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THE ECONOMY OF EARLY COLONIAL DAHOMEY: 1890-1914

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Although the colonial powers collected a wealth of statistics on their African territories, most of them have never been subjected to any real analysis. Many of these statistics are potentially useful for an understanding of African economic life and its changes under the influence of local factors and the colonial presence. This study is intended to help demonstrate the possibility, for French African colonies, of performing quantitative analysis in economic history, based on questions and principles offered by economic theory (see also Helleniner 1966 and Poquin 1957). The feasibility of such analysis will enable the economic historian to study Africa on the same basis as Europe and North America have been studied, and will permit a clearer view of the place of African economies in the world economy (Fogel 1966).

French colonial statistics leave a great deal to be desired, especially as compared to British colonial statistics. French statistics were collected in a sometimes haphazard fashion, they were published under constantly changing titles in constantly changing formats, and libraries in France, Africa and the United States rarely obtained complete collections of official publications. Piecing together series of comparable figures for foreign trade or government expenditures, for example, is a laborious process, and it is likely that such time-series will always have lacunae.

As it is not possible at this stage to report a full interpretation of the economy of early colonial Dahomey, what follows is a series of small studies on major aspects of the economy of that colony, designed to show both the possibilities and the limits imposed by colonial statistics (for background, see Manning 1969). The first two studies are microeconomic, giving evidence of the patterns in which Dahomeans, as producers of palm products, responded to changes in prices and weather, as well as the patterns in which the same Dahomeans, as consumers of imported goods, decided to allocate their earnings. The last two studies are macroeconomic,

including an overview of the dynamics of the money supply which was used in both domestic and foreign transactions, and a survey of the discrepancy between taxation of Dahomeans and colonial government expenditures in Dahomey. A concluding section draws together some impressions of the overall economy based on this evidence, and presents comments on the feasibility of further quantitative work in African economic history.

Dahomey sustained over two centuries of fairly steady British, French, and Portuguese (or rather Brazilian) contact with its coast before the French conquered the area in the years 1890-94, and established the Colony of Dahomey, governed from Porto-Novo. French commercial and government statistics began in 1890 (informal statistics had been kept for a few years prior to 1890), and statistics became more complete in 1894 with the completion of the conquest. Dahomey was integrated into Afrique Occidental Française, in practical terms in the year 1905. The coming of World War I, the rapid inflation which accompanied the war, and a concurrent change in the French system of reporting colonial statistics suggest 1914 as a convenient ending date for this series of studies.[1]

I. ANALYSIS OF PALM OIL AND PALM KERNEL EXPORTS

Palm oil and palm kernels have been the major exports of Dahomey since at least the 1860's. Figures 1 and 2 show the quantity and value of exports of palm oil and kernels (France 1896, France 1897). The cyclical fluctuations in exports, with a periodicity of eight to nine years, appear to have been characteristic of West African palm product exports from the mid-nineteenth century to the present, and may be related to cycles in rainfall.

This study concentrates, however, on the short run and on establishing the specific pattern by which Dahomean producers responded each year to changes in opportunity to market palm oil and kernels. Estimates of their responsiveness are calculated using the technique of linear regression, and the theory on which the calculations are

[1]For a survey of Dahomean history with an excellent (though dated) bibliography, see Cornevin 1962.

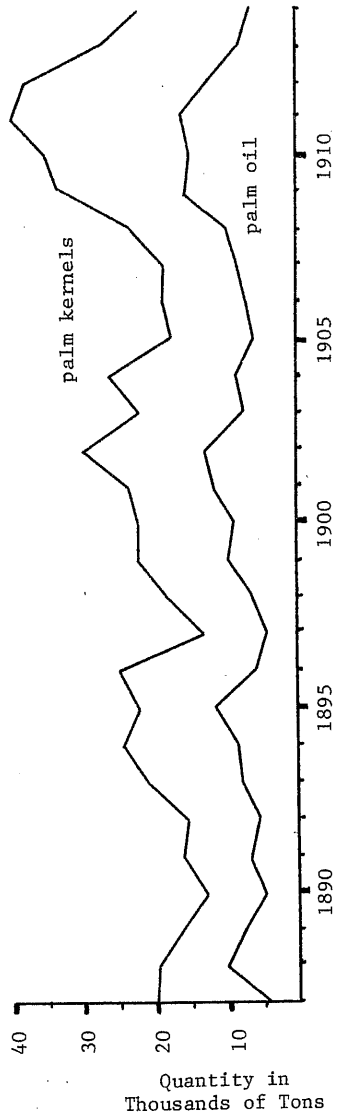

Figure 1. Quantity of Palm Oil and Palm Kernel Exports

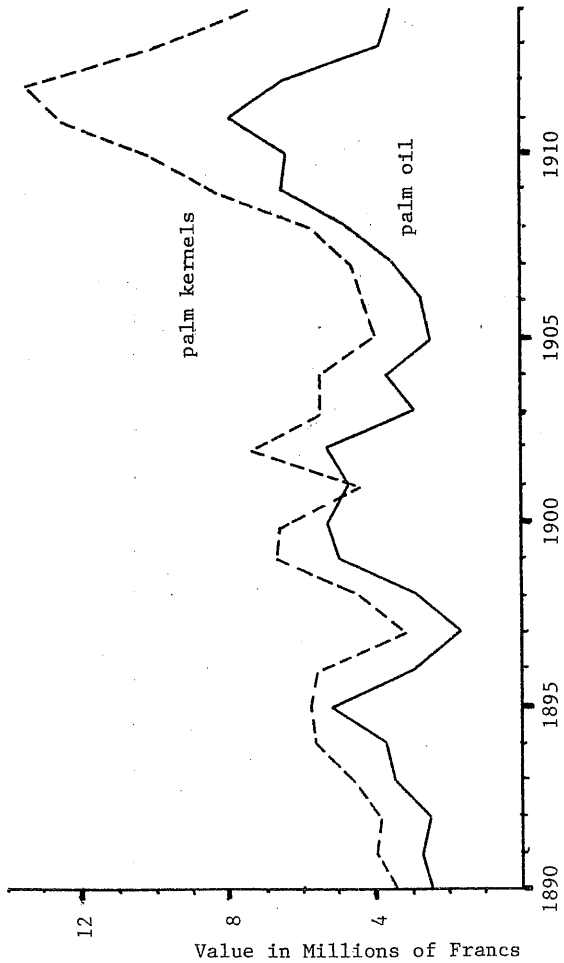

Figure 2. Value of Palm Oil and Palm Kernel Exports

based is first set out briefly.[1]

Figure 3 displays, in theory, the short-run interaction of world and local supply and demand for primary products such as palm oil and kernels. The left side of the figure shows world supply and demand, while the right side shows local supply and demand.

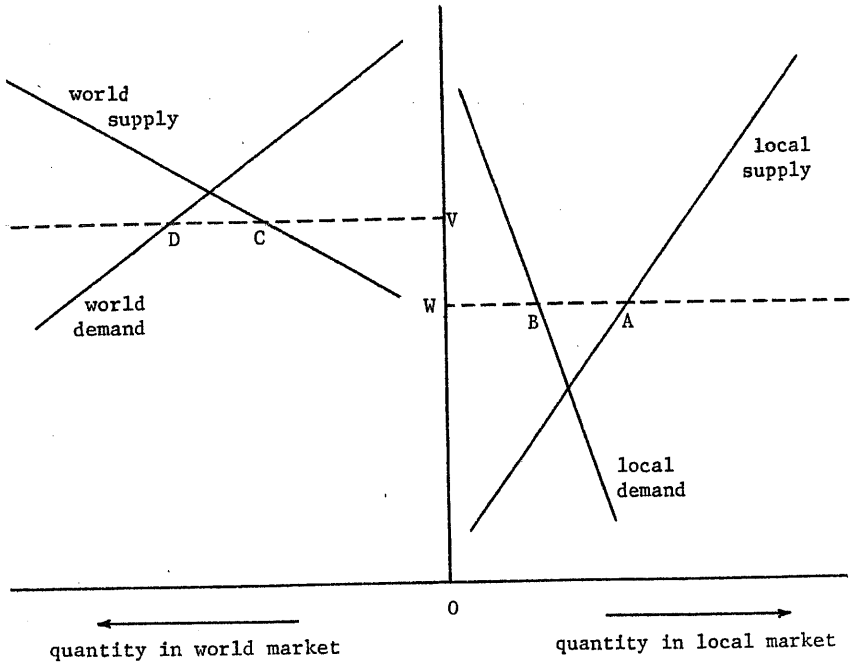

Figure 3. World and Local Markets for Primary Products

Local exports are shown as AB on the right, and as CD on the left. VW is the cost of transport from the local market to the world market. BW represents local consumption, and AB represents exports as a portion of local production AW; CD represents local exports as a portion of world trade VC. The mechanism for determination of the

[1] I have assumed that the reader is acquainted with the basic principles of price theory, and with the technique of linear regression, which establishes the degree of correlation among a number of variables, using repeated observations of the variables. These are presented in a wide variety of texts: for example, Samuelson 1975 and Floud 1973.

equilibrium price and output is, theoretically, as follows: for each set of supply and demand curves, and for a given transport cost, the world price OV (and hence the local price OW) adjusts to the level where AB = CD, thus determining the volume of local exports.

Not explicitly included in Figure 3 are the factors such as supply and demand of substitute goods which might influence the curves shown. Changes in local exports will result from changes in world or local supply or demand. The degree of change in exports resulting from change in another variable depends also on the elasticity (or, crudely, the slope) of each of the supply and demand curves. At the world level, changes in price of substitutes for the product will lead to shifts in the world demand curve, whereas changes in weather, in other supply conditions, and in profit margins will lead to shifts in the world supply curve, determining the world price.

This general model of exports of primary products may be applied to the available information on palm oil and kernels from Dahomey. At the local level, transport costs may change. In fact, Dahomean transport costs varied from region to region, but varied little over time for any given region, except that the railroad may have reduced transport costs in some areas after 1903 (Godfernaux 1911: 233-57, 430-32; Dahomey 1898: 1904). Local demand, too, may have shifted from year to year in accordance with changes in income, tastes, and availability of substitutes. Local supply varied with changes in weather and other supply conditions, including any changes in profit margins which might have come with changes in monopoly power. Oil palms were harvested primarily in August and January. Palm oil was subsequently extracted from the fruit, and the palm nuts upon drying were cracked open to yield the palm kernels. Palm oil and kernels are joint products--each is a by-product of the other--so the supply of each depends on the price of the other as well as its own price. Dahomey exported virtually all of the palm kernels produced, but retained, for local consumption, a large portion of the palm oil produced. Aside from some use as firewood and the extraction of a tiny abount of palm kernel oil, palm kernels had no local use in Dahomey. No direct estimates of palm oil production are available, though some indirect estimates of local palm oil consumption have been made (Manning 1969: 57-8, 88-9).

Complete information on all variables would permit estimation of the shape of all the curves in Figure 3, but available information consists mainly of export prices and quantities, rainfall statistics and transportation costs. This information may be used, in the case of palm kernels, to estimate the shape of the local supply curve (local demand being virtually zero) and, in the case of palm oil, to estimate the shape of the local supply curve as related to the local demand curve. In the estimation below, transport costs and profit margins are assumed to have remained constant.

The hypothesis chosen for testing was that exports in year t are positively correlated with rainfall in years t and t-1 (which determines yield), with price of the product in year t, and with price of the joint product in year t (both of which determine intensity of harvesting). Agronomists and farmers recognized that each year's harvest depended on rainfall of both current and preceding years. Current rather than lagged price is used since there was no annual decision to plant palm oil and kernels, but only a decision to harvest, based on current price. Rainfall figures used in this calculation are those for Lagos, which is one to two hundred kilometers from the producing areas of Dahomey.[1]

Results of the correlations for the years 1895-1913 are as follows:

$$E(o)_t = -9865 + \underset{(55.9)}{139.4\, R_t} + \underset{(52.4)}{143.7\, R_{t-1}} - \underset{(19{,}401)}{40{,}784\, P(o)_t} - \underset{(21{,}928)}{68{,}287\, P(k)_t} \qquad (R^2 = 0.459)$$

$$E(k)_t = -10{,}256 - \underset{(128.4)}{138.0\, R_t} - \underset{(120.5)}{181.7\, R_{t-1}} - \underset{(44{,}601)}{39{,}564\, P(o)_t} - \underset{(50{,}401)}{116{,}382\, P(k)_t} \qquad (R^2 = 0.349)$$

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[1] A sufficient number of rainfall figures for Porto-Novo is not currently available, so those for nearby Lagos were used instead (Lagos 1890, Southern Nigeria 1906). A correlation of the ten available rainfall figures for Porto-Novo with the equivalent figures for Lagos resulted in a very poor correlation coefficient of $R^2 = 0.108$.

Where:

$E(o)_t$ = palm oil exports in year t, in metric tons,

$E(k)_t$ = palm kernel exports in year t, in metric tons,

R_t = Lagos rainfall in year t, in inches,

$P(o)_t$ = Dahomean palm oil price in year t, in francs/kg,

$P(k)_t$ = Dahomean palm kernel price in year t, in francs/kg.

The calculated coefficients of $P(o)_t$ and $P(k)_t$ in the second equation give the price elasticity of supply for palm kernels. If it could be assumed that local palm oil demand was insensitive to price, then the coefficients of $P(o)_t$ and $P(k)_t$ in the first equation would also give the price elasticity of supply for palm oil. But this cannot be safely assumed, and the interpretation of the first equation is rather more delicate.

The results show a positive and significant (95 percent confidence level for palm oil, 50 percent confidence level for palm kernels) correlation of rainfall with exports of palm oil and palm kernels. Rainfall is shown to be more significant in determining exports of palm oil than of kernels, and rainfall in the previous year is shown to be more significant than that of the current year in determining exports of both products.

Palm kernel prices were a major and significant (95 percent confidence level) determinant of exports of palm kernels, and also of palm oil. That is, a decrease in palm kernel prices tended to reduce exports of palm oil even if palm oil prices remained constant, presumably because producers decided to harvest a smaller amount of palm fruit from which both are obtained.

Surprisingly, there is a negative correlation of palm oil prices with palm oil exports (95 percent confidence level). Returning to Figure 3, this would make it appear as if the local palm oil demand curve were rotated clockwise so that the distance between it and the local supply curve--the amount of exports--would decrease as prices increased. This anomaly--a demand curve showing increased demand with increased price--springs from other changes in levels of local demand.

These calculations demonstrate the impact of rainfall on palm product exports, and they show that contrary to the impression often obtained from the literature, palm kernels were the leading export crop of the two, in that the world price for palm kernels was more

significant than the price of palm oil in determing the amount of harvesting. The clear correlation of palm product exports with these economic factors may also serve to counter balance the frequent suggestions in the literature on nineteenth century West Africa that variations in the quantity of palm product exports may be explained by political rather than economic considerations (Dike 1956; Newbury 1961).

II. INCOME ELASTICITY OF DEMAND FOR IMPORTS

Observers of African economies have tended to be preoccupied with exports, so that imported goods and consumption of local goods have been relatively neglected. Since the desire to consume is fundamental to economic motivation, the study of African consumption is obviously important. Statistics on locally produced goods are scattered, but fairly reliable records exist for imported goods. And since imported goods formed a substantial (though clearly minority) portion of total consumption in early colonial Dahomey, a study of the patterns and priorities of Dahomean consumers of imports throws some light on the broader aspects of consumption.

The main categories of Dahomean imports have been the same for decades, even centuries: alcoholic beverages, cotton cloth, tobacco, and money (cowries, followed by gold and other currencies), plus a host of other imports in smaller quantities. Of these, gunpowder, salt, tobacco, and four types of cloth are selected here for an analysis of the income elasticity of imports. Figures 4 and 5 show the quantity of each of these goods imported in the early twentieth century (France 1897).

Alcoholic beverages accounted for some 40 percent of the value of Dahomean imports just after 1900, but are not included here because the categories in which they were reported changed frequently, and customs duties were capriciously added to or left off their reported value. Cloth imports accounted for some 25 percent of Dahomean imports, followed by tobacco with 8 percent. Salt and gunpowder (used for hunting and for ceremonies) each accounted for about one percent of the value of imports. These goods were consumed almost entirely by Dahomeans rather than by Europeans in Dahomey.

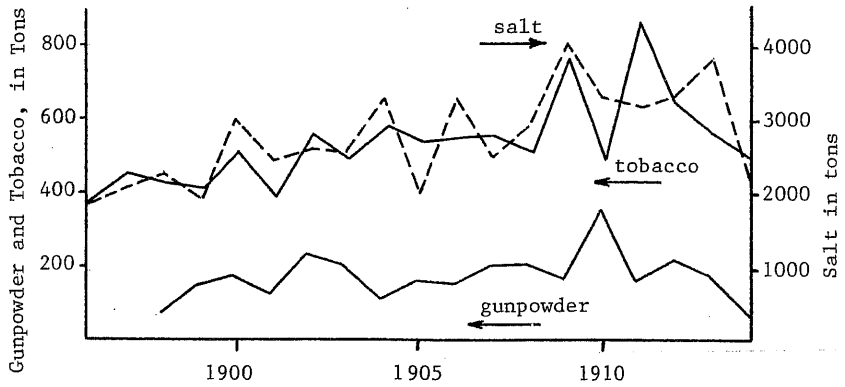

Figure 4. Quantity of Gunpowder, Salt, and Tobacco Imports

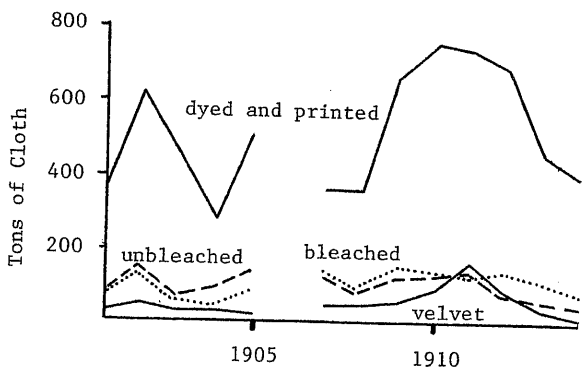

Figure 5. Quantity of Cloth Imports

Aside from changes in relative preference, purchases of goods will vary, in theory, according to the income of the consumer, the price of the goods, and the prices of any close substitutes for the goods. The combination of the influences of these factors on purchases of imported goods may be expressed by the following equation:

$$M_i = a_o Y_i^{a_1} p_i^{a_2} p_j^{a_3} p_k^{a_4}$$

where M_i is quantity of imports of the ith goods, Y_i is income allocated to the ith goods, p_i is the price of the ith goods, and p_j and p_k are prices of close substitutes. A change in the level of any relevant price or income leads to change in the volume of imports, with the exponents (a_1, etc.) giving the relative weight of each factor. The equation may be rewritten in a linear form, suitable for linear regressions:

$$\log M_i = a_o + a_1 \log Y_i + a_2 \log p_i + a_3 \log p_j + a_4 \log p_k.$$

Again, however, limits on available information mean that only a portion of the full analysis can be performed. The recorded prices of imports are of dubious value, as the French recorded standard accounting prices of many goods and left them unchanged for years (Manning 1969: 189-94). The estimates which follow, therefore, show only the correlation of import volume with export income, and exclude prices of substitutes.

The numerical coefficient of $\log Y_t$ in the calculations below estimates the income elasticity of demand for each import (that is, the percent increase in import purchases for each percent increase in income from exports), assuming that prices of substitute goods were unchanged. The interpretation of each equation is then given with a qualitative assessment of the significance of the substitutes for each import (France 1897). Note that the relevant figure for consumer income, used in the calculations below, is the total value of exports from Dahomey in the current year.

Gunpowder:

$$\log M_t = 4.646 - \underset{(.308)}{0.505} \log Y_t \qquad (R^2 = 0.151)$$

Salt:

$$\log M_t = 1.071 - \underset{(.103)}{0.429} \log Y_t \qquad (R^2 = 0.421)$$

Dyed and Printed Cotton:

$$\log M_t = 4.911 - 0.689 \log Y_t \qquad (R^2 = 0.443)$$
$$(.233)$$

Unbleached Cotton:

$$\log M_t = 5.009 - 0.064 \log Y_t \qquad (R^2 = 0.000)$$
$$(.385)$$

Bleached Cotton:

$$\log M_t = 4.204 - 0.669 \log Y_t \qquad (R^2 = 0.229)$$

Velvet:

$$\log M_t = 4.545 - 0.042 \log Y_t \qquad (R^2 = 0.015)$$
$$(.100)$$

Gunpowder had no close substitute, tobacco could be substituted to a slight degree with local tobacco, and salt could be fairly readily replaced by local salt. (The income elasticity calculated for each of these imports is significant at the 90% confidence level.) The calculated income elasticity of demand for tobacco (0.351) is shown to be less than for salt (0.429) or for gunpowder (0.505). Gunpowder thus appears as a relative luxury good. Salt, too, appears as a luxury good, in that higher income enabled Dahomeans to substitute imported for domestic salt. Tobacco imports were relatively insensitive to income changes, which may correspond to its addictive qualities.

Among cloth goods, imports were close substitutes for each other, and locally produced cloth also substituted for imports (domestic cloth was of higher quality than the inexpensive imports). The calculations show a relatively high income elasticity of 0.689 for dyed and printed cotton (average price 5 francs/kg), and of 0.669 for bleached cotton cloth (average price 4.5 francs/kg)---both these elasticities are significant at the 90% confidence level. The calculated income elasticity for unbleached cotton cloth (average price 3 francs/kg) shows no significant correlation of income with quantity of imports. (A negative income elasticity for unbleached cloth, if it were statistically significant, would be consistent with labeling it as an inferior product, that is, one

whose purchases decline as income rises.) Velvet, the most expensive imported cloth (average price 10 francs/kg) might have been expected to show a high income elasticity. That it showed no significant correlation of imports with income can perhaps be taken to indicate that changes in velvet imports reflect changes in style rather than income.

III. ESTIMATION OF THE MONEY SUPPLY

The Dahomean money supply underwent tumultuous change in the nineteenth and twentieth centuries. Cowries had been the currency in this fully-monetized economy at least since the seventeenth century, and continued in use well into the colonial period. In the mid-nineteenth century various dollars and thalers were introduced as currency by Spanish and Brazilian merchants. In the late nineteenth century British sterling coin circulated widely, notably through the activities of German merchants based in Lagos, but beginning in 1890 the French set about driving out all currencies but their own. In fact the French accepted many payments in sterling, in cowries, and in kind until at least World War I, but they also levied a 25 percent duty on imports of foreign coin from 1900 to 1906 and smashed millions of cowries in an attempt to suppress all but French currency. Nor was compensation given for demonetization of non-French money (Baillaud 1907, Hopkins 1964).

Figures available for the flow of money permit at least a partial assessment of the stock of money in Dahomey, and of the pattern by which the money supply varied. Available figures for Dahomean import and export of money are shown in Figure 6 (Dahomey 1890, Dahomey 1898, AOF 1908).

Money exports show a fairly clear inverse correlation with money imports for those years up to 1908 for which figures are available. Estimates of money exports have therefore been drawn in (see the dotted portion of the line) for the remaining years from 1890 to 1903, assuming them to be in the same inverse relationship with money imports. Recorded money imports were far greater than money exports, except for the years 1908, 1913 and 1914. Conceivably this fact is related to the fact that the pattern of the import of money, and in particular its relation with the value of exports, appears to change after 1905 with the establishment of the Govern-

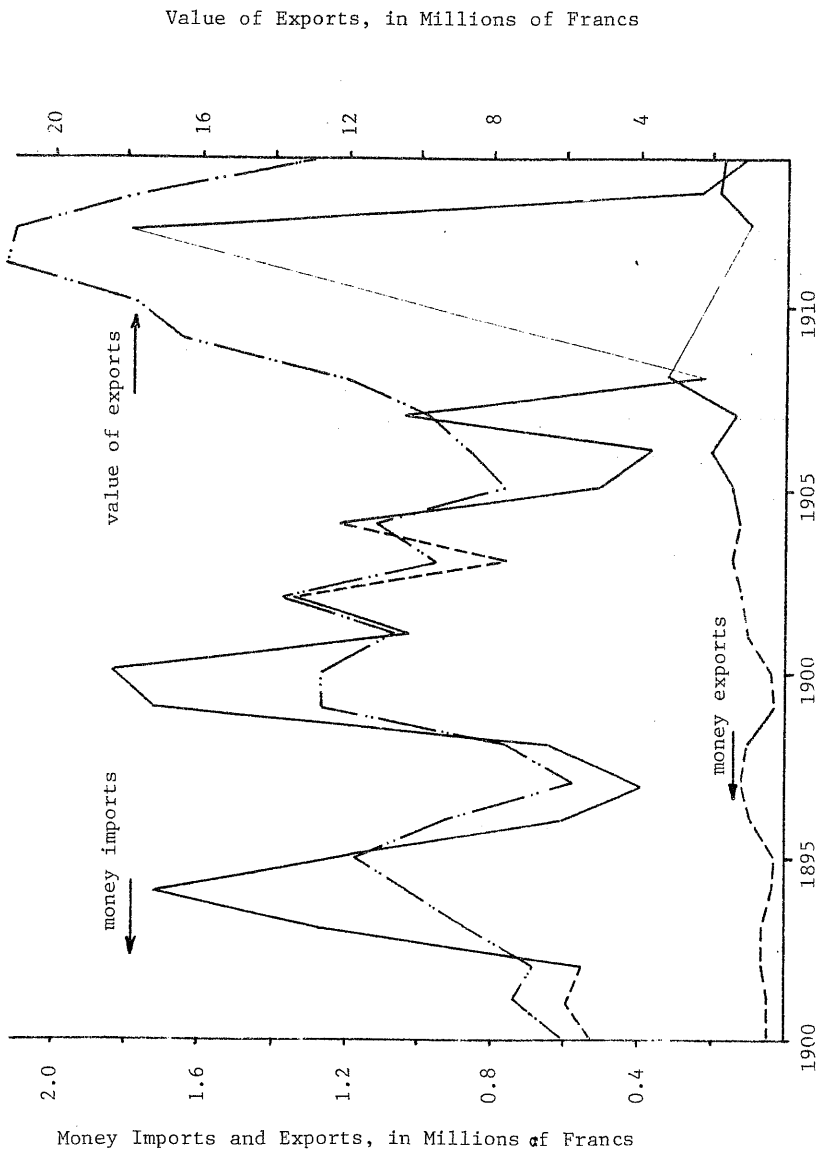

Figure 6. Imports and Exports of Money

ment General of AOF. It should be noted that import and export figures do not generally distinguish whether the money was French, British or other.

The historical background makes it tempting to treat the immense imports of money into Dahomey as the constitution of a new money supply to replace the old, demonetized currency. Each year's export income would permit the purchase of a certain amount of currency to be used in local transactions--such as paying taxes.

Estimates of the money supply in francs were prepared by assuming a zero supply of francs in 1890, assuming the money supply to be the sum of net imports from that date, and assuming that import and export figures include only francs and not other currencies. This method gave estimates of a money supply of 6 million francs in 1896, 12.4 million francs in 1902, and 15.4 million francs in 1908. But the official estimate of the Dahomean money supply for 1908 (the only year for which I have such an estimate) is 8.8 million francs (AOF 1908). My estimate is higher by almost a factor of two. Possible causes of this discrepancy include: (1) the French estimate of 1908 may simply be incorrect (I do not know on what basis the estimate was drawn up), (2) recorded money imports may include non-French money which was subsequently de-monetized, and (3) actual money exports may have been higher than those recorded.

The dynamics of the Dahomean money supply need far more elucidation, but it is clear that the money supply is an important issue when one notes, as Figure 6 shows, that money imports commonly represented 10 percent of the value of export earnings.

IV. ANALYSIS OF COLONIAL BUDGETS

Since colonial government finance embodies the priorities and policies of a colonial government, the study of colonial finances provides insight into the practice, not just the theory, of colonial economic policy. This partial study attempts to assess the impact of the colonial government on the Dahomean economy--specifically, to compare the amount of government revenue collected from Dahomeans with government expenditures which, directly or indirectly, passed into the hands of Dahomeans. This comparison also required consideration of revenues flowing between Dahomey, France, and AOF.

The rise in colonial tax revenue in Dahomey is shown in Figure 7. Customs revenues fluctuated with the volume of imports, but the increase in revenue is mainly because of steadily increasing customs duties (all levied on imports), especially in 1890, 1893, 1899, and 1905. The head tax was instituted in 1899, and its rates were increased in 1907 and 1910. Other local revenues included receipts from previous years, postal revenues, and registration fees. These revenues grew with the passage of time. From 1907, fees for commercial licenses, profits from the Porto-Novo railway and fines assessed in local courts also became significant revenues. The sum of these gives the total revenue collected in Dahomey (AOF 1908, Dahomey 1890, Dahomey 1898, France 1913).

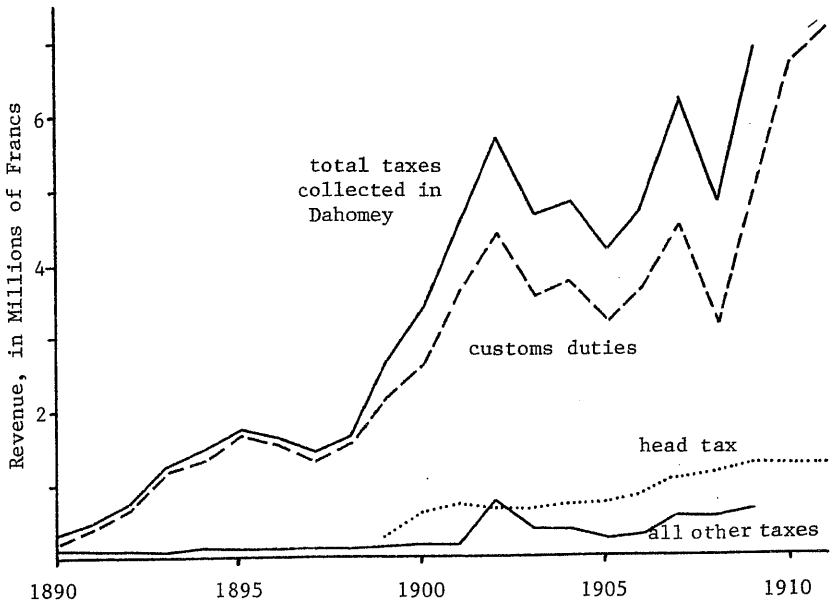

Figure 7. Taxes Collected in Dahomey

Total expenditures by the government of Dahomey are shown in Figure 8 (total revenue, taken from Figure 7, is also shown for reference). These expenditures by the government of Dahomey were not, however, all made within Dahomey. A portion of salaries of colonial servants was remitted directly to France, transportation

of government personnel and materials to Dahomey was paid out of this budget, and the government purchased many imported goods.

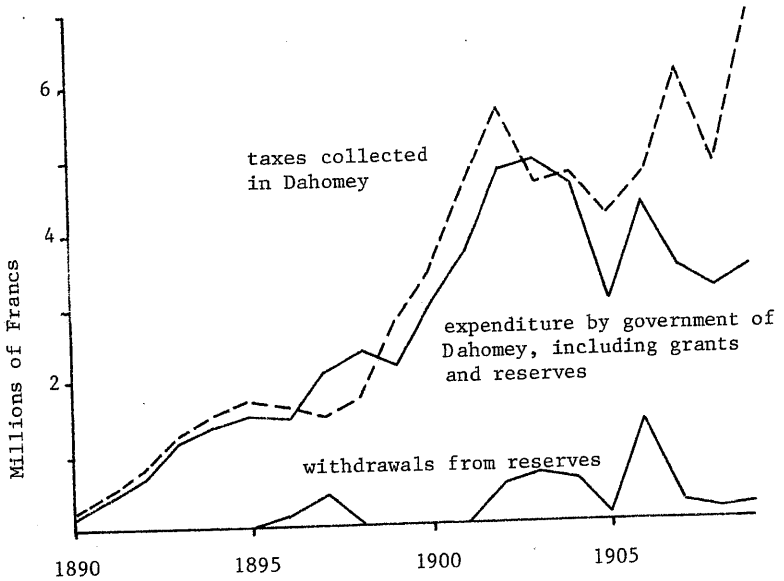

Figure 8. Expenditures by Government of Dahomey

The expenditures of the Dahomean government are summarized below for several years. These figures include all expenditures of the government of Dahomey, but do not include expenditures of the Government General of AOF (France 1913).

Expenditures of Government of Dahomey, in Millions of Francs

	1903	1905	1907	1909
General Administration	1.014	1.260	1.581	1.712
Police	.405	.348	.448	.440
Public Health and Public Works	.496	.691	.493	.656
Railroad Construction	1.850	.330	.457	.230
Debt Repayment	.343	-	-	-
Other	.851	.321	.492	.430
Total	4.960	2.950	3.471	3.468

The portions of these expenditures which went to local wages and local materials, as opposed to European wages and imported materials, can be established from the detailed budget (AOF 1905, Dahomey 1897). But it is clear that a large portion of government expenditures, perhaps even a majority, went to European salaries and imported materials.

Railroad construction was the largest single government expenditure from 1900 to 1907. From 1899 to 1904 roughly 6 million francs were spent on construction of a railroad from Cotonou to Dan, virtually all of it from local revenue. Originally a concessionary company was to lay the rails and build the stations, but in 1904 the agreement was revised so that the colony would build everything and the company would simply operate the railroad (Dahomey 1899: 1908). In 1907 and 1908, the Government General of AOF spent 8.5 million francs for a mysterious operation labeled "Rachat de la Convention du Chemin de Fer du Dahomey," apparently having to do with buying out the concessionary company completely, for more than the company could ever have put into the enterprise. The source of the 8.5 million francs was a portion of the bond issue of 100 million francs authorized by AOF in 1907 for sale in France (AOF 1908). Work continued on the railroad in Dahomey from 1905 until 1911 when it reached Savè, but the expenditures are either hidden in the budget or in another budget.

A second railroad was built from Porto-Novo to Sakété from 1904 to 1907 at a cost of 1.0 million francs, paid for entirely out of local revenue.

The railroads, therefore, were built not out of foreign investment, but out of local tax revenue--the only foreign investment was the purchase of AOF bonds to pay off the concessionary company, and these were redeemed with local revenue. Further, to the extent that Dahomean workers were underpaid or unpaid for their work in building the railroad, it was forced investment at government direction.

As a means of summarizing the fiscal impact of the colonial government on Dahomey, the transfers of revenue in and out of Dahomey are shown in Figure 9. The narrow bars indicate payments into Dahomey, and the wide bars indicate payments out of Dahomey. The difference between the two bars is the net transfer of funds in or out of Dahomey.

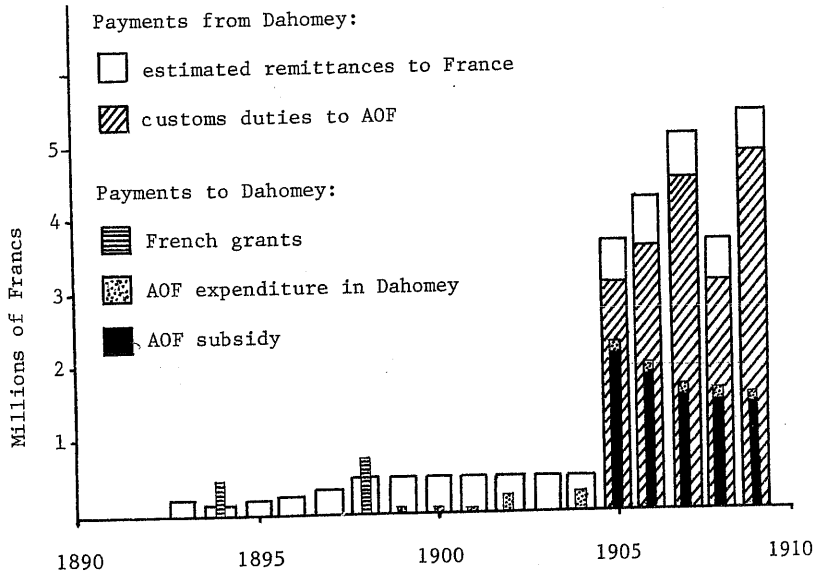

Figure 9. Transfers of Funds in and out of Dahomey

The largest outside payment for Dahomey was the 20 million francs granted by the Chamber of Deputies for the conquest of Dahomey in 1892 and 1893 (Ross 1967). This is not shown, as none of this amount was put into the local budget of Dahomey, and the portion of the 20 million francs which was spent in Dahomey is not known. France gave two small grants to the government of Dahomey in 1894 and 1898. The Government General of AOF made small expenditures in AOF beginning in 1899, which included the salaries of customs officers beginning in 1905. The subsidies from AOF to Dahomey were, in effect, a rebate of a portion of the customs duties paid by Dahomey to AOF beginning in 1905. Clearly, the subsidy tended to decrease absolutely, and especially as a portion of customs duty revenue.

The Government General of AOF, which had begun in 1899, was set up in earnest in 1905. Each colony was required to turn over all of its customs revenue (see Figure 7 for its magnitude in

Dahomey) to AOF, which obviously put each colony in the position of paring back expenses and raising taxes in order to meet local expenditures. Figure 9 shows the amount of customs revenue paid by Dahomey to AOF up to 1909. The Dahomean component of AOF customs revenue ranged from 20 percent to 30 percent. The other main outward transfer of Dahomean revenue was direct remittances of salary and travel expenses to France; for these I have made rough guesses, as indicated in Figure 9. Government-purchased imports are here assumed to be expenditures in Dahomey, not outward transfer or revenue. The resultant estimates of outward transfer of funds, given below, are therefore conservative.

The government of Dahomey put any excess of revenue over expenditure into a Caisse de Réserve, which was used when expenditures exceeded revenues. From 1890 to 1895 the colony built up a reserve of 560,000 francs, mostly from a French grant of 500,000 francs in 1894 for military expense. The expense of conquering the north and of administering the whole colony exceeded revenues, and the reserves were consumed in 1896 and 1897. The deficit in 1898 was made up by a grant of 740,000 francs from France. The sharp increase in taxes in 1899 permitted the government to build up a reserve at the same time it was building the railroad. The reserve grew to 2.7 million francs in 1902 and to 3.7 million francs in 1904. With the loss of customs duty revenue to AOF beginning in 1905, the government of Dahomey used reserves--over 1.4 million francs in 1906--to replace the lost revenue. Further withdrawals to replace lost revenue drew reserves down to 1.8 million francs in 1907, after which they began to grow again, as taxes continued to rise and since government expenditures on railroad construction had lessened (AOF 1908, Dahomey 1898).

In sum, the fiscal impact of the colonial government was to transfer immense amounts of revenue outside Dahomey and, in effect, to bleed the country. Comparing only local revenue with Dahomean government expenditures (using Figure 8), the net result was to transfer 1.5 million francs out of Dahomey in the period 1890-1904, and 9.2 million francs in the period 1905-1909. If, using Figure 9, one makes the full comparison of revenue transfers by adding estimates for remittances to France of salaries and transport costs earned in Dahomey, and estimates of AOF funds expended in Dahomey,

the estimated outflow of funds runs as high as six million francs for 1890-1904 and 11 million francs for 1905-1909. Clearly, the financial setup of the Government General was a great drain on Dahomey. Most AOF funds were spent, in these years, for military occupation of other colonies; it is not clear, therefore, that other territories in AOF benefited from Dahomey's loss.

The government of Dahomey attempted consistently to build up reserves out of local revenue. Grants from France were available only for military action. Construction of the railroads was not through foreign investment, but through local tax revenue--and forced labor. The investment was entirely Dahomean, though it was at government direction, and may be termed a forced investment. Dahomeans made part of the investment indirectly, by paying taxes. And to the extent that Dahomean workers on the railroads were under paid or unpaid, they made a direct investment. The Cotonou railroad was, unfortunately, the least profitable and the least used in AOF, although the Porto-Novo railroad turned a modest operating surplus of some 300,000 francs a year (France 1911).

The degree to which the bleeding of Dahomey by its government led to its impoverishment could be estimated, for example, by comparing the annual outflow of revenue to the colony's Gross Domestic Product. Such figures have not been constructed and might not be practicable--but for the period 1905-1909, the outflow of revenue averaged 15-20 percent of the value of export earnings. A further indication that such calculations are of interest is that at the formation of AOF, Dahomey was the second richest colony in AOF (after Senegal) in terms of the value of exports, while by the time of independence it has fallen far behind Guinea and Ivory Coast to a level of exports similar to those of the land-locked territories of West Africa.

V. CONCLUSION

The above studies treat elements of production, consumption, exchange, and government intervention in the Dahomean economy. What remains is to consider some of the interrelationships among these areas of the economy, in an attempt to summarize some of the

patterns and problems of participants in the Dahomean economy.[1]

Palm products were virtually the only source of foreign earnings for Dahomeans, as they accounted for 90-95 percent of the recorded value of exports. The rains are clearly shown to have been a factor in determining the volume of trade in palm products, with the previous year's rains being more significant than the current year's. (Producers were thus able, to a degree, to predict their income a year in advance.) Prices of palm kernels were even more significant in determining exports of palm oil and kernels. While it may be that French administrative policy or various political and military events also influenced the volume of exports, the results above are consistent with the conclusion that export volume was determined primarily by economic factors, and only secondarily by political factors.[2] Prices of palm oil, however, show an inverse correlation with exports of palm oil, and no significant correlation with exports of palm kernels. This result seems to be tied to the large amount of local palm oil consumption, and the latter therefore needs to be studied in greater detail. But the idea of palm exports being determined by the price of palm kernels rather than palm oil makes sense on other grounds: both the tonnage and the value of palm kernel exports exceeded those for palm oil (though palm oil had a higher price per kilogram). Before the 1880s, more oil was exported than kernels, as demand for kernels had not yet grown; the price of palm oil might then have been more significant in determining exports.

The fluctuations in income from palm produce exports (resulting from fluctuations in rains and in kernel prices) affected Dahomean purchases of imports. Investigation of the income elasticity of imported goods shows widely differing patterns, ranging from no significant correlation of imports with income to fairly sharp

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[1]The vexatious question of whether Africans are "responsive" or "rational," which has consumed so much space in the literature, will not be discussed here because the basis of social science is the assumption of human rationality. Our studies are to discover specific patterns of behavior and the rational behind them.

[2]Sharp increases in production of maize could also influence palm produce exports by calling away scarce labor (Henry 1912).

response of imports to changes in income. Tobacco imports fluctuated rather little with income changes, whereas gunpowder imported fluctuated a good deal more, indicating that the latter was a relative luxury while the former was a relative necessity. In neither case were close substitutes available. The income elasticity of salt imports was intermediate between tobacco and gunpower, but a locally produced substitute salt was available when income was low. Dyed and printed cotton, which accounted for most of cloth imports to Dahomey, showed a fairly high income elasticity. What might next be investigated is what else the Dahomeans did in years when their income fell and they decreased imports of dyed and printed cotton: did the consumers buy other imported cloth, buy locally produced cloth, or cut back their consumption of cloth?

The local market and the world market overlapped and interpenetrated to a great extent. Since Dahomey had participated actively in world trade since the seventeenth century, the colonial period did not bring a sudden impact of the world economy; nor did Dahomey have any clear separation between a "traditional" or non-market sector and a "modern" or market-oriented sector. Those areas of the country which did not sell crops for export, for instance, abstained on the basis of cost considerations rather than for lack of awareness or motivation. Farmers in the area of Savè, who had never exported their crops, began expanding their output of maize and palm products in anticipation of the arrival of the railroad. They were disappointed, however, as railroad rates were too high to enable export of their crops. Similar disappointments befell farmers near Abomey in earlier years (Dahomey 1911). European goods circulated in every Dahomean market, and Dahomeans earned cash income not just through the export of palm products, but through the sale of foodstuffs, fish, and artisan products.

It is feasible therefore to use the study of foreign trade as a window on the Dahomean patterns of producing and consuming. Working by implication from a detailed study of foreign trade, it should be possible to develop hypotheses on many aspects of the domestic economy of colonial Dahomey. The studies above, for example, clarify certain basic patterns of export and import behavior of Dahomeans, suggest ways in which that behavior was related to other aspects of production and consumption, and raise questions for further

investigation: specifically, the relative significance of palm oil consumption and of local production of cloth.

The last two studies reveal elements of the governmental and world economic framework in which Dahomeans made their production and consumption decisions. The sharp changes in the money system and the sharp increase in taxation surely influenced the economic life of Dahomeans. At this stage it is possible to identify some of the main quantitative changes in money and government fiscal policy, and to suggest, for further investigation, some ways in which these changed conditions might have altered the Dahomean economy.

All the transactions of foreign and domestic trade were done in terms of money. Sometimes goods were exchanged directly without money changing hands, but transactions were always in terms of money value. An adequate supply of money was therefore required to facilitate transactions on all levels, throughout the country. For the period 1890-1907, Dahomeans used some 10 percent of their export earnings to import money rather than merchandise. Much of this, presumably, was to replace other currencies, mainly cowries and British coin, which the French attempted to bar from circulation. It also could correspond to an increased amount of transactions, to increased use of cash in transations which had previously not involved cash, and to inflation of local prices. To the extent that cowries and British coin were devalued and demonetized without compensation, Dahomean income was reduced, which would have led in turn to reduced purchases of domestic and imported goods.

For the period 1890-1905 the money supply was controlled not by any central bank or agency, but by the vagaries of supply and demand. The behavior of money in this period was thus as similar to the pre-French period, with the free flow of cowrie and silver currency, as it was to the period after 1905 with central governmental control of money.

The colonial government increased taxes sharply, but did not expend all the tax revenue in Dahomey. The government transferred a large amount of wealth out of Dahomey to Dakar and France, and therefore cut the income--the export income in particular--of Dahomeans. This cut in income (or increase in price of imports) reduced their abili to buy consumer goods, imported or domestic. It also,

presumably, had the effect of reducing the volume of exports, in that taxation, though indirect, had made export production less remunerative. At the same time, because the head tax had to be paid, and was generally demanded in cash, every Dahomean family was required either to produce some minimum amount for export or to work on government forced labor and public works projects

The government therefore appears to have been a hindrance rather than a help to the functioning of the Dahomean economy. The operation of the local economy and the patterns of participation in the world economy underwent no major changes. The government imposed a new money system but required the Dahomeans to bear the full cost of the change, and continued to transfer large sums of money out of the country. The economy operated as it had before colonialism, but under greater hardships. Without doubt there were advantages and improvements brought by the colonial regime, but they would have to have been very sizeable to counter balance these costs. A more detailed investigation of government revenues and expenditures may yield a clearer idea of which groups were helped and hurt by government policy in the colonial period.

These studies are based on two major series of colonial documents: foreign trade statistics and colonial budgets. Colonial governments also collected statistics on population, land tenure, transportation, public works, wages, licenses, justice, and other subjects. The British collected the most accurate and systematic set of colonial records in Africa, though their figures, too, include inaccuracies and inconsistencies.[1] The French changed categories of budgets and foreign trade statistics frequently, making the construction of time-series difficult. They filed and published statistics irregularly, making it difficult to find the required figures. And many of the figures are simply incorrect, thus requiring that the analyst seek to verify each figure.

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[1]For example, exports from the Niger through the delta port of Forcados were not published for West Africa until 1900. But figures for imports to Britain show exports from Lagos Colony prior to 1900 which clearly include those of Forcados (Manning 1967). The British House of Commons Sessional Papers include a thorough, well indexed set of colonial and metropolitan statistics, published regularly.

These problems should give the analyst pause, but without halting his analysis. Collection, comparison, and internal criticism of all available documents often leads not only to the discovery of errors in the statistics, but to ways to correct them. For example, the French incorrectly included transfers from the Caisse de Réserve in the total revenue for Dahomey in several years, but investigation of a separate account for the Caisse de Réserve enabled correction of this error. As a more monumental example, French officials followed a very capricious policy of including customs duties in the value of some imports in some years, and not in other years. Specifically, as the size of customs duties increased, the reported value of imports grew to an amount well in excess of the value of exports. The government statisticians tried to resolve this apparent discrepancy by reporting only the landed value of certain imports rather than reporting the value of the imports plus customs duties. Thus, alcoholic beverages fell from a reported 31 percent of the value of imports in 1901 to a reported 11 percent of the value of imports in 1902, with no such decrease in the quantity of imports. Similar changes were made in reported values of other imports in other years. Because customs duties were quite high, the published import values are thus rather badly distorted. Although the officials left no record of their decisions, it will be possible to imply what their decisions were, by laborious comparison of prices, values, and duties. We will then be able to construct a fairly accurate picture of the monetary value of import trade to Dahomey, and help to clarify whether the economic welfare of Dahomey was improved or worsened in the early colonial period.

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