1930, cigars had fallen to 22.1 percent of total tobacco exports while raw tobacco rose to 76.6 percent. (Cigarettes were never an important export as most were consumed locally.) Thus Puerto Rican tobacco rollers not only had to compete with mechanization but also with the market tastes of American consumers. The lack of market diversification took its toll with the collapse of the United States as an importer during the depression. By 1932 tobacco exports from Puerto Rico had declined in value from a peak of \$25.1 million and 31.6 percent of total exports in 1919, to \$5.7 million and 6.6 percent of total exports.¹⁰⁰

The importance of this industry for the Puerto Rican economy in the predepression period has been discussed above. Yet apart from the material cited there has been no attempt to evaluate the rise or decline of the tobacco industry or the impact of this cycle on local economic and social structure.

The Coffee Industry, 1900–1930

The dislocation in the Puerto Rican coffee industry caused by the inclusion of the island in the American tariff system has already been discussed. The initial loss of traditional market areas and competition by cheaper South American coffee in the U.S. market were responsible for the decline of coffee exports in the years following the occupation. However, despite these difficulties and although it never regained its former importance, the coffee industry was revived somewhat in the period before World War I. While the United States never became a purchaser of Puerto Rican coffee, old market areas were recovered to some

degree by 1910, although purchases were lower than their pre-1900 level. In fact, after 1900 coffee exports only once surpassed the 1896 peak of \$8.9 million, in 1920, a year of inflated coffee prices.¹⁰¹

Cultivation seems to have shifted its small-scale intensive nature to larger scale extensive operations after 1900. At the same time yields declined considerably. In 1899 an average acre of coffee trees yielded 350 pounds of fruit, while in the 1939 to 1946 period this figure dropped sharply to 150 pounds per acre.¹⁰² This may have been due to soil exhaustion on coffee farms and failure to fertilize adequately. The few studies available show that land progressively became more concentrated. Eric Wolf's typology of land holders indicates this, although he fails to discuss the relative importance of each stratum delineated. The Brookings Institution study of 1930 fills some of the gaps left by Wolf. The 1928 records of 99 coffee farms were examined in the municipalities of Adjuntas (the site of Hacienda Pietri), Lares, and Yauco. Only 18 percent of the farms surveyed had 20 acres or less sown in coffee. This means that the small "peasant" group was insignificant numerically in terms of both total farms and land control.¹⁰³ This implies that coffee cultivation was no longer as viable in small-scale operations as before 1898, probably because of yield declines. Middle farmers, those with coffee sown on 20 to 100 cuerdas, were an important group, accounting for 42 percent of all coffee farms in these municipalities. Finally, hacendados, farmers controlling over 180 cuerdas of coffee land, owned 39 percent of all farms. Among the hacendados there was a group that can be classified as large-scale latifundia owners. These were farmers with coffee sown on over 300 cuerdas, approximately 9 percent of all coffee farms.¹⁰⁴

The generalization that the change in sovereignty meant a shift in the control of credit facilities from individuals to institutions does not seem to be true for the area dominated by coffee. The Brookings Institution found that farms with over 140 cuerdas in coffee secured 59.2 percent of their borrowed capital from merchants or individuals. The interesting discovery was that average interest rates for these loans was 7.35 percent, which was lower than rates charged by banks to tobacco farmers.¹⁰⁵ The continued role of small-scale lenders after 1898 is an area of investigation that may yield interesting results. Coffee farmers, like tobacco growers and sugar colonos, almost invariably sold their products to creditors. The lack of centralized lending and marketing facilities meant that coffee marketing was in the hands of a fairly dispersed group of individual merchants.

The labor basis of coffee farms in the twentieth century is as obscure as for the nineteenth, although it is clear that the extensive units found by the Brookings Institution required large seasonal labor inputs that were probably provided by day laborers or subsistence farmers. The extent of dependent tenants residing on coffee farms is unknown, along with the types of contractual arrangements in force. Generational continuity in the coffee districts has also not been examined. The number of coffee farmers of the early twentieth century that were nineteenth-century planters or their offspring is unknown. Finally, the new marketing arrangements that linked rural creditor/merchants to exporting houses remains another unrevealed mystery.

After the American occupation the coffee industry was incapable of expansion. There were boom years when world market prices soared and prosperity was felt in the coffee districts. Still the general characteristics of the industry were stagnation and decline. In 1928 hurricane San Felipe destroyed the island's crop. This combined with the world economic depression that began the following year meant the end of Puerto Rican coffee cultivation as a major industry.

Coffee is a unique and fascinating industry in the Puerto Rican context because of the great contrasts that are evident if compared to sugar and even tobacco. In the first place its prosperity dated to twenty-five years before the United States seized control of the island. Created from market forces, it was on the verge of dominating the island's economy when destroyed by legislation imposed by the United States after 1900. The impact of this destruction on those sectors dependent on coffee must have been devastating. In the second place, it apparently was an industry of Puerto Rican creation, although the precise origins of the nineteenth-century coffee elite are unknown. Nevertheless it was a product of the old society that desperately fought for survival after 1900 in the face of the onslaught of investment capital on other areas of the economy. Coffee culture was rooted in Puerto Rican soil before the North Americans arrived, while the sugar and tobacco industries of the twentieth century were really new creations of foreign capital even though these crops had been known on the island from the sixteenth century. (In the case of tobacco, before this period, as it was an indigenous plant unknown to Europeans before the discovery of the New World.)

The collapse of coffee really meant the decline of Puerto Rico's nineteenth-century productive elite. Changes in the island's social structure and the problem of class formation in the twentieth century originated in the modernization and dislocation of the traditional society represented by coffee, which began when North American troops disembarked in Guánica in 1898.

CONCLUSION

The change in sovereignty resulted in a complete reorganization of Puerto Rico's agrarian structure. It is mistaken to view the period after 1900 as merely an intensification of trends that were evident in the late nineteenth century.¹⁰⁶ It has been shown that by the 1870s the sugar industry was stagnating and declining, although there were isolated areas of modernization. After the turn of the century the newly created agro-industrial complexes retained few characteristics of their nineteenth-century counterparts. Land, labor, and capital resources were organized in a totally different manner as the plantation replaced the hacienda. At the same time coffee culture in the late nineteenth century was expanding dynamically and there were no indicators of the collapse precipitated by the U.S. intervention. It is difficult to see the nineteenth-century origins of coffee's decline. Tobacco was of little importance to the insular economy before the provision of guaranteed market areas in the mainland United States. There is little evidence that tobacco would have become so important without the inter-

vention. The reorganization of agriculture as outlined here must be seen as a radical break from the evolutionary trends of the nineteenth century rather than as any intensification of natural developmental processes.

In terms of economic development the growth of plantation agriculture in the period before the great depression had adverse effects. The hegemonic control exercised by absentee sugar corporations over the economic resources of the island by 1930 led to decreased opportunities for Puerto Ricans to participate in the benefits of sugar "prosperity." Ownership concentration by absentees and the remittance of profits to the mainland meant few possibilities of capital accumulation. Little capital generated by the sugar industry was reinvested in island development or economic diversification. The domestic income-generating effects of sugar were extremely limited due to seasonal labor patterns in the industry. The sugar proletariat worked four or five months during the harvest and remained unemployed or underemployed for the remainder of the year. At the same time the general level of skills attained by the island work force was minimal. Sugar manufacturing was capital intensive requiring a numerically small skilled work force. The labor intensity of the *zafra* encouraged the maintenance of a large unskilled labor reserve. Sugar dominance of the island also did little to develop an internal consuming market. It was difficult to construct a native manufacturing industry without consumers. This was aggravated by the inability of Puerto Ricans to stimulate nascent industry through tariff protection, as all manufactured goods entered duty free from the United States.

At the same time insular government expenditures reinforced the development of sugar and the underdevelopment of the island. Infrastructure, utilities, banking and credit operations, and power plants were all designed to support the needs of sugar. There were no long-range economic or social plans designed to generate full employment or economic diversification.¹⁰⁷

The decline of coffee production has been outlined above. Without glorifying the coffee industry of the nineteenth century or underestimating the exploitative mechanisms for controlling labor, there were great differences in the organization of resource control if compared with sugar after 1900. The most glaring distinction was in the ownership structure. Even though there was great dependence on merchants and marketers, the ownership pattern in coffee country seems to have been fairly diversified, with minimal levels of concentration. This meant that profits generated by coffee exports were more equitably distributed and, more importantly, a greater percentage of surplus capital probably remained on the island. The implications are that through the development of coffee culture there would have been a greater possibility of economic development as coffee was a domestically controlled industry. However it is clear that no developmental choices existed after 1900.

Coffee's decline also had important implications with respect to the question of class formation. By 1930 Puerto Rican class structure was highlighted by the lack of any well defined national bourgeoisie.¹⁰⁸ While there existed a social elite, this group was, for the most part, composed of professionals, bureaucrats, and agents or managers for absentee corporations, whose positions were largely based on education rather than ownership of the means of production. The

functions of a national bourgeoisie in terms of productive control were taken over by foreigners with the active cooperation of Puerto Rican intermediaries. Two extremely important and related questions are why Puerto Rico was not able to develop a social class of this nature, and the implications of the existence of this social vacuum for Puerto Rican society. This must obviously be considered in relation to the economic reorganization of Puerto Rico after 1900. Specifically how did the new economic order inhibit or destroy the possibilities of the emergence of a Puerto Rican national bourgeoisie? For this question to be answered the structure of the coffee industry of the late nineteenth century must be investigated in detail. As the most prosperous industry by the 1890s it is around coffee that a national bourgeoisie may have been taking shape.

The Pietri family's extended business network was indicative of these possibilities. We need to determine the vertical integration of coffee farmers like them, as well as their numbers and their investments in other areas of the economy. How many coffee farmers were actually able to accumulate capital and diversify their economic activities? What was the fate of these farmers after 1898? These questions are critical areas for future research into the economic history of Puerto Rico. Their answers will lead to a better understanding of developments after the great depression. Government intervention in the economy, the rise of the Popular Democratic Party and "industrialization," Puerto Rican emigration to the mainland, and the sad economic dilemma of contemporary Puerto Rico have their roots in the reorganization of agriculture after 1900. To understand the impact of this reorganization we must first decipher the characteristics of agrarian Puerto Rico in the late nineteenth century.

NOTES

1. For 1830 and 1862 see Harvey Perloff, *Puerto Rico's Economic Future* (Chicago: University of Chicago Press, 1950), p. 83. For 1899 see United States War Department, *Report on the Census of Porto Rico 1899* (Washington, D.C.: Government Printing Office, 1900), p. 356.
2. Angel G. Quintero Rivera, "Background to the Emergence of Imperialist Capitalism in Puerto Rico." In A. López and J. Petras, *Puerto Rico and Puerto Ricans: Studies in History and Society* (New York: Halsted Press, 1974), p. 93. Cultivated acreage increased approximately 135 percent in the period, while population increased 185 percent.
3. Labor scarcity is usually a problem of low wages or land availability, both making the attraction of wage labor a difficult task. Capital scarcity is usually due to low productivity and low short-term returns on invested capital.
4. For the most complete account of Cuban sugar expansion in the 1790s, see Manuel Moreno Fragnals, *El Ingénio, Tomo 1, 1760–1860* (La Habana, 1964). Aside from the article by Sidney Mintz, "Labor and Sugar in Puerto Rico and Jamaica, 1800–1850," *Comparative Studies in Society and History* 1:3 (1959):273–80, there has been little of value written about this early period of sugar expansion. Statistics cited by Dario de Ormaechea, *Memoria acerca de la agricultura, el comercio y las rentas interiores de la isla de Puerto Rico* (Madrid, 1847), reprinted in Cayetano Coll y Toste, ed., *Boletín histórico de Puerto Rico* (San Juan: Tip. Cantero Fernández, 1914–27), 2:4, p. 230, indicate that cultivated acreage in sugar cane as well as output doubled between 1824 and 1832.
5. For this standard interpretation see Juana Gil-Bermejo, *Panorama histórico de la agricultura de Puerto Rico* (Sevilla: Instituto de Cultura Puertorriqueña, 1970), chap. 6, pp. 129–40.

6. Through the different stages of productive reorganization of the Cuban sugar industry in the nineteenth century, a social revolution seems to have occurred as a modernizing "bourgeoisie" actually replaced the old Cuban aristocracy in positions of economic power in the aftermath of the Ten Years' War. In Puerto Rico no such changes occurred as the sugar industry was incapable of modernization and was reduced to secondary economic importance late in the century. For an interpretation of the Cuban process see Hugh Thomas, *Cuba: The Pursuit of Freedom* (New York: Harper & Row, 1971), chap. 11.
7. *Ibid.*, p. 1562.
8. For Puerto Rican statistics see Luis M. Díaz Soler, *Historia de la esclavitud negra en Puerto Rico* (San Juan: Editorial Universitaria, 1965), p. 117. For Cuba see Heinrich Friedlaender, *Historia económica de Cuba* (La Habana: 1944), p. 110.
9. For a description of these laws and their effects see Sidney Mintz, "The Role of Forced Labour in Nineteenth Century Puerto Rico" *Caribbean Historical Review*, no. 2, (1951), p. 139. For general treatment of the topic see Labor Gómez Acevedo, *Organización y reglamentación del trabajo en el Puerto Rico del siglo XIX (Proprietarios y jornaleros)* (San Juan: Instituto de Cultura Puertorriqueña, 1970.)
10. See, for example, Ormaechea, *Memoria*, p. 250. He comments on the sad state of the *hacendados de caña* who could not expand or improve production due to lack of credit. Also see José Ramón Abad, *Puerto Rico en la feria exposición de Ponce en 1882* (Ponce: Tip. El Comercio, 1885), p. 40.
11. See Julian Steward et al., *The People of Puerto Rico* (Urbana: University of Illinois Press, 1956), p. 54.
12. *Ibid.*, and Santiago McCormick, *Informe dado a la Excelentísima Diputación Provincial sobre el sistema de las factorías centrales para la elaboración del azúcar* (San Juan: Imp. Bole-tín Mercantil, 1880), p. 10.
13. *Commercial Porto Rico in 1906*, United States Department of Commerce and Labor (Washington, D.C.: Government Printing Office, 1907), p. 54. S. L. Descartes, *Basic Statistics on Puerto Rico* (Washington, D.C.: Office of Puerto Rico, 1946), p. 47. *Annual Book of Statistics*, Puerto Rico, Dept. of Agriculture and Commerce, Division of Commerce, 1935–36, p. 137; 1937–38, p. 12.
14. War Department, *Census, 1899*, pp. 155, 141.
15. Andrés Ramos Mattei, "Apuntes sobre la transición hacia el sistema de centrales en la industria azucarera: contabilidad de la Hacienda Mercedita 1861–1900" (Río Piedras: Centro de Estudios de la Realidad Puertorriqueña, 1975), no. 4. Mimeographed. See p. 10.
16. Gervasio García Rodríguez, "Primeros fermentos de organización obrera en Puerto Rico 1873–1898" (Río Piedras: Centro de Estudios de la Realidad Puertorriqueña, 1974), no. 1, pp. 5–6. Mimeographed.
17. McCormick, *Informe*, p. 23. The author describes the benefits of specialization and labor division claiming that for \$300,000, a central could have been established.
18. Enrique Delgado, *Proyecto para la creación de una empresa de factorías centrales para la isla de Puerto Rico* (San Juan: Tip. de Acosta, 1881).
19. War Department, *Census, 1899*, p. 152.
20. See Mintz, "Labor and Sugar" and "Forced Labour," and "The Culture History of a Puerto Rican Sugar Cane Plantation: 1876–1949," *Hispanic American Historical Review* 33:2 (1953):224–51.
21. Delgado, *Proyecto*, pp. 8–9.
22. García Rodríguez, "Primeros fermentos," p. 7. Andrés Ramos Mattei's "El régimen de trabajo y los cambios tecnológicos de la industria azucarera 1840–1873" (Río Piedras: Centro de Estudios de la Realidad Puertorriqueña, n.d.) has been unavailable for consultation. However he discusses the theme of labor in his other work on Hacienda Mercedita, pp. 15–21.
23. Quintero Rivera, "Background," pp. 92–102.
24. See for example Peter Klarén, *Modernization, Dislocation and Aprismo: Origins of the Peruvian Aprista Party, 1870–1932* (Austin: University of Texas Press, 1973); Peter

- Eisenberg, *The Sugar Industry of Pernambuco, 1840–1910: Modernization without Change* (Berkeley: University of California Press, 1974); and Ramiro Guerra y Sánchez, *Sugar and Society in the Caribbean* (New Haven, Conn.: Yale University Press, 1964). The problems faced in the sugar industries in these regions were similar although the results, both economic and social, were distinct.
25. For Brazil the best study of coffee production in the late nineteenth century is Stanley Stein, *Vassouras: A Brazilian Coffee County, 1850–1900* (Cambridge, Mass.: Harvard University Press, 1957). Another important contribution is Warren Dean, *Rio Claro: A Brazilian Plantation System, 1820–1920* (Stanford, Calif.: Stanford University Press, 1976). For Colombia, William McGreevy, *An Economic History of Colombia, 1845–1930* (New York: Cambridge University Press, 1971) has a short but well written section on the organization of coffee production in Colombia. A good survey of coffee production in Central America is Ciro Flamarión Santana Cardoso, "Historia económica del café en Centroamérica (siglo XIX): estudio comparativo," *Estudios Sociales Centroamericanos* 4:10 (1975):9–55.
 26. This has been pointed out in an essay by Magnus Mörner that will appear in a volume to be published by Cambridge University Press as *Land and Labour in Latin America: Essays on the Development of Agrarian Capitalism in the Nineteenth and Twentieth Centuries*. Mörner's essay is titled "Latin American 'Landlords' and 'Peasants' and the Outer World During the National Period."
 27. Gil-Bermejo, *Panorama*, p. 197.
 28. Perloff, *Economic Future*, p. 83.
 29. This is the explanation given by Steward et al., *The People*, p. 55.
 30. *Commercial Porto Rico in 1906*, pp. 54–55; Descartes, *Basic Statistics*, p. 47; and *Annual Book of Statistics, 1935–36*, p. 137 and 1937–38, p. 12.
 31. *Commercial Porto Rico in 1906*, p. 55.
 32. *Ibid.*, p. 54; Descartes, *Basic Statistics*, p. 47; and *Annual Book of Statistics, 1935–36*, p. 137 and 1937–38, p. 12.
 33. Raymond Crist, "Sugar Cane and Coffee in Puerto Rico," *American Journal of Economics and Sociology* 7:2 (1948):177.
 34. Eric Wolf, "San José: Subcultures of a 'Traditional' Coffee Municipality," in Steward et al., *The People*.
 35. *Ibid.*, p. 203.
 36. War Department, *Census, 1899*, p. 354.
 37. *Ibid.*, pp. 150–51.
 38. *Ibid.*, pp. 354–56.
 39. Vivian Carro Figueroa, "La formación de la gran propiedad cafetalera: La Hacienda Pietri, 1858–1898," *Anales de Investigación Histórica* 2:1 (1975). This is a mimeographed publication of the Department of History of the University of Puerto Rico. See pp. 1–14 for a summary of land acquisition, pp. 64–76 for a discussion of debt, and pp. 42–50 for land holdings of the Pietri family which extended into Yauco.
 40. Letter from Dr. F. Picó, 2 March 1976. Dr. Picó is researching the social structure of the Utuado region in the nineteenth century.
 41. Henry Wells, *The Modernization of Puerto Rico* (Cambridge, Mass.: Harvard University Press, 1969), p. 40.
 42. Cayetano Coll y Toste, *Reseña del estado social, económico, industrial de la isla de Puerto Rico al tomar posesión de ella los Estados Unidos* (San Juan, 1899), p. 16. Enrique Vijande, *Apuntes estadísticos-económicos referentes a la isla de Puerto Rico* (Barcelona: Tip. de la Casa P. de Caridad, 1896), pp. 8–10, contains a short sketch of the founding of credit institutions in Puerto Rico.
 43. E. D. Colón, *Datos sobre la agricultura en Puerto Rico antes de 1898* (San Juan: Tip. Cantero Fernández, 1930), p. 128.
 44. There is a good descriptive section on the processing of coffee in Puerto Rico in William Dinwiddie, *Porto Rico: Its Conditions and Possibilities* (New York: Harper & Brothers, 1899), pp. 85–101.
 45. War Department, *Census, 1899*, p. 154.

46. *Ibid.*, p. 156.
47. Coll y Toste, *Reseña*, p. 10.
48. For the best account of political conflicts between hacendados and merchants in the late nineteenth century see Angel G. Quintero Rivera, "Conflictos de clase en la política colonial: Puerto Rico bajo España y bajo los Estados Unidos, 1870–1924" (Rio Piedras: Centro de Estudios de la Realidad Puertorriqueña, 1974), pp. 3–6. Mimeographed.
49. In 1875 the first Asociación Agrícola was founded in Ponce followed by local chapters throughout the island. The Junta Provincial de Agricultura, Industria, y Comercio was inaugurated in 1883, and in 1885 the Junta Provincial de Estadística y Evaluación de Riqueza was organized. Finally the Asociación de Agricultores de Puerto Rico was founded in 1892 with an official organ "La Reforma Agrícola." See Colón, *Datos*, pp. 119–22.
50. This is suggested by Quintero Rivera, "Conflictos de clase," p. 3.
51. Henry K. Carroll, *Report on the Island of Porto Rico* (Washington, D.C.: Department of War, Government Printing Office, 1899), p. 41.
52. See for example the excellent quotes from hacendados cited by Lidio Cruz Monclova, *Historia de Puerto Rico (Siglo XIX)*, 3 vols. (San Juan: University of Puerto Rico, 1971), 3:318–22. One hacendado claimed that in the Cidra-Comerio region the roads had not been improved from the times of Agüeybana, a Taino cacique on hand to greet the Spaniards in the late fifteenth century. Another said that to go from San Germán to Mayagüez required one to leave a written will at the point of departure. For more complaints see Ramón Abad, *Puerto Rico en la Feria*, p. 21.
53. Carroll, *Report*, p. 46, and Colón, *Datos*, p. 133.
54. Dinwiddie, *Porto Rico*, p. 97. In 1897 over 50 percent of coffee exports were shipped from Ponce and another 25 percent departed from Mayagüez.
55. For trade data 1879–83 see José Jimeno Aguis, *Población y comercio de la isla de Puerto Rico*, in Coll y Toste, *Boletín* 5(1918), p. 307. For 1893–96 see Descartes, *Basic Statistics*, pp. 49–50.
56. García Rodríguez, "Primeros fermentos," pp. 10–11. There is a list of "industries" in Coll y Toste, *Reseña*, pp. 374–75. Also see Cruz Monclova, *Historia* 3:289–90 for another list of industries.
57. *Commercial Porto Rico in 1906*, p. 54. Descartes, *Basic Statistics*, p. 47.
58. This is the interpretation of Quintero, "Conflictos de clase," p. 11.
59. Edward Berbusse, *The United States in Puerto Rico, 1898–1900* (Chapel Hill: University of North Carolina Press, 1966), p. 93.
60. Quintero Rivera, "Background," pp. 108–10.
61. Mintz, "Culture History," pp. 234–36.
62. Andrés Sánchez Tarniella, *La economía de Puerto Rico: etapas en su desarrollo* (San Juan: Ediciones Bayoán, 1973), pp. 70–71. There is a short history of currency in Puerto Rico in the nineteenth century in Dinwiddie, *Porto Rico*, chap. 20.
63. Bailey and Justine Diffie, *Puerto Rico: A Broken Pledge* (New York: The Vanguard Press, 1931), p. 34. Also see the *First Annual Report of the Governor of Porto Rico* (Washington, D.C.: Government Printing Office, 1901), pp. 65–66.
64. See Crist, "Sugar and Coffee," p. 181 for a summary of this. Diffies, *Puerto Rico*, chap. 7, also deals with this subject. According to Victor S. Clark, ed., *Porto Rico and Its Problems* (Washington, D.C.: The Brookings Institution, 1930), p. 410, Puerto Rico was included in the American customs system by a presidential proclamation of 25 July 1901.
65. *Commercial Porto Rico in 1906*, p. 54; Descartes, *Basic Statistics*, p. 47; and *Annual Book of Statistics, 1935–36*, p. 137 and 1937–38, p. 12.
66. Angel G. Quintero Rivera, "La clase obrera y el proceso político en Puerto Rico," *Revista de Ciencias Sociales* 18:3–4 (1974): 70–71. Also see Quintero Rivera, "Conflictos de clase," p. 20.
67. Mintz, "Culture History," pp. 245–46.

68. For 1899, War Department, *Census, 1899*, p. 356. For other years, Descartes, *Basic Statistics*, p. 25.
69. This argument is advanced by the Diffies, *Puerto Rico*, p. 80.
70. For 1899 see War Department, *Census, 1899*, p. 356. For 1929 see Descartes, *Basic Statistics*, p. 25.
71. This is the conclusion of Perloff, *Economic Future*, p. 85.
72. For 1883 see Jimeno Aguis, *Población y comercio*, in Coll y Toste, *Boletín* 5:304. For 1895 see Perloff, *Economic Future*, p. 139. For 1901–1905 see *Report of the Governor of Puerto Rico, 1905*, p. 18. For 1906–1910 see *Report of the Governor of Puerto Rico, 1910*, p. 8. For 1921–32 see *Anuario Estadístico, 1945/46*, p. 82. For food imports to Cuba, Chile, and Peru in the contemporary period see United Nations Food and Agricultural Organization, *Trade Yearbook, 1974*. These three countries devoted approximately 23 percent of foreign exchange to food imports in 1972.
73. For 1899 see War Department, *Census, 1899*, p. 35. For 1909 see United States, *Thirteenth Census of the United States. Vol. 7. Agriculture, 1909–1910*, p. 385. For 1919–29 see United States, *Fifteenth Census of the United States: Outlying Territories and Possessions, 1930*, p. 216.
74. United States, *Fifteenth Census*, p. 208.
75. Perloff, *Economic Future*, p. 73.
76. Aurthur D. Gayer et al., *The Sugar Economy of Puerto Rico* (New York: Columbia University Press, 1938), p. 37. For a schedule of comparative production costs per ton of Puerto Rican, Cuban, Hawaiian, and Louisianan sugar for 1913–28 see Clark, *Porto Rico and Its Problems*, p. 631. In 1913 average production costs per ton of Puerto Rican sugar was \$52.30 while a ton of Cuban sugar was produced for \$28.76. In 1922 production costs for a ton of Puerto Rican sugar were \$103.99 while a ton of Cuban sugar was produced for \$66.23. It must be added that after a superficial investigation I have not been able to determine why these costs were so much higher in Puerto Rico as wages were not higher. Land costs and comparative yields must be examined. Although by 1925 sugar yields per acre were higher in Puerto Rico than in Cuba.
77. Thomas C. Cochran, *The Puerto Rican Businessman* (Philadelphia: University of Pennsylvania Press, 1959), p. 26.
78. Diffies, *Puerto Rico*, p. 52. For general consideration of the Foraker Act see Lyman Gould, *La Ley Foraker: Raíces de la política colonial de los Estados Unidos* (San Juan: Editorial Universidad de Puerto Rico, 1969).
79. Diffies, *Puerto Rico*, p. 53.
80. This is what Sidney Mintz found at 'Cañamelar'. See Mintz, "Culture History," p. 235.
81. This theme is developed by Angel G. Quintero Rivera, "The Development of Social Classes and Political Conflicts in Puerto Rico," in Lopez and Petras, *Puerto Rico and Puerto Ricans*.
82. Clark, *Porto Rico and Its Problems*, p. 626.
83. Gayer et al., *Sugar Economy*, p. 137.
84. Clark, *Porto Rico and Its Problems*, p. 619.
85. Diffies, *Puerto Rico*, p. 69.
86. Quintero Rivera, "La clase obrera," pp. 82–86. Also see Mintz, "Culture History" for a discussion of this.
87. Again the works by Mintz cited above are unique.
88. See for example the maps on railroad and road building in the early annual reports of the governors of "Porto Rico." Roads and railroads were rapidly developed in the coastal areas of sugar production and in the eastern area of the island that was devoted to tobacco cultivation. Comparatively few roads were built into the heartland of coffee country in western Puerto Rico. See United States War Department, *Annual Report of the Governor of Porto Rico, 1910. Vol. 4, the map between pp. 124–25*.
89. There is a good descriptive section on commerical reorganization in Clark, *Porto Rico and Its Problems*, pp. 421–27.

90. Descartes, *Basic Statistics*, p. 47.
91. Tobacco products accounted for 17.3 percent of all exports in 1930. See Charles E. Gage, "The Tobacco Industry in Puerto Rico," U.S. Department of Agriculture, circular no. 519, 1939 (Washington, D.C.: Government Printing Office, 1939); esp. p. 12.
92. Steward et al., *The People*, p. 72.
93. Diffies, *Puerto Rico*, cites plants on the island at the following places: La Marina, San Juan, Bayamón, San Lorenzo, Manatí, Cayey, Cidra, and Ponce; see p. 93. Thomas Mathews, *Puerto Rican Politics and The New Deal* (Gainesville: University of Florida Press, 1960), p. 6, claims that over 80 percent of marketing and manufacturing was controlled by this company.
94. Robert A. Manners, "Tabara: Subcultures of a Tobacco and Mixed Crop Municipality," in Steward et al., *The People*, p. 117.
95. *Ibid.*, pp. 110–18.
96. Clark, *Porto Rico and Its Problems*, pp. 676–77.
97. Diffies, *Puerto Rico*, p. 97. The Brookings Institution study estimated that small farmers, whether share tenants or owners, received 6.2 cents per pound less than the average farm price of 29.25 cents per pound for tobacco in 1928. See Clark, *Porto Rico and Its Problems*, p. 695.
98. Clark, *Porto Rico and Its Problems*, p. 693.
99. Perloff, *Economic Future*, p. 92.
100. Gage, "The Tobacco Industry," pp. 38, 44, 48.
101. *Commercial Porto Rico in 1906*, p. 54; Descartes, *Basic Statistics*, p. 47; *Annual Book of Statistics, 1935–36*, p. 137 and 1937–38, p. 12.
102. Steward et al., *The People*, p. 73.
103. Clark, *Porto Rico and Its Problems*, p. 655.
104. *Ibid.*
105. *Ibid.*, p. 668.
106. This is the interpretation of Steward et al., *The People*, p. 62.
107. Gordon Lewis, *Puerto Rico: Freedom and Power in the Caribbean* (New York: Monthly Review Press, 1963), p. 98.
108. *Ibid.*, pp. 95–96, and Manuel Maldonado-Denis, *Puerto Rico: An Historic Social Interpretation* (New York: Random House, Inc., 1972), p. 79.

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