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INSTITUTO DE PLANEJAMENTO ECONÔMICO E SOCIAL

# Brazilian Economic Studies

Government Policy and the  
Economic Growth of Brazil,  
1889 – 1945

Annibal V. Villela  
Wilson Suzigan

3

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## Brazilian Economic Studies N.º 3

### Government Policy and the Economic Growth of Brazil, 1889-1945

*Annibal V. Villela and Wilson Suzigan*

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S E P L A N

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... what is most likely to happen is that the historian will find what he is looking for, namely, the documents which will explain and illustrate his own point of view. But what is he looking for? Surely he is looking for the truth — for what really happened. It is his job as a scholar to form as exact an idea of past events as he can from the surviving evidence. But the instrument with which he looks at the past is modern. It was made, and shaped, and it operates, in the present. It is his own mind. And however much he bends his thoughts toward the past, his own way of thinking, his outlook, his opinions are the products of the time in which he lives. So that all written history is a compound of past and present.

C. V. Wedgwood, "The Present in the Past," *The Listener* 53 (10 February 1955): 235.



# Preface

This is the definitive version of our study, which first appeared in mimeographed form in 1971 under the title "Aspectos do Crescimento da Economia Brasileira, 1889-1969".

While this study was in progress at the Instituto Brasileiro de Economia (IBRE) of the Fundação Getúlio Vargas (FGV) in the period August 1969 to December 1970, a number of individuals gave their assistance in helping us overcome various technical problems. We are especially grateful for the help of Professors Isaac Kerstenetzky, Jorge Kingston, Mario Henrique Simonsen, Ralph Zerkowsky and Moacyr Fioravante. Professor George Stolnitz, director of the International Development Research Center of Indiana University, made useful suggestions on ways of incorporating demographic analysis into the framework of economic growth.

The group which assisted us on the preliminary version included professors David Carneiro and Sérgio Kamos da Silva, and the sociologist Maria José Santos, who authored appendix B, "Demographic Trends".

We also received the valuable collaboration of professors Carlos M. Peláez, Douglas H. Graham and Margaret H. Costa. Professor Peláez was contracted through a USAID agreement to write a monograph for the project entitled "An Economic Analysis of the Brazilian Coffee Support Program, 1906-1946: Theory, Policy and Measurement". In the period July-August 1970, after the termination of the USAID agreement, he was contracted directly, through project funds, to write a second monograph entitled "The Economic Consequences of Monetary, Exchange and Fiscal Orthodoxy in Brazil, 1889-1945". Professors Douglas H. Graham and Sérgio Buarque de Hollanda Filho contributed a monograph on internal migrations and economic growth. The definitive version of this monograph appeared under the

title *Migration, Regional and Urban Growth and Development in Brazil: A Selective Analysis of the Historical Record, 1872-1970* (São Paulo: Universidade de São Paulo, Instituto de Pesquisas Econômicas, 1971). Finally, Professor Margaret H. Costa and her team at the Centro de Estudos Fiscais, IBRE/FGV, contributed a chapter on the public sector. This was reproduced in the preliminary version of this work.

In their studies, Pelácz, Costa and Graham tried to quantify, respectively: the impact of coffee policies on the coffee sector and on public finances, as well as the effects of monetary policies on the economy; the causes and effects of the growth of the public sector, from both the receipt and the expenditure side; and lastly, the magnitude of migrations and their causes. Our task in this final version was to consolidate and attempt to link their quantitative information to the information we had gathered on foreign trade, agricultural output and industrial production. To this we added our studies of exchange-rate policies, foreign indebtedness and protection of industries. We also attempted, where possible, to account for historical and political factors which throw some light on long-run trends and structural changes in the Brazilian economy. Without the contribution of Professor Margaret H. Costa and her team, it would have been impossible to examine adequately the interrelations between monetary, exchange-rate and fiscal policies and their effects on the economy.

In the early phase of this study, we received the valuable support of the president of IBRE, Professor Octávio G. de Bulhões, and the executive director of FGV, Dr. Alim Pedro.

The first version of this work benefited from the criticisms of a number of economists, including Werner Baer, Denio C. Nogueira, Carlos M. Pelácz, and Arízio de Vianna.

For the present version, we would like to thank José Almeida and Werner Baer for their criticisms and suggestions. We, of course, assume full responsibility for deficiencies and errors which might still exist.

It should be mentioned that research for the preliminary version of this study was financed by funds from a grant from the Ford Foundation to the Instituto Brasileiro de Economia of the Fundação Getúlio Vargas.

The work was originally translated into English by David Garlow and Thomas Trebat under the guidance of Werner Baer, and subsequently edited at IPEA by Sheryle Laverne Oliver.

ANNIBAL V. VILLELA  
WILSON SUZIGAN



## Note of Explanation

Throughout the period covered by this study, the city of Rio de Janeiro was the capital of Brazil and therefore known as the Distrito Federal. When the capital was transferred to Brasília in 1960, the city became the Estado da Guanabara. Then, in 1974, Guanabara was joined to the Estado do Rio de Janeiro. The city, in turn, became the capital of the new state, which retains the name Estado do Rio de Janeiro. Thus, when making comparisons on the basis of the current geopolitical division, the city of Rio de Janeiro (ex-Distrito Federal) and the former Estado do Rio de Janeiro should be aggregated.

Up to 1942, the monetary unit of Brazil was the *mil-réis* (1\$000), which was divided into thousandths (e. g. \$20 = 20 *réis* or *vintém*; \$100 = 100 *réis* or *tostão*; \$500 *réis*). Note that 1 000 *mil-réis* was denominated one *conto de réis* and written 1.000\$000. In 1942, the *mil-réis* was replaced by the *cruzeiro* (Cr\$ 1,00). The *cruzeiro* was equal to one *mil-réis*, but divided into hundredths (*centavos*). Having been eroded by inflation, the *cruzeiro* was replaced in 1967 by the *cruzeiro novo* (NCr\$), equal to 1 000 *cruzeiros antigos*. Three years later, the adjective “*novo*” was dispensed with. It is this *cruzeiro* that is the current monetary unit of Brazil. In this translation, the unit employed is that which was in effect during the greater part of the period studied — that is, the *mil-réis*. For ease of comparison, it should be remembered that one *cruzeiro* = 1 000 *cruzeiros antigos* and/or one *conto de réis*.



# 1

## Introduction

A study of the economic history of a country should be based on documents and statistical information. While we shall not ignore the influence of historical and political events on long-run economic trends, the emphasis in this work is on the construction and interpretation of basic statistical time series. Along the lines of the pioneering work of Deane<sup>1</sup> and Kuznets,<sup>2</sup> our main objective is to analyze the trends and structural changes in the Brazilian economy in the period 1889-1945.<sup>3</sup>

Although the statistical series in this volume represent our most important contribution, they should be used and interpreted with care. They are incomplete and thus do not permit macro analyses of the evolution of the Brazilian economy for the entire period under study. The series are often based on primary data of questionable accuracy. For this reason we felt it wise to avoid the use of more sophisticated techniques of statistical analysis, i. e. the construction of econometric models. We also thought it advisable to avoid testing

<sup>1</sup> P. Deane and W. A. Cole, *British Economic Growth, 1688-1959* (Cambridge: Cambridge University Press, 1967).

<sup>2</sup> S. Kuznets, *Modern Economic Growth: Rate, Structure, and Spread* (New Haven: Yale University Press, 1966).

<sup>3</sup> Our project was initially to cover the period 1889-1969. However, we found that the post-World War II period had already been studied by various authors. This was largely due to the greater availability of systematically collected and published statistical information since World War II. We felt that a study of the postwar period would therefore have led to a synthesis of the work of others, and consequently thought it better to concentrate on the period up to the end of World War II.

a priori hypotheses, which are frequently based on "nonobserved facts".<sup>4</sup>

Our main interest was to determine in what ways government economic policies had a positive effect and in what ways they inhibited the growth and diversification of the Brazilian economy up to 1945. Our intention was not to criticize past policies, but merely to verify, in the light of modern economic analysis, the failures and successes of the policies pursued. Needless to say, these generally reflected the doctrines prevalent at the time they were formulated.

For the years up to 1919, only individual sectors of the economy could be analyzed. However, for the period 1920-1945 it was possible to construct aggregative series. Due to inadequate data, regional aspects of growth were given less emphasis than desirable. Although our study concentrates on monetary, exchange-rate and fiscal policies, there can be no doubt that the coffee-support policies had a special significance for the Brazilian economy during the period under review. A separate section is therefore devoted to their analysis.

We also attempted to examine how government policies influenced long-run trends and structural changes in output and foreign trade. We were especially interested in finding answers to the following questions: To what extent was government policy, especially coffee policy, responsible for the lag in the diversification of agriculture and the industrial growth of Brazil until 1945? Given endowments which favored industrial development, why did industrial growth only accelerate in the thirties? To what extent was internal economic activity dependent on foreign trade and thus vulnerable to international crises? What was the role of internal and international migration on economic growth, especially regional growth? Finally, was there any growth in Brazil's real per capita income prior to 1945? To these and many other questions we hope to provide answers in the chapters which follow.

The analysis is organized around a number of subperiods. Unfortunately, it was not possible to select these according to rigorous scientific criteria. Rather, they were chosen according to distinct historical-political events, and to the economic cycles perceptible through the statistical data available.

Chapter 2 surveys the long-term trends for the period as a whole. Since it summarizes the entire volume, the reader not in-

<sup>4</sup> In this connection, see the excellent article by W. Leontief, "Theoretical Assumptions and Nonobserved Facts," *American Economic Review* 61, no. 1 (March 1971): 1-7.

terested in details can limit his efforts to this and to the concluding chapter. Chapter 3 analyzes the economic crisis at the beginning of the Republic, especially the monetary crisis, and the subsequent recovery in the first decade of this century. It was in the latter period that the first important spurt of industrial growth in Brazil occurred. The drastic effects of the international crisis of 1913 and of World War I on the Brazilian economy are the subject of chapter 4. Although these events brought about important modifications in the structure of agricultural output, they impeded continued industrial development. Chapter 5 examines the heyday of the export-oriented economy, when the influence of coffee-support policies was most notable. In the period 1919-1928/1929, the growth of the Brazilian economy was basically a function of the expansion of foreign trade. Chapter 6 describes the impact of the coffee crisis and the Great Depression. Although there was a rapid growth of industrial production in the thirties, this was counterbalanced by the continued coffee crisis and the stagnation of agricultural output, resulting in the stagnation of real income. Chapter 7 summarizes the effects of World War II. The latter placed a damper on industrial growth, but due to favorable foreign-trade conditions, there was a rise in per capita income. Finally, chapter 8 contains our principal conclusions.

We would like to call attention to the fact that chapters 2 to 7 comprise conclusions drawn from the data and analyses presented in appendices A to H. The first of these, which we consider the most important, is a description of the methodology used in estimating the basic statistical series. The others cover topics that it did not seem opportune to detail in the main text. The statistical appendix contains the basic series used throughout the work.



## 2

# Long-term trends, 1889-1945\*

### 2.1 — Introduction

In the closing years of the Empire, the Brazilian economy was fundamentally agricultural. The principal activities consisted of coffee-growing in the Center-South of the country, sugar cultivation in the Northeast, and rubber extraction in the North. Most of the output of these activities was exported; and taken together, the three represented an average 80% of total exports.<sup>1</sup> It was the agricultural sector which, through foreign trade, generated the foreign exchange necessary for the domestic consumption of imported manufactured goods, for capital formation, and for the payments due on the foreign debt.<sup>2</sup> Even government financing depended on agriculture, since 75% of federal tax receipts originated in the foreign-trade sector.<sup>3</sup>

\* The purpose of this chapter is to give a general notion of long-run trends in the economy. It is based on the more detailed information presented in the subsequent chapters and appendices.

<sup>1</sup> Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil*, 1939-1940, p. 1 374.

<sup>2</sup> Ministério da Fazenda (MF), *Finanças do Brasil*, 20 vols. (Rio de Janeiro: Tipografia do Jornal do Comércio, Rodrigues & Cia., 1955), vol. 19: *Divida Externa, 1824-1945*, by V. F. Bouças, p. 580. This is the best source for long-run trends in the foreign debt. Data on the trade balance can be found in IBGE, *Anuário Estatístico do Brasil*, 1939-1940, pp. 1 358-59.

<sup>3</sup> This information was obtained from the Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBRE/CEF).

Rubber extraction benefited from the migration of manpower from the Northeast,<sup>4</sup> while coffee-growing in São Paulo depended to a large extent on European immigrants.<sup>5</sup> However, the sugar production of the Northeast and the growing of coffee and other crops outside São Paulo depended on slave labor. It is thus not surprising that the abolition of slavery at the end of the Empire, even though expected, created some distress in agriculture. Many farmers were in need of liquid resources to finance production and to pay for mortgages which were previously guaranteed by the ownership of slaves and land. The government was forced to provide these resources. In agreement with various banks, agricultural banks were created to which the government provided half of the capital.<sup>6</sup>

There also occurred a financial crisis at the time, which was attributed mainly to the dearth of money supply.<sup>7</sup> The abolition of slavery probably accentuated this crisis. To counter it, a banking law was passed in 1888 empowering banks to issue notes which could be used as legal tender.<sup>8</sup> Although the aim of the law was to create a banking system with a 100% reserve, in effect it gave rise to "one of the most notable inflations in the history of Brazil."<sup>9</sup>

These were the most important factors influencing economic policies right after the declaration of the Republic in 1889. In the following sections we shall examine the short- and long-term effects of these policies. Did they have a positive or restrictive effect on the growth of the Brazilian economy until 1945? While the available data do not permit us to give a definitive answer to this question, they do allow us to make suggestions based on partial evidence.

<sup>4</sup> D. H. Graham and S. B. de Hollanda Filho, *Migration, Regional and Urban Growth and Development in Brazil: A Selective Analysis of the Historical Record, 1872-1970* (São Paulo: Universidade de São Paulo, Instituto de Pesquisas Econômicas, 1973), p. 21.

<sup>5</sup> The state of São Paulo was already one of the major coffee-producing states in 1887. However, it accounted for only 16.9% of the country's slaves. See S. Stein, *Vassouras, A Brazilian Coffee County, 1850-1900* (Cambridge: Harvard University Press, 1957), p. 295.

<sup>6</sup> MF, *Relatório*, 1889, p. 29.

MF, *Relatório*, 1884, p. 62; 1887, p. 20; 1888, p. 11.

<sup>8</sup> MF, *Relatório*, 1889, p. 26.

<sup>9</sup> C. M. Peláez, "The Economic Consequences of Monetary, Exchange and Fiscal Orthodoxy in Brazil, 1889-1945," pp. 14-15. This monograph, especially written for this study in August 1970, was subsequently published in Portuguese as "As Consequências Econômicas da Ortodoxia Monetária, Cambial e Fiscal no Brasil entre 1889-1945," *Revista Brasileira de Economia* 25 (July-September 1971): 5-82.



## 2.2 — Economic and financial policies during the Republic

Brazil's economic policy, as reflected in its monetary, exchange-rate and fiscal policies, was characterized by sudden and frequent changes in orientation. In the period 1889-1945 there was a near constant preoccupation with the maintenance of balanced budgets, and with monetary and exchange-rate stability. For a number of reasons, however, the authorities were often forced to abandon such policies. The financial burden of servicing the foreign and domestic debt, the decline in federal revenues due to foreign-trade crises, and the occasional need for special expenditures (mainly military expenditures or outlays due to regional climatic factors such as the Northeastern droughts) often led to budget deficits, resulting in the issue of new money when foreign loans were not available. The frequent changes of administration were also responsible for a certain instability in the orientation of economic policy. In the first eight years of the Republic there were 12 finance ministers,<sup>10</sup> each with his own set of policies. Radical policy changes occurred over very short periods of time. It was common for periods of deflation or stabilization of prices to be followed by periods of severe inflation, and vice-versa.

It could be argued that if economic policy in the period 1889-1945 did not hamper economic growth, neither did it give it much of an impulse. On a number of occasions, reductions in the money supply, increases in taxes, and cuts in government expenditures occurred in the midst of depressions. Also, the Brazilian monetary institutions were not suited to a developing economy. It was only in the thirties that institutions were created that could make long-term loans for the expansion of productive capacity (e.g. the Carteira de Crédito Agrícola e Industrial — CREAMI of the Banco do Brasil), or could assume the functions of a central bank (the Caixa de Mobilização Bancária — CAMOB, founded in 1932). A description of the policies adopted in the 57 years following the establishment of the Republic should help provide a better understanding of the long-run trends in the Brazilian economy.

<sup>10</sup> A. Bulhões, *Ministros da Fazenda do Brasil, 1808-1954* (Rio de Janeiro: Departamento de Imprensa Nacional, 1955), pp. 12-13.

## 2.2.1 — The inflation at the beginning of the Republic and the subsequent stabilization policies, 1889-1898

The first Republican government inherited a number of problems from the Empire. The crisis in agriculture, which was worsened by the prolonged droughts of the early nineties,<sup>11</sup> made it necessary to place new financial resources at the disposal of that sector. This required that the amount of money in circulation be increased in order to avoid the alleged commercial constraints of the last years of the Empire.<sup>12</sup>

However, the balanced-budget policies required a reduction of the deficit. This was difficult to achieve for two additional reasons. First, on the expenditure side, the government had to periodically buy foreign exchange to service the foreign debt and to cover the costs of railroad debts, on which it had guaranteed interest payments. This resulted in large fluctuations in the exchange rate. Since the government was the biggest buyer of foreign exchange,<sup>13</sup> its entrance into the market, which occurred at specified periods, caused substantial speculation. Second, on the revenue side, 75% of federal receipts were derived from import taxes,<sup>14</sup> which were collected in domestic currency. Given the short-run fluctuations and the long-term tendency of the domestic currency to devalue, the government often purchased foreign exchange with devalued *mil-réis*, thereby making it impossible to balance the budget.

The most important measures adopted were: an increase in the credit granted to agriculture; the founding of banks entitled to issue notes; and the collection of customs duties in gold. In the period 1888-1890, the government extended about 50 thousand *contos de réis* to agriculture.<sup>15</sup> These resources were channeled through the banking system, which, through contractual arrangements, complemented these funds with equivalent amounts.<sup>16</sup> The gold tariff began to function in early 1890, after a brief experience with a flexible tariff in 1889. At first, customs duties amounted to 20%, but within a few months they had risen to 100%.<sup>17</sup> The gold tariff

<sup>11</sup> *Jornal do Comércio (JC)*, *Retrospecto Comercial*, 1889, "Introdução."

<sup>12</sup> MF, *Relatório*, 1888, p. 20.

<sup>13</sup> JC, *Retrospecto Comercial*, 1897, p. 38.

<sup>14</sup> Data from FGV/IBRE/CEF.

<sup>15</sup> MF, *Relatório*, 1891, pp. 6-15.

<sup>16</sup> MF, *Relatório*, 1889, 1890, and 1891.

<sup>17</sup> JC, *Retrospecto Comercial*, 1891, "Tarifas."

was abolished by the budget law of 1892, which fixed duties at 50 and even 60%.<sup>18</sup>

There can be no doubt that the most important policy measure was the banking law of 1888.<sup>19</sup> The immediate concession to banks of the right to issue notes led to an increase in the money supply substantially above the needs of the day (see graph 1). In the years 1889 to 1894, a period during which output was adversely affected by the abolition of slavery and the drought of 1889, the money supply increased 3.5 times. This resulted in an average yearly price increase of 20% (graph 1) and a rapid devaluation of the exchange rate.<sup>20</sup> The spurt in the founding of new enterprises, which had already begun at the end of the Empire, was given an added impulse by the banking reform, the new laws concerning corporations (*sociedades anónimas*),<sup>21</sup> and the optimism which accompanied the new regime. In the absence of a central control mechanism, there was a burst of speculation, especially in stocks of "ghost companies" (*empresas fantasmas*); this led to the crisis known as the "Encilhamento" in late 1891 and the collapse of many firms.<sup>22</sup>

This period of "easy money" was followed by a period of rigid stabilization policies, especially after 1894. The aim of these policies was to reduce government budget deficits and to control the money supply.<sup>23</sup> It was felt that the deficits were the principal cause of the increased money supply, and that this was the principal obstacle to appreciation of the exchange rate. The implementation of these policies was hampered mainly by the persistence of federal deficits. The extraordinary military expenditures and the large sums needed for servicing the public debt made it difficult to reduce expenditures, while the devaluation of the exchange rate had a dampening effect on imports and subsequently on government receipts. Thus, in 1896 the government was forced to charge extra import duties.<sup>24</sup> However, when at the end of that year the fall in the price of coffee worsened the trade balance, more drastic measures were adopted.

<sup>18</sup> *Ibid.*

<sup>19</sup> Peláez, pp. 15-16.

<sup>20</sup> This also reflected the problem of a shortage of foreign exchange (see app. C).

<sup>21</sup> MF, *Relatório*, 1891.

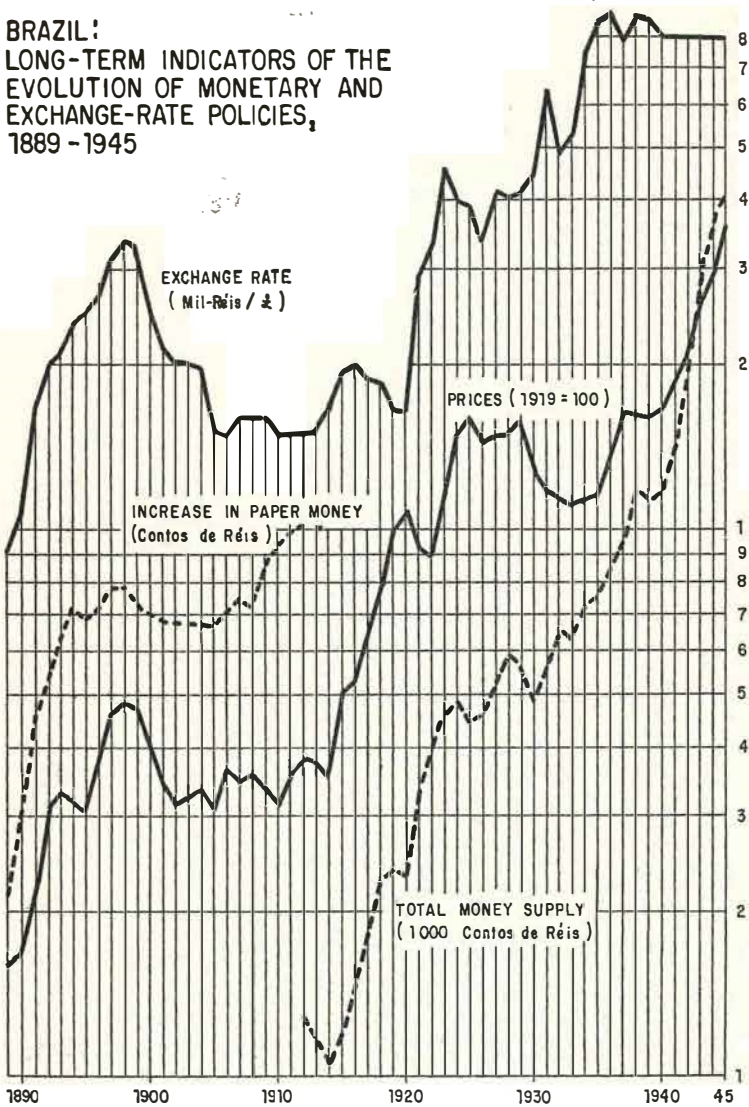
<sup>22</sup> Peláez, pp. 20-21.

<sup>23</sup> *Ibid.*, p. 29.

<sup>24</sup> FGV/IBRE/CEF, based on the federal balance sheets.

Graph 1

**BRAZIL:**  
**LONG-TERM INDICATORS OF THE**  
**EVOLUTION OF MONETARY AND**  
**EXCHANGE-RATE POLICIES,**  
**1889 - 1945**



Sources : Statistical Appendix, tables 114 and 120 .

Towards the end of 1896, the government stepped up its stabilization policies. In order to reduce the money supply, the privilege of issuing notes was withdrawn from banks. The treasury took over all bank notes in circulation so as to unify the money supply. The right of issue became a government monopoly, and the new money was to be completely convertible.<sup>25</sup> As a complementary action, even greater emphasis was given to eliminating the budget deficit and appreciating the exchange rate. However, no new measures were adopted to these ends.

Once again, policy objectives were not completely realized. The international coffee price continued to decline, causing export receipts to fall. The dearth of foreign exchange, which was worsened by payments on the foreign debt, had two important repercussions. It accentuated the devaluation of the exchange rate, which obviously favored coffee exporters. It also reduced imports. Given the predominance of customs duties in the tax structure,<sup>26</sup> the decline of imports caused a substantial decrease in government tax receipts. This was the most important factor behind the deficit of 1897, though some of the responsibility can also be laid on the previously mentioned rising military and foreign-debt-service expenditures. To finance the deficit, the government relied in part on new foreign borrowing and in part on increasing the money supply. These trends forced the government to negotiate its first foreign funding loan in 1898.

A question that did not receive enough attention in the first 10 years of the Republic was the foreign-exchange devaluation. There were good causes for this devaluation: the demand for foreign exchange exceeded the supply, and internal prices were rising. However, the rate of devaluation surpassed the rate of inflation. In fact, it was difficult to counter these trends in a period when the price of coffee was continually falling. Also, some of the newer industries had an interest in a declining exchange rate because of the protection it offered. Only the government was hurt, since it was the largest buyer of foreign exchange and since its receipts depended almost entirely on customs duties. The government's principal aim in the period 1899-1902 was to counteract the decline of the exchange rate.

<sup>25</sup> Peláez, pp. 30 ff.

<sup>26</sup> In the period 1896-1899, customs duties accounted for about 92% of federal tax receipts. FGV/IBRE/CEF.

### 2.2.2 – Deflationary policies and the economic recession, 1899-1902

Towards the end of 1898, the government's finances were in a chaotic state. Expenditures exceeded receipts by approximately 100% (see table 1). The rise of the internal price level (it had tripled in relation to 1889) had caused receipts to deteriorate. At the same time, the servicing of the foreign debt had substantially increased due to the decentralization resulting from the constitution of 1891, which permitted states and *municípios* to borrow directly abroad. In the first 10 years of the Republic, the external debt increased by 53%,<sup>27</sup> and in 1898 the public debt accounted for 53.2% of federal expenditures.<sup>28</sup> Many of the foreign loans were used to finance the government deficit, thus complementing the issuance of new currency. As a result, the government was forced, still in 1898, to negotiate a consolidation of the foreign debt through new borrowings, i.e. old debts were paid via the creation of new debts. The depreciation of the exchange rate, which was an important factor in stimulating the founding of local industries, also kept the domestic price of coffee high (and thus the income of the coffee growers). The latter stimulated an excessive expansion of productive capacity (through the planting of new coffee trees), which resulted in a crisis of overproduction. At the time there was increasing pressure for the government to intervene in the market.

It was in this climate that a change of government occurred on 15 November 1898. The new policymakers adopted very strong stabilization measures, and these, in marked contrast to previous stabilization efforts, proved successful. One might question, however, how valid the stabilization aims of the new regime were.

The changes in the policy orientation of the new government were quite radical in nature.<sup>29</sup> Domestic industry was viewed as "artificial", or able to survive only at the cost of excessive exchange-rate devaluation and protectionist tariffs. It was also felt that the exchange-rate devaluation not only benefited the income of coffee sector, but also resulted in the appearance of inefficient coffee growers. The inflation caused by the *Encilhamento* left government finances in chaos and thus necessitated a tax reform. Finally, it was thought that the money supply was excessive in relation to the evo-

<sup>27</sup> See app. D, "The Evolution of the External Debt."

<sup>28</sup> *Ibid.*

<sup>29</sup> MF, *Relatório*, 1899, "Introdução ao Relatório do Ministro Joaquim Murinho," pp. 40-43.

lution of economic activities,<sup>30</sup> and that this excess of money relative to the pound-sterling value of exports was the principal cause for the exchange-rate devaluation.<sup>31</sup> It was therefore necessary to give the economy a thorough "monetary cleaning" (*saneamento monetário*).

The policies adopted were mainly aimed at easing the pressures in the foreign-exchange market and reducing the money supply. The principal objective was to appreciate the exchange rate so as to eliminate artificial industries and clear the coffee sector of inefficient producers. In June of 1898, an agreement for a moratorium on the foreign debt was obtained. It suspended all payments for 13 years.<sup>32</sup> The agreement specified the obligation of the Brazilian government to eliminate the budget deficit and to withdraw from circulation a sum equivalent to the total value of the loan. This sum would be withdrawn from circulation as the bonds of the accord were sold. This was to continue until the desired exchange rate was obtained. Customs duties were once again collected in gold. This measure was supposed to provide the government with gold and thus eliminate the necessity of its entering the foreign-exchange market directly.

Somewhat later, additional complementary measures were introduced. In 1900 customs tariffs were raised, and in 1901 a new foreign loan was obtained (for double the amount of the consolidation agreement) in order to rescind the contracts of the 50% of the railroads with which the government still had agreements guaranteeing interest payments.

The effects of these measures can be seen in graph 1 and table 1. The deficit of 1900-1901 is explained by the loan-financed expenditures for the rescinding of the railroad contracts. Otherwise, all objectives were attained. The money supply was reduced; prices had fallen about 30% by 1902; the exchange rate appreciated, reinforced by the counterspeculation of the Banco da República do Brasil (which, in practice, had an exchange monopoly); and in 1900 there was a large surplus in the trade balance due to the rise in the price of coffee.

Despite these achievements, the new policies were responsible for the bank panic of September 1900 in Rio de Janeiro.<sup>33</sup> In fact,

<sup>30</sup> Pelácz, p. 41.

<sup>31</sup> Linking the exchange rate to the ratio between the value of exports (in foreign currency) and the growth of the money supply was possibly the weakest aspect of the economic policy of the time. Pelácz, pp. 41-42.

<sup>32</sup> App. D, "The Evolution of the External Debt."

<sup>33</sup> J. P. Calógeras, *A Política Monetária do Brasil, 1910* (São Paulo: Companhia Editora Nacional, 1960), pp. 340-50.

the deflationary policies caused a general crisis in the banking system. The panic seems to have been set off by the withdrawal of funds from the Banco da República in order to pay its debts to the treasury.<sup>34</sup> The crisis could have been mitigated by the large trade surplus. However, the latter had no inflationary effects; on the contrary, the government was determined to reduce the money supply. It is difficult to find a plausible explanation for this paradoxical situation, given available statistics and documents. It is not conceivable that the trade surplus financed the capital outflow connected with debt repayments, mainly because of the size of the trade surplus in relation to repayments and because of the steep drop in the exchange rate. One hypothesis is that there occurred a forced accumulation of foreign exchange in the hands of coffee exporters. Whatever the true explanation, it is a fact that the trade balance had a negative effect on bank liquidity and thus contributed to the crisis.

Finally, although there are no macroeconomic indicators available for the period, it is almost certain that the deflationary policies had a negative impact on the level of economic activity. The most important consequence, however, was a general consensus in favor of government intervention in the coffee market.<sup>35</sup> This resulted from the elimination of the mechanism which protected the income of coffee growers: the continued devaluation of the exchange rate.

### 2.2.3 — Economic revival, 1903-1913

The new government which took over in 1903 continued the economic policies of its predecessor, a phenomenon which is unusual in the annals of Brazilian public administration. The money supply was stabilized, the exchange rate was appreciated, customs duties continued to be collected in gold, and the government budget was balanced. At the same time, however, a program of public works was undertaken which led to a general revival of economic activity. At a later stage this program was substantially augmented, creating budget deficits which probably offset — at least in part — the dampening effects of monetary policy.

The public-investment program consisted of sanitation and urbanization works in the federal capital, plus the construction and equipping of ports and railroads. Expenditures for gross govern-

<sup>34</sup> *Ibid.*, p. 344.

<sup>35</sup> C. M. Peláez, "An Economic Analysis of the Brazilian Coffee Support Program, 1906-1945: Theory, Policy and Measurement," in *Essays on Coffee and Economic Development* (Rio de Janeiro: Instituto Brasileiro do Café, 1973), p. 64.



ment capital formation, which had fallen to less than 3% of total expenditures in 1900-1902, rose to 9% in 1903, and reached 24% in 1912.<sup>36</sup> These new expenditures were in large part financed through new foreign borrowings. This explains why the government initially encountered no difficulties in maintaining a balanced budget and stabilizing the money supply. In 1908, however, an international crisis brought on a decline in foreign trade. Since about 70% of taxes still came from customs duties, there was a drastic decline in government receipts. As a consequence, budget deficits reappeared and continued for the next few years. With the rise of service payments on the foreign debt as a result of new foreign borrowings, the budget deficit worsened until 1913.

It was not, however, the government deficit which made it difficult to achieve monetary stability in 1909-1912. The new money supply resulted from the government's attempt to attain another objective that was perhaps politically more important: exchange stability.

The government was successful in its initial goal to appreciate the exchange rate. Strong market pressures for appreciating the rate of exchange accompanied the inflow of capital loans for public works and other government activities<sup>37</sup> and the suspension of payments on the foreign debt due to the debt-consolidation agreement. However, appreciation hurt the coffee producers, whose income in domestic currency suffered as a consequence. This led the government to counteract these trends. Through the Banco da República do Brasil (transformed into the fourth Banco do Brasil at the end of 1905), it bought foreign exchange for public-works expenditures, and gained a near monopoly position as foreign-exchange trader, since the Banco negotiated 80% of foreign-exchange transactions and 75% of gold certificates.<sup>38</sup>

In the two years 1905-1906, the exchange rate appreciated by 25%. This substantially reduced the profitability of coffee growing. With the imminence of a large coffee crop in 1906-1907, which caused a drop in international coffee quotations, pressures for official intervention in the coffee sector (which dated back to the last years of the nineteenth century) increased substantially.

<sup>36</sup> Data from FGV/IBRE/CEF. It should be mentioned that a part of this percentage increase was due to reduced expenditures on the foreign debt in 1911. In 1912, however, the government resumed full service on the foreign debt (see app. D).

<sup>37</sup> Especially the sale of the Sorocabana railroad (see app. D).

<sup>38</sup> JC, *Retrospecto Comercial*, 1907, pp. 71 and 115.

The first coffee-support plan was formulated in 1906.<sup>30</sup> Although there was no program for government intervention on the federal level, the states succeeded in having their support programs guaranteed against an eventual appreciation of the exchange rate. This was achieved through the creation of an institution on the national level. Through the Taubaté agreement, the Caixa de Conversão was established. Its function was to secure a stable exchange rate.<sup>40</sup> It was the issuing of notes by the Caixa de Conversão that was mainly responsible for the large increase in the money supply in 1909-1912, and for its subsequent decrease in 1913-1914. The latter caused a run on the Caixa's deposits and forced it out of existence.

The exchange rate remained stable until August 1914, when there were again strong pressures for its appreciation. This obviously helped to protect the income of the coffee sector, which was in full accord with the coffee-support plan. The defense of the coffee sector — perhaps the most important aspect of Brazilian economic policy prior to World War I — would remain a key objective for many years thereafter. The distortions this brought about are obvious: the artificial maintenance of coffee prices interfered with the proper functioning of the market mechanism in efficiently allocating investment resources. The productive capacity of the coffee sector was thus increased substantially beyond what the market required. As a consequence of the distortions in resource allocation, the development of other sectors was held back, including the diversification of agriculture. It is true that industry and transportation benefited from the periodic rise in the terms of trade and the capacity to import. But the question remains as to whether the Brazilian economy might not have grown and diversified more rapidly had there been no coffee-support program.

#### **2.2.4 — The first world war and the abandonment of stabilization policies, 1914-1922**

This period was characterized by the forced abandonment of the major goals of Brazilian economic policy. Government budget deficits increased, monetary stabilization policies were slackened, and the defense of the exchange rate was abandoned. The coffee-support program, which had been initiated in 1906, resulted in substantial increases in the sector's productive capacity. As a result, the expect-

<sup>30</sup> Peláez, "Economic Analysis," p. 74.

<sup>40</sup> The Caixa de Conversão was established by Law 1 575 of 12 June 1906. Its objectives and mode of operation are described in app. C, "Foreign Trade and Foreign-Exchange Policy."

tation of huge harvests forced the government to formulate new support plans, one in 1917 and another in 1921.

The international crisis of 1913 hit Brazil through a drastic fall in the export prices of its principal exports; this, in turn, brought on a deficit in the trade balance. Expenditures for imports and for servicing the foreign debt remained high. There was no foreign-exchange crisis, however, because, of the continued inflow of capital, both official and private,<sup>41</sup> and because of the Caixa de Conversão, which exchanged foreign money for stabilization notes. But, ironically, by withdrawing money from circulation and thus helping to sustain the foreign-exchange market, the Caixa contributed to deepening the recession.

With the outbreak of war in July 1914, the crisis worsened. The inflow of capital stopped, causing a balance-of-payments deficit. Soon after, in August 1914, the exchange rate rose above the stabilization rate, resulting in a collapse of the foreign-exchange market. This problem was resolved in September of the same year through a new accord on foreign-debt consolidation.<sup>42</sup> In addition, the Caixa de Conversão was forced to close following a run on its deposits. However, the depressive impact of the massive withdrawal from circulation of Caixa notes<sup>43</sup> was partially offset by government budget deficits.

The foreign-trade and exchange-rate crisis forced a cut in imports. As a consequence, federal receipts, of which import taxes comprised 70%, fell by a third. Expenditures remained high, however, due to the servicing of the foreign debt incurred in the previous period, and the maintenance of government investment expenditures for the construction of railroads and ports. The resulting deficit amounted to 80% of receipts.

There was thus no alternative but to abandon previous policies. Budget deficits — which remained large until 1922 as a result of the high level of government investments and the public expenditures associated with droughts — came to be financed through appreciable increases in the money supply. By 1922, the total supply amounted to almost three times the money in circulation in 1913. The growth of the money supply showed only in 1919-1920, when the economy experienced a monetary crisis. This slowdown was in large part due to an unusual increase in the cash reserve/demand deposit ratio of commercial banks (57% in 1920).<sup>44</sup> The money supply

<sup>41</sup> See app. C.

<sup>42</sup> App. D, "The Evolution of the External Debt."

<sup>43</sup> The issue of Caixa de Conversão notes fell from Cr\$ 408 million in 1912 to Cr\$ 158 million in 1914. Caixa de Amortização, *Relatório*, 1931, pp. 50-54.

<sup>44</sup> See table 114 in the Statistical Appendix, and graph 1 in this chapter.

was subsequently expanded in 1912-1922 by the issues of the rediscount department (Carteira de Redescontos) created within the Banco do Brasil in 1921.<sup>45</sup>

With the foreign-exchange-stabilization mechanism dismantled, there was a rapid devaluation from 1914 to the end of 1917. By October of 1917, however, the foreign-exchange market had again become a matter for official concern. Control of foreign-exchange operations was established in order to eliminate speculation and to hold down profit remittances during the war. In July 1918 foreign-exchange transactions became subject to government approval. As a result of these measures, the exchange rate appreciated again until 1920. In 1921-1922, however, appreciation was once again abandoned as a result of the crisis in the foreign-trade sector. There can be little doubt that exchange-rate policies continued to be strictly tied to policies for the coffee sector.

After the crisis of 1913, the price of coffee in the international market remained about 30% below the levels of 1911-1912. This price decline was partially compensated by exchange devaluation. In 1917, the expectation of a large harvest in the period 1917-1918 led to the formulation of a second coffee-support program.<sup>46</sup> A severe frost in 1918, however, caused a substantial decline in output which led to a steep rise in prices. In 1919 the balance of trade showed a large surplus, which led to a considerable increase in imports in 1920. The latter was also influenced by the substantial amount of war-repressed demand for imported goods. Capital outflows also increased at the time. In 1920 a new crisis broke out in the coffee sector. Forecasts for a huge harvest in 1920-1921 and the recession in the United States<sup>47</sup> caused a sharp decline in both the prices and the volume of coffee exports. The trade balance was in deficit in 1920 and there was a small surplus in 1921. New foreign-exchange difficulties resulted in devaluations which cumulatively amounted to 100% by 1922. Once more, devaluation protected the coffee interests. In March 1921 a new coffee-support program was instituted. By then the policies in defense of the coffee sector had been institutionalized. The long-term result was a large increase in productive capacity, and the final outcome an overproduction crisis just a few months prior to the repercussion on Brazil of the Great Depression in the industrialized countries.<sup>48</sup>

<sup>45</sup> The Carteira gradually became a discount window which financed government expenditures. Peláez, "Economic Consequences," p. 76.

<sup>46</sup> Peláez, "Economic Analysis," p. 93.

<sup>47</sup> *Ibid.*, p. 98.

<sup>48</sup> *Ibid.*, p. 115.

### 2.2.5 – Return to stabilization policies and the monetary reform, 1923-1929

The rigid economic policies pursued from 1923 on had depressive effects. The budget deficit was reduced through large cuts in government expenditures. The rate of expansion of the money supply was at first slowed down, and after a while the total supply was decreased. The foreign-exchange market was stabilized by means of an appreciated exchange rate. Had it not been for these policies, the economy could have expanded and diversified more rapidly, for the years 1924-1929 were the golden age of the export economy. The price of coffee reached historical highs, as the coffee-support program reaped its greatest fruits. The economy could therefore have sustained a much larger volume of imports had a substantial share of export earnings not been used to service the foreign debt, to back the money supply, and to stabilize the foreign-exchange market.

The circumstances underlying policy changes from 1923 on were different from those observed in 1913-1914. This time there were deliberate changes aimed, above all, at reducing the budget deficit. Besides the monetary reform of January 1923, which gave the monopoly of issue to the Banco do Brasil and eliminated the Carteira de Redescontos, a number of other measures were adopted with respect to financing government expenditures.<sup>40</sup> First, the budget law permitted the government to borrow from the Banco do Brasil up to a limit of 24% of expected tax receipts. Second, the federal government was authorized to borrow in order to consolidate its debt. However, the most important steps taken to reduce the deficit were on the expenditure side: government investment expenditures were sharply reduced from 27% of total expenditures in 1921-1922 to 3.7% in 1923. This proportion increased slightly in the next few years, reaching a maximum of 8% in 1926.<sup>50</sup>

As a result of these measures, the deficit was steadily reduced until 1925. However, it rose again in 1926 and worsened after 1927, when full servicing of the foreign debt was resumed. In response, the government secured a large loan abroad in order to once again consolidate the foreign debt, which weighed heavily in the budget.<sup>51</sup> It also cut investments – this time by 50% in absolute terms, and in relative terms from 8% of total expenditures to 3.7% in 1927. In the years that followed, such expenditures continued to be extremely low. Even though the government had resumed full payment

<sup>40</sup> Peláez, "Economic Consequences," p. 78.

<sup>50</sup> FGV/IBRE/CEF.

<sup>51</sup> See app. D, "The Evolution of the External Debt."

on the foreign debt, these strict policy measures allowed for large budget surpluses in 1928 and 1929.

The issuing activities of the Banco do Brasil were paralyzed in 1925. This represented a new tightening of government policies. The money supply, which had increased by 22% in 1923-1924 due to the issuing activities of the Banco do Brasil, was reduced again in 1925-1926. This reinforced the depressive effects of reduced government expenditures and led to a recession of economic activity. With the monetary reform at the end of 1926, policy objectives did not change. The principal goal was to establish a new gold parity for Brazil's currency and to stabilize the rate of exchange. To achieve these ends, the Caixa de Estabilização was created. Its funds were to be used to sustain the desired exchange rate, and its mode of operation to be similar to that of its predecessor, the Caixa de Conversão.<sup>52</sup> The major concern was still exchange-rate stabilization in protection of the coffee interests.

After the crisis of 1921-1922, the exchange rate achieved its maximum devaluation in 1923. In that year new measures were formulated to control the operation of the exchange market.<sup>53</sup> Thus, exchange receipts from coffee exports were allowed to enter the market only at specified times. Likewise, government foreign-exchange purchases were distributed over time. In addition, the Banco do Brasil set up funds abroad in order to regulate the exchange rate. These measures, along with higher overall foreign-exchange inflows due to increased exports and capital inflows, produced strong pressures for appreciation of the exchange rate. Although the foreign-exchange department (Carteira de Câmbio) of the Banco do Brasil tried to counteract these pressures, the currency had appreciated 25% by 1926. This partly neutralized the effects of the coffee-support program, and exposed domestic manufactures to even more foreign competition.

The most important effects of the coffee-support program of the twenties was the growth of the profitability of the sector. This acted as a stimulus to the planting of new coffee trees. The resulting increased productive capacity in the middle of the Depression led to the adoption of a drastic control measure: the destruction of excess coffee output.

## 2.2.6 — Stabilization policies during the Depression and the crisis of the thirties, 1930-1936

When the world depression hit Brazil at the end of 1929, the economy was already in crisis. To the huge coffee stocks accumulated

<sup>52</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

<sup>53</sup> *Ibid.*

in the previous years as part of the coffee-support program, there was now added the prospect of a bumper crop for the year 1929-1930.<sup>54</sup> Prices entered a decline, which was accelerated with the international crisis starting in October 1929. Although a trade-balance surplus was maintained, decreased capital inflows threatened to produce balance-of-payments difficulties. This was due to the fact that in the previous years the trade surplus covered less than half of the foreign-debt payments (not counting private remittances). Thus, a crisis in the foreign-exchange market was imminent. It was felt at first that the Caixa de Estabilização and the Banco do Brasil had enough reserves to avoid it. This was not the case, however. The banking system already gave evidence of the recession: there was a marked increase in withdrawals and a decrease in demand deposits.<sup>55</sup> The decline of the money supply was a natural consequence. The government budget showed a surplus, however, owing to the large increase in receipts associated with the trade expansion in the last years of the twenties.

A reasonable reaction to these events in terms of post-Keynesian thinking would have been the adoption of countercyclical policies: increased government expenditures and lower taxes,<sup>56</sup> a larger money supply (new issues to finance government expenditures, easier credit policies, reduced interest rates, more rediscount operations, etc.), and devaluation of the exchange rate. It is obvious that the vision of policymakers at the time was limited and that they did not perceive these options. The policies pursued were exactly the opposite. Balanced budgets were aimed for and expenditures were reduced. The money supply was contracted, and exchange controls were introduced to minimize exchange-rate devaluation. Had unexpected circumstances not significantly raised government expenditures in 1932, the effects of the Great Depression on Brazil might have been even more severe. The most serious problem was the overproduction of coffee, which forced the government to buy the excess supply. The latter had little impact, however, in terms of countercyclical fiscal policy.<sup>57</sup>

By 1930 the world depression had exerted a profound impact on the Brazilian economy. While the drop in the price of coffee reduced export receipts, the even greater reduction in imports increased the trade surplus. The paralyzation of capital inflows, however, meant that the only foreign-exchange available was that stem-

<sup>54</sup> Peláez, "Economic Analysis," p. 113.

<sup>55</sup> See table 114 in the Statistical Appendix.

<sup>56</sup> This was not possible, however, because government receipts were reduced by a foreign-trade crisis which caused imports to decline.

<sup>57</sup> Peláez, "Economic Analysis," p. 203.

ming from the trade surplus, and the amount required to service the foreign debt and cover other remittances exceeded the supply. The market rate of foreign exchange began to rise and there was a run on the reserves of the Caixa de Estabilização and the Banco do Brasil.<sup>58</sup> In October, as an emergency measure, the Banco do Brasil was given the monopoly on exchange operations. With the subsequent change of government, however, this measure was revoked and the Caixa de Estabilização abolished.<sup>59</sup> Its reserves were used to service the foreign debt.

The foreign-trade crisis also caused problems in the public finances of the country. Reduced imports decreased government receipts, while expenditures were rising substantially. The latter was mainly due to increased government consumption expenditures, to the rise in government salaries in late 1929, and to the repression of the political agitation which preceded the revolution of October 1930. Thus, a large budget deficit appeared which was to have a profound influence on fiscal and monetary policies from then on.

Brazilian policymakers viewed the solution to the economic crisis as consisting of the elimination of two basic problems: inflation<sup>60</sup> and the budget deficit. In the area of fiscal policy, increased taxation was considered unfeasible in view of the existing economic crisis. It was thus decided to reduce expenditures. On the monetary policy side, it was decided to reduce the money supply. Already towards the end of 1930, the government confiscated the notes of the Banco do Brasil (592 thousand *contos de réis* or 17.4% of the money issued in 1929). These, however, were not removed from circulation, but incorporated into the treasury supplies.<sup>61</sup> Later on, the Banco do Brasil was again granted the right to issue notes; this resulted in the issue of 170 thousand *contos de réis*.<sup>62</sup>

Even so, the total money supply was reduced by 15% in 1930. First, due to the exchange-rate crisis, 720 thousand *contos de réis* of Caixa de Estabilização notes were removed from circulation. However, the net withdrawal of notes was smaller because of a reduction in the cash holdings of the Banco do Brasil. Second, and quantitatively more important, there was a substantial reduction in demand deposits. This was caused by the general economic crisis,

<sup>58</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

<sup>59</sup> *Ibid.*

<sup>60</sup> In fact, at the time, a number of prices were actually declining. See E. M. L. Lobo *et al.*, "Evolução dos Preços e do Padrão de Vida no Rio de Janeiro, 1820-1930: Resultados Preliminares," *Revista Brasileira de Economia* 25 (October-December 1971): 235-65.

<sup>61</sup> Caixa de Amortização, *Relatório*, 1931, p. 54.

<sup>62</sup> *Ibid.*



which had brought about a shortage of credit and difficulties in discounting commercial papers. The net result of the policies followed was an accentuation of the crisis in 1931, which was the worst year of the Depression in Brazil.

In 1931 the foreign-trade crisis worsened. The price of coffee stood at less than half the 1925-1929 levels, and available foreign exchange was limited to the trade surplus. However, it was the government's policy to fully honor foreign-debt payments, and there were no restrictions on other remittances abroad. The exchange rate therefore devalued considerably. In August 1931, the government suspended part of the debt payments and initiated negotiations on a new debt-consolidation agreement. In September 1931 an extreme measure was adopted: the introduction of exchange controls, with the Banco do Brasil being granted the monopoly on exchange operations and with the establishment of a scale of priorities for the sale of foreign exchange. As a result, by the end of the year imports had been reduced to less than half of the 1928-1929 level. This must have partly counterbalanced the negative effects on national income of the decline in exports.<sup>63</sup> Most important, however, was the impact of these measures on public finances.

The decline in imports precluded the increase in government receipts required to obtain the desired balanced budget. Thus, the only way to achieve the latter was to reduce expenditures. Let us examine the depressive impact these expenditure reductions had on the economy.<sup>64</sup> The continuation of payment on the foreign debt, plus the expenditures resulting from the new debt consolidation, increased debt payments by 78% in 1931, bringing them to 36.5% of total government expenditures. In spite of this, total government expenditures declined by 18.5%. The most drastic cuts were in government current expenditures (almost 40%) and investments (almost 42%). There can be no doubt that this was one of the main causes for 1931 being the most critical year of the Depression for Brazil. The coffee-support program did not prevent this, since the destruction of coffee stocks was financed by new taxes. Thus, the support program cannot be interpreted to have acted as a counter-cyclical policy measure.<sup>65</sup> Monetary policy was rigidly conducted. The primary money supply was limited to the new issue of 100 thousand *contos de réis*<sup>66</sup> by the Carteira de Redescontos of the

<sup>63</sup> C. M. Peláez, "A Balança Comercial, A Grande Depressão e a Industrialização Brasileira," *Revista Brasileira de Economia* 22 (March 1968): 34.

<sup>64</sup> Data from table 115 in the Statistical Appendix.

<sup>65</sup> Peláez, "Economic Analysis," p. 203. This interpretation has been challenged, however. See section 2.3.1.2 of this chapter.

<sup>66</sup> IBGE, *Anuário Estatístico da Brasil*, 1936, p. 206.

Banco do Brasil. There was, however, an important increase in the means of payments because of a rise in demand deposits. The restrictive policies were interrupted in 1932 because of events outside of the economic sphere. This year marks the beginning of Brazil's recovery from the Great Depression.

The most important factor contributing to the economic recovery in 1932 was the large budget deficit. In this year, about 70% of the increase in government expenditures was owing to two historical events: a drought in the Northeast and the constitutionalist revolt of São Paulo. The budget data show,<sup>67</sup> however, that even in the absence of these events, there would still have been a substantial increase in the budget deficit. In fact, only 50% of the deficit could be attributed to new expenditures; the other cause was the fall in tax receipts.

The continuing world-trade crisis substantially reduced export earnings. The resulting shortage of foreign exchange (payments on the foreign debt alone, even under the new debt accord, were greater than the trade surplus) and the introduction of exchange controls in late 1931 caused imports to decline drastically. This caused government tax receipts to decline even more, since about half of these consisted of import duties. As a consequence, the budget deficit of 1932 was the largest yet recorded in the fiscal history of the country.

It is obvious that the way the budget deficit was financed would determine its countercyclical impact. In times past, recourse to foreign credit was the standard way of financing a budget deficit. This time, however, the country was having serious exchange difficulties and new loans from abroad were prohibited after the third debt-consolidation agreement. As a result, the government was forced to relax controls over monetary expansion. To finance the deficit, 400 thousand *contos de réis* were issued<sup>68</sup> (13% of the new money supply of 1931). The total money supply increased by 18%. This was also in part due to a new increase in demand deposits. The latter resulted not only from the economic recovery, but especially from some of the monetary policies adopted at the end of 1932.

From 1933 on, the emphasis of economic policy was once more on balancing the budget, and on monetary and exchange-rate stability. Although there was a gradual trend toward liberalizing the foreign-exchange market in the period 1933-1937, the Banco do Brasil always tried to counteract the devaluation of the exchange rate. In 1933 it fought the black market by offering foreign exchange

<sup>67</sup> See chap. 6.

<sup>68</sup> IBCE, *Anuário Estatístico do Brasil*, 1936, p. 206.

at an intermediate rate. The Banco maintained its exchange monopoly until 1934, and until 1937 it retained a part of the exchange receipts from exports in order to furnish the government with its foreign-currency needs. The exchange rate was held at levels lower than the devalued rates of 1931. It was only in 1936 that there was another devaluation. By that time, the foreign exchange required to pay commercial arrears and to service the foreign debt substantially exceeded the trade surplus.

It was especially in monetary and fiscal policies that the government proved to be extremely inflexible. The strict adherence to a balanced budget induced the government, after the deficit of 1932, to cut expenditures in 1933 and again in 1935. The continued rise in receipts (due to the recovery of imports, as well as to larger sales and income-tax collections) made it possible to nearly eliminate the budget deficit by 1936.

The rate of growth of the money supply was reduced in the years 1933-1934, but rose again in 1935-1936. The monetary expansion in the middle of the thirties was caused by two important policy measures and also by the nature of the Brazilian monetary system.

The first policy measure dated back to the end of 1932, when CAMOB was created within the Banco do Brasil.<sup>69</sup> Its purpose was to provide the Brazilian banking system with an institution having some of the attributes of a central bank. It would be able to expand and contract the money supply by manipulating the cash/deposit ratios of commercial banks. The effect of this institution was to tighten the money supply. Thus, in addition to establishing the reserve requirements for commercial banks, the decree which created CAMOB controlled its financing. This was to be done through the compulsory deposits at the Banco do Brasil of all cash exceeding a determined ratio in relation to total deposits. A symbolic 1% rate of interest was to be paid on these forced deposits. Since commercial banks were operating with large amounts of cash at that time,<sup>70</sup> these measures were equivalent to an increase in the rate of compulsory deposits, and would have a contractionary effect on the money supply. This is where the peculiar nature of the Brazilian monetary system played a role.

Although CAMOB had some of the functions of a central bank, the fact that it was part of the Banco do Brasil at times made it difficult to attain the goals set by monetary policies. In fact, since the Banco do Brasil also functioned as a commercial bank the compulsory deposits were not withdrawn from circulation, but used

<sup>69</sup> Banco do Brasil, *Relatório*, 1933.

<sup>70</sup> See Statistical Appendix, table 114.

by the Banco do Brasil to make loans. This, perhaps, explains the large increase in demand deposits, which was the main part of the expansion of the money supply after 1933.

A second important measure was the regulation concerning the Carteira de Redescontos of the Banco do Brasil adopted at the end of 1935.<sup>71</sup> Perhaps in response to the needs created by the industrial growth of the thirties, rediscount facilities for industrial and commercial papers were expanded. The note issues of the Carteira were an important primary source for the expansion of the money supply until 1936.

There can be no doubt, however, that the crisis of the thirties centered around the coffee sector. Although the federal coffee-support program resulted in the destruction of a large part of output, the financing of the program was not inflationary. A tax was imposed on each bag of coffee exported. Thus, the resources needed to destroy the excess coffee came from the coffee sector itself.

### **2.2.7 — Wartime expenditures and trends towards more liberal monetary, fiscal and exchange-rate policies, 1937-1945**

In the years 1937 to 1945, Brazilian economic policy followed a familiar path. Because of uncontrollable outside events, the policies aimed at balancing the budget and at a monetary stability eventually had to be abandoned. Two stages can be identified. During the first, from 1937 to 1940, the major concerns continued to be reducing budget deficits and limiting the expansion of the money supply which financed the deficits. At the same time, adverse foreign-trade conditions led to exchange controls. In the second stage, from 1941 to the end of World War II, since the large budget deficits were financed by new issues, there was a rapid expansion of the general money supply, and surpluses appeared in the trade balance.

The large budget deficits observed from 1937 on were caused by increased expenditures to reequip the armed forces, and, a little later, to finance large government investment expenditures on industrial infrastructure, transportation, equipment and installations. In spite of this, the authorities were still concerned with reducing budget deficits. In 1939-1940 they diminished the rate of expansion of government expenditures. It seems that this was in great part due to the behavior of tax receipts, since the growth of revenues was substantially slowed by the adverse foreign-trade conditions that per-

<sup>71</sup> Peláez, "Economic Consequences," p. 89.

sisted until 1940 (import duties still accounted for about 46% of total receipts in 1936-1937).

In 1937, a marked rise in imports (resulting from the gradual liberalization of the foreign-exchange market and from the industrial surge) caused the trade surplus to disappear. The ensuing foreign-exchange crisis forced the government to once again grant a monopoly on foreign-exchange operations to the Banco do Brasil,<sup>72</sup> and for the first time in Brazilian economic history, to suspend payment on the foreign debt.<sup>73</sup> These conditions persisted until early 1939. By then, the trade balance was again in surplus and commercial arrears had been paid off. The foreign-exchange situation had improved, and operations were almost totally liberalized.

It was the drastic cut in imports, however, which made the re-appearance of a trade surplus possible in 1939. This was necessary because exports remained at very low levels until 1940. As a consequence of the policies adopted in 1938, the price of coffee declined again in 1938-1940,<sup>74</sup> and European markets were lost with the outbreak of war in Europe. On the other hand, the decrease in imports limited the possibility for increasing revenues so as to balance the budget. Thus, taxes on internal transactions and income taxes came to replace import duties as the principal sources of government revenues in 1939-1940. As a result, in 1939-1940 the deficit was held below the 1937-1938 levels. And to cover the remaining deficit, most inflationary sources of financing were eliminated.

Monetary policy was cautious during this period. The money supply grew rapidly only in 1937-1938, and most of this growth was due to an extraordinary expansion of demand deposits. New issues were substantially reduced in 1939-1940. There was a decline in the money supply in 1939 and almost no growth in 1940. Deficits were financed mainly by the sale of government bonds. However, these developments were due more to wartime changes in the banking system and in the public's attitude than to monetary policies. The banks increased their voluntary reserves, deposits declined, and the paper money in the hands of the public increased.

From 1941 on, a number of changes occurred. The increase and diversification of exports and the decrease in imports due to the war resulted in large trade surpluses. Even so, budget deficits rose (except for 1943-1944) owing to Brazil's involvement in the war and to increased government investments in transportation and industrial infrastructure (especially the financing of the construction of the steel

<sup>72</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

<sup>73</sup> See app. D, "The Evolution of the External Debt."

<sup>74</sup> Peláez, "Economic Analysis," p. 152.

mill of the Companhia Siderúrgica Nacional at Volta Redonda). Also, payments on the foreign debt were resumed.

The marked expansion of the money supply during World War II was the outcome of budget deficits and trade surpluses. There was a not too successful attempt to sell war bonds to the public in order to avoid the growth of the money supply.

As a whole, policies favored economic growth; but, as in the period 1914-1918, wartime conditions also had an inhibiting effect on economic growth and diversification. While the importance of the construction of the integrated steel plant at Volta Redonda must be recognized, its construction depended in large measure on foreign resources.

## 2.2.8 — Summary

Brazilian economic policy in the period covered was always dominated by traditional goals: balanced budgets, monetary stability and appreciation of the exchange rate. It was common throughout this period, however, for these goals not to be attained. This was due to both internal and external factors. Among the former, changes in administration caused discontinuity in the policies pursued. There were also the periodic regional climatic problems or political changes which resulted in extraordinary expenditures leading to budget deficits. Finally, the protection of certain sectors often influenced economic policy, and at times conflicted with the above-mentioned basic goals.

External factors, however, were most often responsible for deviations of economic policies from original goals. The fluctuations in the price of coffee, the periodic foreign-trade crises, the business contractions in industrialized countries, and the world wars had significant effects on Brazilian economic policies until 1945.

Graph 1 and table 1 illustrate the effects of monetary, fiscal and exchange-rate policies between 1889 and 1945. The periods of monetary expansion, price increases, exchange-rate devaluation and budget deficits coincided with internal (agriculture at the beginning of the Republic; the drought of the Northeast and the revolution of São Paulo in 1932) and external (World Wars I and II) crises. The long-term trends show that periods of expansion were always followed by periods of contraction, and vice versa. Policies were not designed to be anticyclical in nature. For example, deflationary policies, such as cuts in government expenditures, were applied in periods of recession (1899-1902 and 1929-1931).

Table 1  
*Brazil: Federal Budget, 1889-1920*  
 (1 000 Contos de Réis)

Year	Surplus or Deficit	Deficit/Receipts (%)
1889	— 25.3	
1890	— 25.4	13.0
1891	8.4	3.7
1892	— 51.7	22.7
1893	— 40.8	15.7
1894	—107.7	40.6
1895	— 37.0	12.0
1896	— 22.7	6.6
1897	— 75.9	25.0
1898	—344.1	106.2
1899	25.5	
1900	—125.6	40.8
1901	— 29.6	9.7
1902	46.1	
1903	52.2	
1904	— 20.7	4.7
1905	26.2	
1906	8.3	
1907	13.8	
1908	— 69.8	15.8
1909	— 68.4	15.2
1910	— 98.7	18.8
1911	—118.3	21.0
1912	—173.8	28.2
1913	—131.0	20.0
1914	—343.4	81.1
1915	—284.3	70.3
1916	—208.7	43.7
1917	—199.3	37.1
1918	—119.0	19.2
1919	—305.9	48.9
1920	—304.5	33.0

Source: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBR&E/CEF), federal balance sheets.

It is therefore probable that, if monetary, fiscal and exchange-rate policies did not restrict growth, neither did they facilitate the expansion and diversification of the economy up to 1945. In the following section we shall examine how these long-term trends in economic policy affected the evolution and structure of Brazilian output.

## 2.3 – Output: trends and structural changes

### 2.3.1 – Agricultural production

Until at least the twenties, Brazil's economic growth was based on the expansion of agricultural output. The latter constituted about 80% of total value added of agriculture and industry.<sup>75</sup> A large proportion of agricultural output (68% in 1907 and 36% in 1919 and 1939) was exported.<sup>76</sup> Even so, until shortly before World War I, the country imported about 13% of its domestic consumption of agricultural products.<sup>77</sup>

The two major influences on the long-run growth of agricultural output were the coffee-support programs and the periodic foreign-trade crises. The support programs, because of their distorting effects, accentuated the coffee monoculture.<sup>78</sup> The crises, however, were responsible for the cyclical nature of agricultural growth and for the diversification of agricultural production for the domestic market.

Some agricultural import substitution took place before and during World War I, and meat and livestock-product output (and exports) grew rapidly both during and right after the war. But it was only after the debacle resulting from the coffee-support program at the end of 1929, which was followed by the Depression, that important changes in production trends and structure occurred in the agricultural sector.

#### 2.3.1.1 – Principal long-run trends

The abolition of slavery in 1888 and the severe drought of 1889 brought on a pronounced food shortage. Since, as already mentioned, the Brazilian economy depended to an important extent on the importation of food products, there was a substantial increase in food imports which was to last for a long time. With the continued growth of coffee output, partly the result of the rise in coffee prices (in domestic currency) associated with the various exchange-rate devaluations, food production was neglected. This led to attempts, even prior to the twenties, to modify the structure of agricultural output during coffee and foreign-trade crises.

<sup>75</sup> See Methodological Appendix.

<sup>76</sup> See part 2.3.2 of this chapter.

<sup>77</sup> *Ibid.*

<sup>78</sup> Peláez, "Economic Analysis," p. 280.



Data on exports and on the import substitution of agricultural products during World War I are shown in table 2. Exports of non-traditional agricultural products, together with minerals, wood products and sugar, diminished the depressive effects on the economy of the fall in the international prices of traditional products, especially rubber and coffee.

As already mentioned, the coffee crisis was solved through a series of support programs (1906, 1917 and 1921) which artificially maintained the price of coffee at a high level until shortly before the Great Depression. These programs accentuated the predominance of a monoculture export sector. For a brief period, agricultural production for the domestic market grew rapidly, even causing a diversification of agricultural exports. But soon the emphasis on traditional exports, especially coffee, once again prevailed. In the twenties, the principal export products (coffee, cotton, tobacco, and cocoa) amounted to 60% of agricultural output and took up 50% of cultivated lands.<sup>79</sup>

The twenties marked the high point of export agriculture. The output of export crops grew at a much higher rate than that of crops destined for the domestic market (see graph 2). This was obviously caused by the artificially-maintained higher prices in the case of coffee. The long-term results of this situation were to be disastrous for the economy. The stimulus to the planting of coffee trees increased the domestic and international productive capacity, and led to an overproduction crisis in 1929. It was, above all, the collapse of the coffee sector that occasioned the most important changes in the trends and in the structure of agricultural production.

In the years following the Great Depression, Brazilian agriculture underwent extensive transformations. First, among the export crops, cotton substituted coffee as the most important product. Its most notable growth took place in the former coffee regions of the state of São Paulo. There are strong indications that there was a net transfer of resources within the export sector, i.e. from coffee to cotton growing.<sup>80</sup> Second, and perhaps more important, crops for the domestic market became more important than those for export. From the thirties on, the rate of growth of the former exceeded that of the latter (graph 2). In the late thirties and early forties, the primacy of domestic over export agriculture appeared in its growing share of the value of agricultural output and of the area cultivated. Thus, it was in the thirties that Brazilian agricultural output became less dependent on foreign markets.

<sup>79</sup> Basic data from the Ministério da Agricultura, Serviço de Estatística da Produção.

<sup>80</sup> Peláez, "Economic Analysis," pp. 240 ff.

Table 2

**Brazil: Imports and Exports of Selected Food Products, 1901-1920**  
(Annual Averages in Tons)

Product	1901-1905		1906-1910		1911-1915		1916-1920	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
Rice	383 451	220	86 760	181	48 019	144	758	236 655
Beans	34 301	144	38 165	282	32 698	360	1 829	291 753
Corn	38 696	9 748	46 798	21	22 625	488	10 907	51 065
Jerked Beef	260 778	338	169 969	2 060	70 075	1 061	9 101	20 253
Potatoes	107 913	—	103 885	3	104 355	9	14 812	11 168
Wheat	840 862	—	1 314 056	—	1 905 898	—	1 506 626	—

Source: Ministério da Fazenda, Serviço de Estatística Econômica e Financeira (MF/SEEF), *Comércio Exterior do Brasil*, various years.

But there can be no doubt that during the entire period 1889-1945 the Brazilian agricultural sector was closely tied to foreign trade, especially coffee production for the foreign market.

### 2.3.1.2 — Agricultural production and coffee policies

Until the end of the twenties, coffee growing was the most important economic activity in Brazil. It accounted for 39% of the total value of agricultural output in 1907 and 27% in 1919, and for 57% of the value of all agricultural exports in 1907 and 74% in 1919.<sup>81</sup> It is thus not surprising that trends in the production and exportation of coffee, and the fluctuations in its world price, should be reflected in the overall trends of agricultural output and foreign trade.

The most important factors responsible for making coffee growing dominant in Brazilian agriculture were the exchange devaluations in the early years of the Republic and the subsequent coffee-support programs. Originating during the *Encilhamento* crisis, the continued exchange-rate devaluation proved to be a powerful stimulant to coffee production in the 1890s. The fall of coffee prices in foreign currency was more than offset by the exchange devaluations. Thus, the profitability of the coffee sector was maintained. However, excess output already existed by the end of the century, and discussions about and pressures for official intervention in the market became common.

The economic policies adopted in 1899 and pursued in the first years of the twentieth century led to intervention in the Brazilian coffee market.<sup>82</sup> Since exchange appreciation was not in the interest of the coffee sector, pressures for official intervention increased. Nothing was done in the first years of the new century because of the rise in international coffee prices. When, however, a record crop achieved its goal. The Taubaté agreement was the first coffee-support program for 1906-1907 was forecast, the movement for official intervention program to be carried out by the coffee-producing states.

A policy was thus initiated which would in the long run be prejudicial to the growth of the Brazilian economy. It would result in an excessive growth of the productive capacity of the coffee sector to the detriment of investments in other sectors. This resulted in a distortion of the market mechanism as an allocator of investment resources.<sup>83</sup> The policies guaranteed the price of coffee regardless of conditions in the international market.

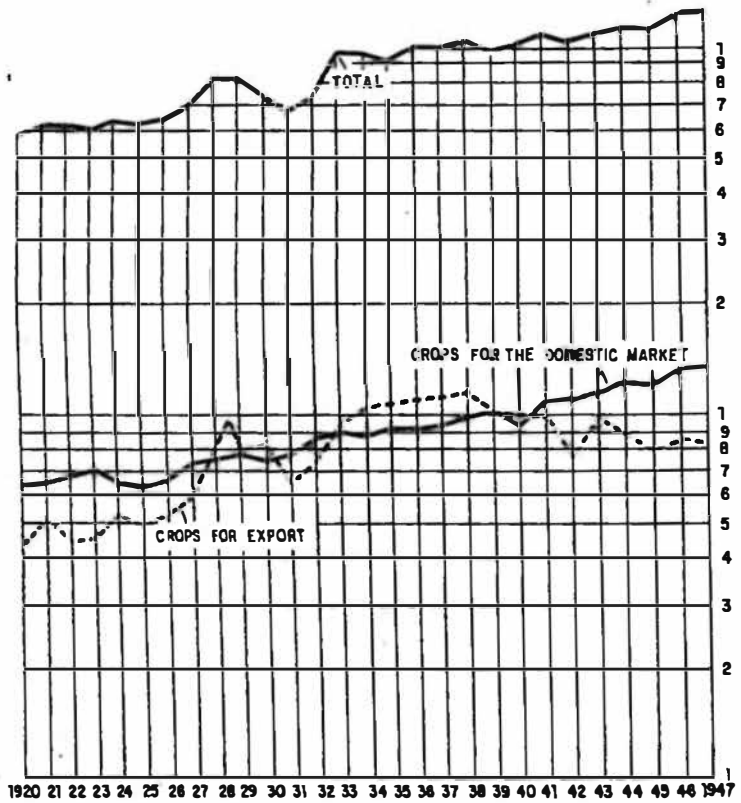
<sup>81</sup> It is important to note that for comparative purposes 1919 is not ideal, since exports were unusually large in this year. However, no data on agricultural output are available for other years in the period.

<sup>82</sup> Peláez, "Economic Analysis," p. 64.

<sup>83</sup> *Ibid.*, p. 280.

Graph 2

**BRAZIL:  
LONG-TERM TRENDS IN AGRICULTURAL PRODUCTION,  
1920 - 1947**



Source : Statistical Appendix , table 121.

The coffee-support programs were successful in achieving their goal. The Taubaté agreement was followed by other support programs in 1917 and 1921. The plans were always introduced as a result of forecasts of record harvests, and their success was almost always due to a large harvest being followed by a number of smaller ones.

After a while, the general economic policies of the federal government increased pressures from coffee producers for more elaborate support programs. In fact, the third support program was hurt by the government's efforts in 1923-1925 to reduce budget deficits, to achieve monetary stability and to appreciate the exchange rate. This led to pressures for and adoption of a permanent coffee-support program. The stimulus given to increasing the productive capacity of the coffee sector resulted in a permanent crisis of excess output: each bumper crop was succeeded by another, resulting in the debacle of late 1929. The coffee crisis in Brazil preceded the Great Depression by a few months. It is certain that the coffee crisis (and thus the crisis of the Brazilian economy) would have occurred even had there been no Great Depression.<sup>84</sup>

From the thirties on, the coffee crisis worsened. The millions of trees planted in the twenties attained their maximum productivity during the Depression, thus aggravating the crisis of excess production. It was then that the federal government assumed the responsibility for the coffee-support program.

In 1931 the government adopted a radical policy in its coffee-support program: it bought and destroyed excess production. Between 1931 and 1944, 78 million bags of coffee were destroyed, most of them in the period 1931-1933 (about 65 million bags).<sup>85</sup> After 1938 there was a decline in the destruction of coffee owing to the policy adopted in 1937. This consisted of letting the entire output enter the market in the hope that lower prices would expel competitors from the market.<sup>86</sup> Prices fell in 1938-1940 and the quantity of coffee exported rose. Then, with the outbreak of World War II, these favorable results were spoiled due to the loss of the European markets, and transport difficulties came to impede export expansion. Stocks did not accumulate, however, because frosts in the producing states substantially diminished productive capacity. As a matter of fact, there was even the danger of underproduction.<sup>87</sup>

<sup>84</sup> *Ibid.*, p. 115.

<sup>85</sup> *Ibid.*, Statistical Appendix.

<sup>86</sup> *Ibid.*, p. 155.

<sup>87</sup> *Ibid.*, p. 200.

An important aspect of the coffee-support program after 1931 is the way it was financed. Resources to buy and destroy surpluses came from the coffee sector itself through the imposition of new taxes.<sup>88</sup> There was a per unit tax from 1931 to 1933, and afterwards a tax in kind. Neither currency issues nor budget deficits were used to finance the program. It was only in 1937 that part of the expenditures of the Departamento do Café were financed by the issue of 500 thousand *contos de réis*. By that time, however, the importance of the coffee-support program had declined. It would thus seem that the program did not have a countercyclical impact leading to recovery from the Great Depression after 1932. It has been argued<sup>89</sup> that due to the inelasticity of demand for coffee and the dominant position of Brazil in the world market, the taxes might have been transferred to the foreign buyers. It can be shown, however, that the disposable income of the coffee sector was substantially lower (in current prices) in 1932 than in 1928-1929 (see graph 3).

The support policy brought the Brazilian coffee sector close to bankruptcy. It is difficult, however, to prove that the long-run effects of this policy hindered the growth and diversification of the economy. It would necessitate a model, more data, and a reasonable dose of imagination to test what would have happened had there been no support program. There can be no doubt, however, that a large proportion of the capital and managerial talents which went into the early industrial growth of Brazil came from the coffee planting and trading classes.<sup>90</sup> Besides this, when reviewing the economic history of Brazil, it is clear that it was during favorable foreign-trade conditions (i. e. when coffee exports boomed) that Brazil was able to import large quantities of capital goods to build up its industries and transportation sector. This was especially true in the years 1908-1912, 1919-1921 and 1923-1929. It seems clear, however, that the excessive expansion of coffee-growing capacity in the thirties represented a waste of resources, and even limited the growth of the economy in the decade. The effects of the rapid industrial growth on per capita income were in part counterbalanced by the agricultural recession resulting from the coffee crisis. The latter also limited growth by constraining the capacity to import.

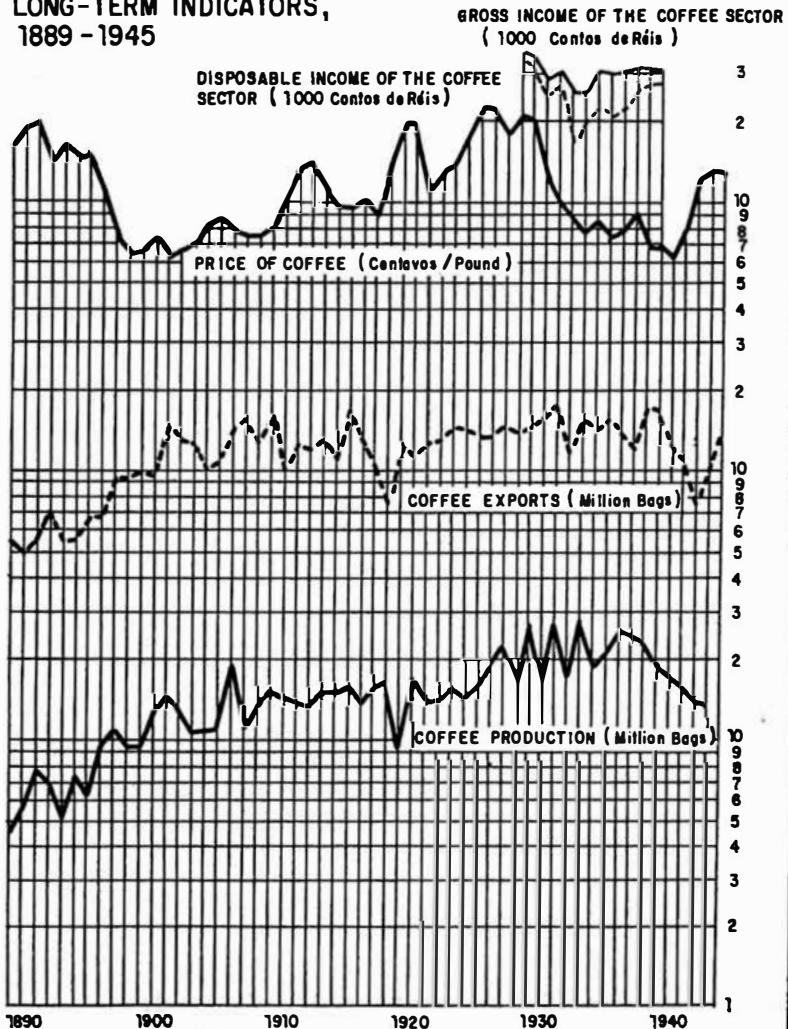
<sup>88</sup> *Ibid.*, p. 203.

<sup>89</sup> See chap. 6, section 6.3.2.

<sup>90</sup> W. Dean, *São Paulo's Industrial Elite, 1890-1960* (University Microfilms, 1964, pp. 9-72).

Graph 3

**BRAZIL :**  
**THE COFFEE SECTOR AND COFFEE POLICIES,**  
**LONG-TERM INDICATORS,**  
**1889 - 1945**



Source: C. M. Paidez, "An Economic Analysis of the Brazilian Coffee Support Program, 1906-1945: Theory, Policy and Measurement", in Essays on Coffee and Economic Development (Rio de Janeiro: Instituto Brasileiro de Café, 1973), table B.

### 2.3.2 — Periodic foreign-trade crises

Throughout the period covered by this analysis, 1889-1945, Brazil was extremely vulnerable to foreign-trade crises. Often these were the result of business recessions in industrial countries. At other times they were caused by internally-generated factors (overproduction of coffee). The degree to which these periodic foreign-trade crises affected economic growth was determined by the dependence of internal economic activities on foreign trade.

#### 2.3.2.1 — Foreign trade and domestic economic activity

On the export side, agricultural output destined for the foreign market amounted to two-thirds of the total agricultural production of Brazil in 1907 (see table 3). On the import side, the great shortage of domestically-produced foodstuffs at the beginning of the Republic led to an even greater dependence on foreign trade in the years 1889-1907. However, the import substitution of agricultural goods prior to and during World War I, and the diversification of agricultural output in the thirties, reduced the relative importance of the sector on foreign trade. In spite of these trends, over one-third of agricultural output was still destined for foreign markets in 1919 and 1939.

In contrast, industrial exports were significant only during the two world wars. Brazilian industrial production depended more on imports than on exports.

Imports accounted for 13% of the domestic consumption of agricultural products and for half the domestic consumption of manufactured products in 1907. By 1939 — that is, after the period of agricultural import substitution in the interwar years — food imports consisted almost entirely of wheat. Likewise, the industrial growth of the thirties resulted in imports declining to 20% of the domestic consumption of manufactured products.

It is clear, however, that foreign trade continued to play a crucial role in determining the level of economic activities. Increased investment activities were directly linked to periods of trade expansion. This is especially revealed by the changes in the commodity composition of imports.

#### 2.3.2.2 — Changes in the structure of foreign trade

*Exports.* The commodity composition of Brazil's exports hardly changed between 1889 and 1945. Until 1934-1939, eight traditional products — of which coffee was almost always the most important —



Table 3

**Brazil: Foreign Trade and the Level of Domestic Economic Activity, 1907, 1919 and 1939**  
(1 000 Contos de Réis and %)

	1907	1919	1939
a) Agricultural Exports	794.7	1 665.1	4 290.2
b) Industrial Exports	66.2	513.6	1 325.3
c) Agricultural Imports	54.8	170.2	569.3
d) Industrial Imports	590.1	1 164.1	4 424.7
e) Value of Agricultural Output	1 170.0	4 614.4	11 705.8
f) Value of Industrial Output	731.6	2 989.2	17 479.4
g) % of Agricultural Output Exported (g = a/e)	67.9	36.1	36.7
h) Agricultural Imports as % of Domestic Consumption of Agricultural Products (h = c/c + e - a)	12.7	5.5	7.1
i) % of Industrial Output Exported (i = b/f)	9.0	17.2	7.6
j) Industrial Imports as % of Domestic Consumption of Industrial Products (j = d/d + f)	44.6	28.0	20.2

Sources: The primary data on the foreign-trade sector are from publications of the Serviço de Estatística Comercial (later SIEEF) of the Ministério da Fazenda. The production data for 1939 are from "Contas Nacionais do Brasil, Novas Estimativas," *Conjuntura Econômica* 23 (October 1969): 53-91. The estimates for 1907 and 1919 are based on data from the Serviço de Estatística da Produção of the Ministério da Agricultura (MA/SEP) and on the industrial censuses of 1907 and 1920 (see the Methodological Appendix with regard to the estimates of physical product for 1907 and 1919).

Note: In order to facilitate comparison with export and import values, gross values were used for agricultural and industrial output. Due to the seasonal nature of agricultural output, some distortions were introduced by the data being limited to census years; the ideal would have been to work with annual averages for two-to three-year periods. Nonetheless, the exchange devaluations which accompanied the rise in domestic prices made it possible to compare the value of internal production and foreign-trade data at current prices.

made up nearly 80% of the total value of exports (table 4). The principal changes consisted of the relative position of these products. During the periodic coffee crises, the following products became of special importance in the export structure: rubber (1887-1913), sugar (1914-1923), and cotton (1914-1945).

Table 4  
*Brazil: Principal Exports, 1889-1945*  
 (%)

Period	Coffee	Sugar	Cocoa	Mate	Tobacco	Cotton	Rubber	Leather Products	Other
1889-1897	67.6	6.5	1.1	1.2	1.7	2.9	11.8	2.4	4.8
1898-1910	52.7	1.9	2.7	2.7	2.8	2.1	25.7	4.2	5.2
1911-1913	61.7	.3	2.3	3.1	1.9	2.1	20.0	4.2	4.4
1914-1918	47.4	3.9	4.2	3.4	2.8	1.4	12.0	7.5	17.4
1919-1923	58.8	4.7	3.3	2.4	2.6	3.4	3.0	5.3	16.5
1924-1929	72.5	.4	3.3	2.9	2.0	1.9	2.8	4.5	9.7
1930-1933	69.1	.6	3.5	3.0	1.8	1.4	.8	4.3	15.5
1934-1939	47.8	.5	4.3	1.4	1.6	17.6	1.1	4.4	21.3
1940-1945	32.5	.6	3.2	.9	1.2	9.1	2.4	3.6	46.5

Source: IBGE, *Anuário Estatístico do Brasil, 1939-1940*, pp. 1 379-80; *idem, Brasil em Números (Rio de Janeiro, 1960)*, p. 88.

The appearance of nontraditional exports was always fleeting. This was the case with food products (livestock products, sugar and cereals) and with textiles in World War I and II. One of the reasons for the inability to maintain the markets for these products was the inefficiency of domestic production. This inefficiency was due to the exchange-rate and tariff policies which protected these industries, whose goods were high-priced and of inferior quality.<sup>91</sup> Another reason for the loss of markets was the lack of seriousness of exporters. They abused their advantages in the wartime situation and engaged in a number of fraudulent practices in the newly conquered markets. Thus, when normal times returned they promptly lost their customers.

*Imports.* Unlike the export structure, the import structure changed considerably (table 5). Consumption goods, which in 1901-1907 comprised one-third of imports, steadily declined in relative importance until 1945, while the weight of fuels, lubricants and raw materials rose. Among the latter, raw products were substituted by more complex ones (chemicals, steel, etc.). This was a reflection of the growth and diversification of the Brazilian economy.

The level of capital-goods imports, and therefore the level of capital formation in Brazil, was clearly related to conditions in the export sector (especially coffee). The largest quantities of capital goods were imported in 1908-1913 (soon after the first coffee-support program) and 1919-1929 (the heyday of the coffee-support program). Contrary to the impression of many writers, the war years were not favorable to economic growth, especially industrial growth. In 1914-1918, imports of capital goods fell drastically. Their share of total imports declined by 50%. During World War II, the high proportion of capital-goods imports was due solely to the government's importation of equipment for the construction of its large integrated steel mill at Volta Redonda. In sum, the importation of capital goods reflected the level of internal economic activity, which, in turn, was influenced by the trends in the terms of trade and the capacity to import.

*Long-term trends in the terms of trade and the capacity to import.* The historical importance of coffee growing to Brazil prior to 1929 will perhaps never be totally known. But its influence on the country's foreign trade, and its repercussions on the rest of the economy, provides a good approximation. Since coffee was dominant in export agriculture and even in total agricultural output,

<sup>91</sup> C. D'Agostino, "Nova Crise de Tecidos," *Observador Econômico e Financeiro*, Ano 2, n.º 13 (February 1937): 24-25.

Table 5

*Brazil: Imports by Type of Commodity, 1901-1945*  
(%)

Period	Consumer Goods	Fuels	Raw Materials	Capital Goods
1901-1907 <sup>a</sup>	36.9	8.2	46.9	7.1
1908-1913	30.8	8.6	46.7	13.9
1914-1918	26.2	14.6	52.3	6.9
1919-1923	19.9	12.9	55.7	11.5
1924-1929	21.3	11.1	52.8	14.8
1930-1932	17.1	16.0	55.9	11.0
1933-1939	17.6	12.4	52.1	17.9
1940-1945	12.6	13.4	52.5	21.5

Sources: For 1901-1920, primary data from MF/SEEF, *Comércio Exterior do Brasil*, various years; for 1921-1945, basic data from FGV/IBRE/Centro de Contas Nacionais, "Estrutura do Comércio Exterior do Brasil, 1920-1964" (Rio de Janeiro, 1969) (Mimeographed), vol. 2.

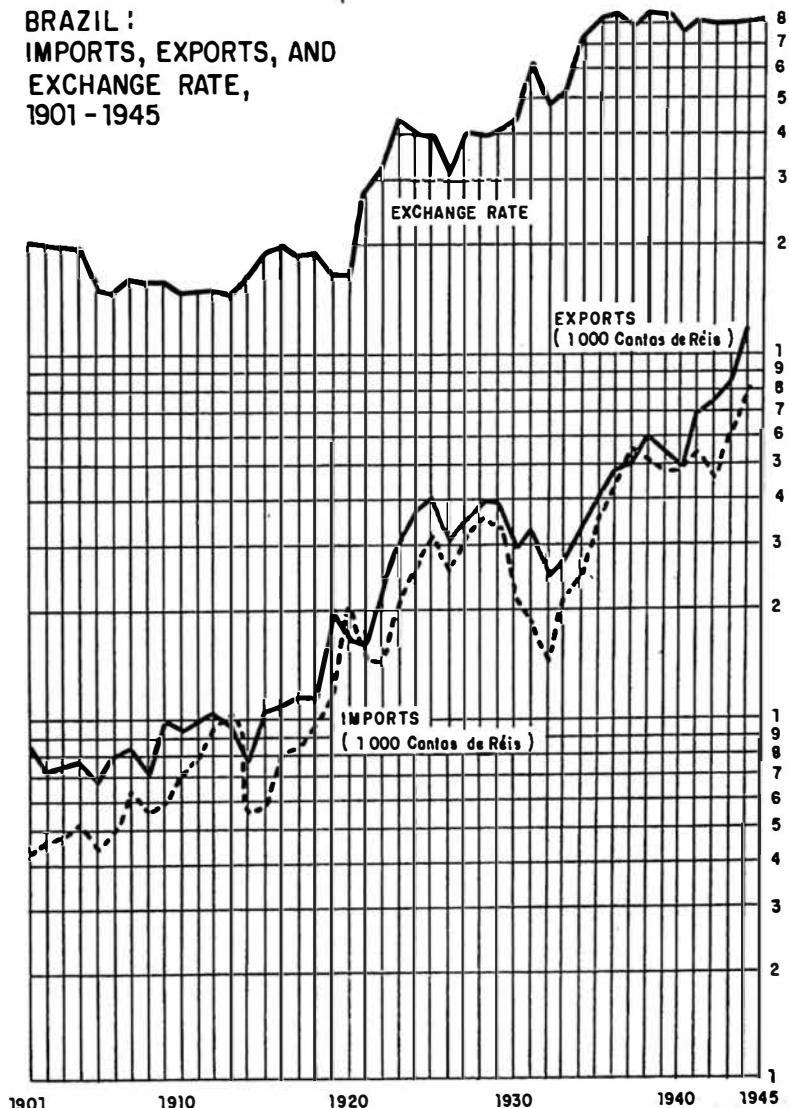
- \* Difference in total due to nonclassified goods.

fluctuations in its international price determined the country's terms of trade, and, in conjunction with the quantum of exports, the economy's capacity to import. Thus, in an economy (1907) in which almost half of the domestic consumption of industrial products was imported and in which capital formation depend on the importation of capital goods, crisis in the coffee sector inevitably became crises for the entire economy. This does not mean that the growth of the coffee sector was a good thing for the long-run growth of the economy. On the contrary, it is likely that the excessive increase in coffee-producing capacity (perhaps even at the expense of the growth of other sectors), together with the overdependence of the entire economy on coffee exports, was ultimately prejudicial.

Graphs 4, 5 and 6 depict the long-term trends in Brazilian foreign trade between 1889 and 1945. It was only possible to construct export and import quantum and price indices, and therefore terms-of-trade and capacity-to-import indices, from 1901 on. The terms of trade probably fell considerably between 1889 and 1899. Except for 1893, coffee prices declined continuously. It is therefore not surprising that foreign-exchange receipts from exports remained at practically the same level from 1891 to 1895, and that they declined thereafter. Because of foreign indebtedness, it was necessary to maintain a trade

Graph 4

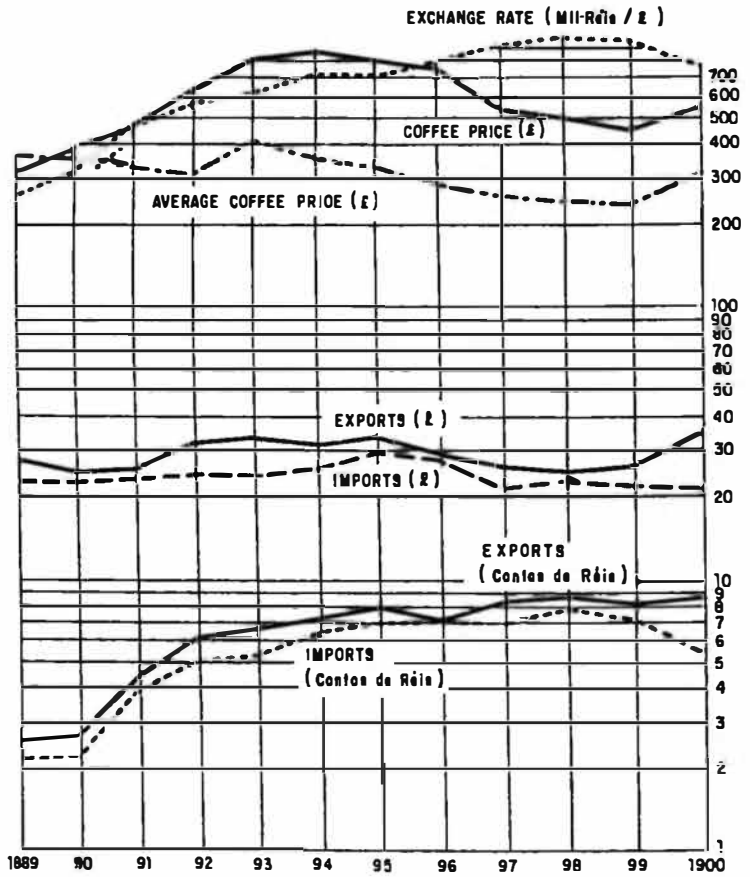
**BRAZIL :  
IMPORTS, EXPORTS, AND  
EXCHANGE RATE,  
1901 - 1945**



Sources : Statistical Appendix, tables 120 and 131.

Graph 5

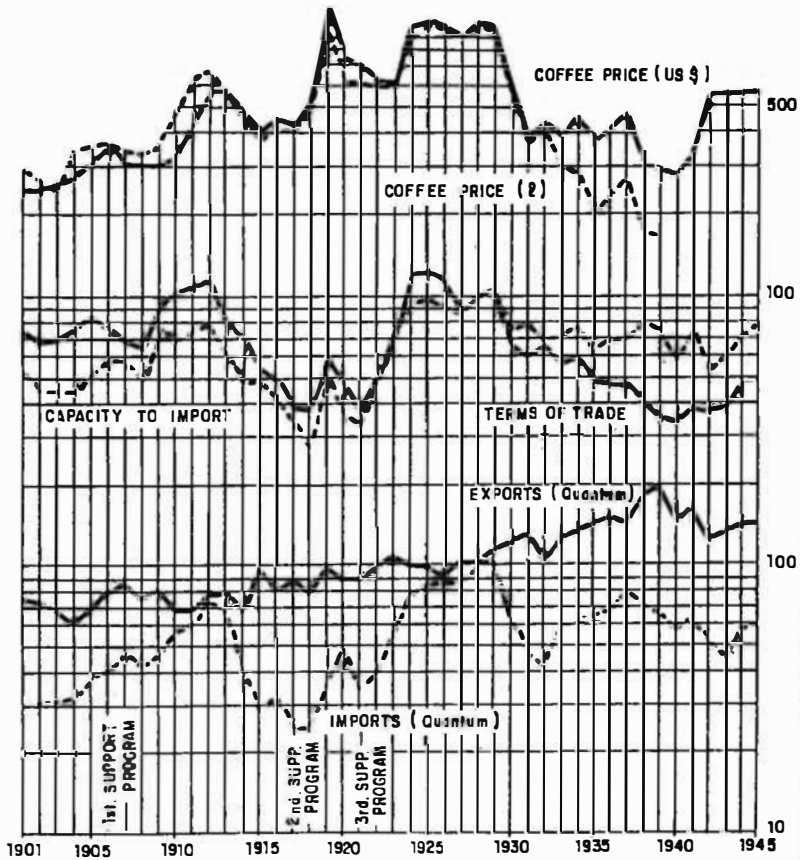
**BRAZIL :**  
**IMPORTS, EXPORTS AND EXCHANGE RATE,**  
**1889 - 1900**



Sources : Statistical Appendix, tables 120 and 131 ; Países, "Economic Analysis," table M.

Graph 6

**BRAZIL :**  
**FOREIGN-TRADE INDICES AND COFFEE PRICES**  
**( £ and US \$ ), 1901 - 1945**



Source : Statistical Appendix, table 132; Peleáz, "Economic Analysis," table M.

surplus of an average £ 2.9 million per year. This explains the restrictions on the growth of imports until 1895, and their subsequent decline.

From 1901 until the end of the twenties, the terms of trade were an exact reflection of the fluctuations in the price of coffee in foreign currency; in turn, the capacity to import was mainly determined by the terms of trade. As a rule, the capacity to import rose (1910, 1931, 1933) or fell (1932) in accord with the quantum of coffee exports. Only in 1915-1919 was the increase in export quantum related to a small trend towards export diversification. This did not last much beyond the war, however.

Imports were closely related to the capacity to import, with a lag of one year. It is thus probable that the influence of domestic economic activity (except for coffee) on imports was limited by fluctuations of the capacity to import, which was linked to coffee exports. However, in two periods imports grew more rapidly than the capacity to import: 1901-1912 and 1923-1929. During these years there was a massive inflow of capital, both private and official, leading to substantial increases in the foreign debt.

With the Great Depression and the coffee crisis of the thirties, Brazil's foreign trade underwent substantial changes. In fact, it did not return to pre-Depression levels until the end of World War II. The foreign-trade crisis which followed the coffee debacle was not only one of the longest in the country's history, but also the cause of the economic stagnation (in terms of income growth per capita) in the period 1928-1929 to 1941.

From the thirties on, the capacity to import declined less than the terms of trade. Coffee had lost some of its influence on the latter, while cotton, whose prices were more stable in the international market, became the second most important export product. But it was the increase in the volume of exports in the thirties which was responsible for the smaller decline of the capacity to import. This helped the industrial surge which was taking place at the time. Although imports increased in the period 1933-1937, they remained at levels substantially below those observed in 1928-1929.

During World War II, mainly in the years 1941-1945, the terms of trade recovered slightly and, together with an even greater increase in the quantum of exports, the capacity to import rose. The reason for this recovery was a new diversification of exports. Textile exports came to account for one-fifth of the total value of exports. However, wartime conditions severely limited imports. Never during the war did foreign trade entirely recover to pre-Depression levels.

In sum, in certain periods of Brazilian economic history, the trends in foreign trade, which were determined by coffee, were fa-



avorable to the development of internal economic activity. These periods were mainly 1902-1905, 1909-1912, 1919-1921 and 1923-1929. At other times, foreign trade restricted growth by limiting capital-goods imports, especially in 1913-1918 and during the thirties. The foreign-trade crisis before and during World War I held back the country's industrialization, while the industrial growth of the thirties occurred in spite of the adverse foreign-trade conditions. During World War II, the restrictions on foreign commerce impeded the continuance of the industrial surge of the thirties. Thus, the long-term trends in industrial growth were always substantially influenced by trends in foreign trade.

### **2.3.3 – Industrial production**

At the end of World War II, Brazil's industrial sector was neither as modern nor as developed as it could have been. This was in large part due to the economic policies of the government during the previous decades. Until the twenties, these policies were not very favorable to continuous industrial development. It would thus be of interest, prior to analyzing the growth of industry (or lack thereof), to examine some general question. It would be of special interest to discover if there ever existed a policy of industrialization. Also, did the country have the necessary conditions for a strong and diversified industrial growth? This would facilitate the identification of factors which contributed to early industrial surges and which influenced long-term industrial growth.

#### **2.3.3.1 – Industrialization policies**

Until 1945 Brazil never had a deliberate industrialization policy. Industrialization had never been a primary objective of economic policy. On the contrary, the defense of coffee interest and the various stabilization programs frequently inhibited long-term industrial growth. Often, however, domestic industrial production benefited from the side effects of these policies, e.g. from the protection offered by the frequent exchange-rate devaluations, and from the indiscriminate levying of tariffs on consumer goods, raw materials and capital goods (though special concessions were often granted for the importation of raw materials and capital goods).

Exchange-rate policies went through phases in which they offered substantial protection to domestic industries. Shortages of foreign exchange and the coffee-defense policies caused exchange-rate devaluations in 1889-1898, during World War I, in 1920-1921, and in 1931. It is true, however, that these devaluations also raised the pri-

ces of imported raw materials and capital goods. This is why they were effective only in stimulating the growth of industries using local raw materials, such as textiles, clothing, shoes, beverages, tobacco and, to a lesser degree, food products. The most important effect of exchange-rate policies on industrial production was the introduction of exchange controls in 1931. The drastic cut in imports which ensued gave domestic industries the opportunity to greatly increase import substitution, especially in the production of textiles, cement, paper and certain other consumer goods. As a result, industrial production had already begun to recover in 1931, prior to the beginning of the general revival of the economy in 1932.

Monetary policy was, perhaps, the principal factor which limited industrial growth prior to 1945. It was a particularly strong restraining force until the end of the twenties. Besides the frequent stabilization policies and even reductions in the money supply, there existed no financial institutions which could adequately finance industrial development. The banking system operated only within the confines of the traditional functions of commercial banks. Because there existed no development bank, there was no domestic source of long-term credit for financing new industrial enterprises. The long-term credits extended by the Banco do Brasil and commercial banks were limited to loans guaranteed by mortgages, and most went to landowners.

It was only in the thirties that policymakers became concerned about industrialization. The coffee crisis and the industrial surge awakened them to the possibility of industrialization as an alternative made of economic growth. The government therefore established agencies to promote and finance industrial growth. The Conselho Federal de Comércio Exterior, founded in 1934, was to formulate industrial policies in relation to foreign trade.<sup>92</sup> The creation of CREA within the Banco do Brasil in 1937 made it possible to finance new firms in such fields as pulp and paper, aluminum, steel, and others.<sup>93</sup> Although it was at first used mainly to make credit available to the crisis sectors of agriculture, it increasingly functioned as an industrial development bank from the 1940s on. Its loans, which made up a sizeable part of the Banco do Brasil's credit to manufacturing industry,<sup>94</sup> were used to finance purchases of machinery and equipment. Credits could at first be obtained for periods of five years at reduced interest rates, and later on for periods of 10 years. With the opening of CAMOB in 1932 and the new regulations concerning the

<sup>92</sup> Conselho Federal de Comércio Exterior, *Dez Anos de Atividades, 1934-1944* (Rio de Janeiro: Imprensa Nacional, 1944).

<sup>93</sup> See app. E, "The Protection of Industry."

<sup>94</sup> Banco do Brasil, *Relatórios, 1941-1945*.

operations of the rediscount department of the Banco do Brasil in 1935, it became easier to discount industrial and commercial papers.

It would seem that economic policy was adapted to the industrial growth of the thirties rather than vice versa — though it is important to recognize that this growth was at first influenced by the exchange-rate policies designed to achieve balance-of-payments equilibrium. While the lack of a definite industrial development policy held back industrial growth prior to the thirties, it might be asked if conditions were previously favorable to such growth.

### 2.3.3.2 — Prerequisites to industrial development

Ever since the pioneering activities of Mauá,<sup>95</sup> it had been obvious that Brazil offered opportunities for a continuous process of industrial development. This was clear from the available factor endowments: a huge reserve of natural resources, availability of capital, entrepreneurial capacity, and manpower.

There exists convincing evidence that the first surges of industrial growth were financed with capital supplied by the coffee sector.<sup>96</sup> The entrepreneurs came, in chronological order, from the coffee-growing classes, from among importers, and from among immigrants.<sup>97</sup> Also important was the contribution of foreign capital. It has been estimated that the foreign capital invested in Brazil until 1930 amounted to about US\$ 2.6 billion, a sum which was four times larger than the foreign debt accumulated until that time.<sup>98</sup> British and American capital predominated, and were applied principally in the fields of transportation, electric energy and industry.

The supply of skilled manpower for industry grew substantially as immigration accelerated in the last years of the Empire. Although most immigrants came to work on the coffee plantations, the coffee crisis led to a mass exodus of these workers in search of industrial employment in the cities. In 1907, foreign-born workers already comprised 26% of the industrial labor force in the Distrito Federal;

<sup>95</sup> Mauá was a nineteenth-century Brazilian entrepreneur who created many large undertakings in industry, transportation and other fields. One of his most notable achievements was the shipyard at Ponta da Areia, which constructed 72 vessels in its first 11 years of existence. See Visconde de Mauá, *Autobiografia, Depoimentos Históricos* (Rio de Janeiro: Edições de Ouro, Tecnoprint Gráfica, 1942).

<sup>96</sup> Dean, p. 9.

<sup>97</sup> *Ibid.*

<sup>98</sup> G. Wythe, *Industry in Latin America* (New York: Columbia University Press, 1945), p. 154.

and in some of the more important subsectors, they accounted for as much as 50%.<sup>99</sup>

Besides providing entrepreneurs and workers, immigration was important for the development of domestic industry for another reason. Together with internal migrations, it contributed to the formation of densely populated urban centers. The latter, especially the Rio de Janeiro – São Paulo axis, became important markets for industrial products.

One of the principal obstacles to industrialization was the country's weak infrastructure, especially the transportation sector. Its inefficiency made it almost impossible for Brazil to turn its land area of continental proportions into an integrated national market. The main regions were bound together through coastal shipping. Moreover, the railroads, which constituted the principal means of land transportation, did not adequately complement coastal shipping. Since they had developed in response to shifting export crops, they were no more than isolated systems from the principal ports to the interior. It was difficult to integrate these systems because they used different gauges and equipment. With the development of roads in the twenties and the coffee crisis of the thirties, the railroads entered a period of decadence.

In regional terms, however, industry benefited from railroad expansion. This was especially the case with the state of São Paulo. Railroads accompanied the spread of coffee growing to the interior of the state, and thus contributed to the integration of a regional market which was of great importance to the industrial growth of the state.<sup>100</sup>

For many years, Brazil did not make adequate use of its hydroelectric potential. Since the country was extremely poor in petroleum resources, until the end of the nineteenth century almost half of installed power capacity was based on thermal energy, which used imported coal. As late as 1907, only 4.2% of the power used by industry was based on electric energy. Hydroelectric energy grew rapidly thereafter. By 1919, almost half of the power used in industry was electric. And by 1945 installed hydroelectric potential was 6.5 times as great as thermal-energy capacity. The growth of electric energy from hydraulic sources greatly benefited industrial growth from the second decade of this century on. However, once again, it was in regional terms that this growth had its greatest impact. It was in the state of São Paulo that hydroelectric capacity

<sup>99</sup> Diretoria Geral de Estatística, *Boletim Comemorativo da Exposição Nacional, 1908* (Rio de Janeiro, 1908).

<sup>100</sup> See app. F, "Industry in the State of São Paulo."

was expanded most rapidly. In 1940, about 55.4% of the total hydroelectric capacity of the nation was located in this state.

The regional concentration of industrial production in Brazil reflects the regional concentration of the factors of production. Being the center of coffee growing, São Paulo attracted most of the foreign capital, most of the immigrants, and most of the internal migrants. It also had a reasonably well developed transportation network and an abundance of electric energy. Thus, the state progressively became Brazil's major center of industrial activities.<sup>101</sup>

Continued industrial development could not take place, however, without active government policies for its promotion. The pioneering efforts of Mauá ultimately failed because of the lack of adequate financial institutions to support industries. For the same reasons, Brazil's industrial growth was inhibited until the end of the twenties. Most importantly, the growth of industrial capacity was dependent on the evolution of foreign trade.

#### 2.3.3.3 – Long-term trends in industrial production: the first industrial surges

Prior to 1945 Brazil experienced not continuous large-scale industrialization, but rather a series of industrial surges. Since the latter were strictly tied to the performance of the foreign-trade sector, they were often interrupted as a result of foreign-trade crises resulting from fluctuations in the international price of coffee, the world wars, the Great Depression, and changes in government foreign-trade policies (especially exchange-rate policies). In fact, the exchange rate reflected all these problems, and is therefore a good point of reference in explaining long-term trends in capital formation and industrial production until 1945. Graphs 7 and 8 summarize these trends.

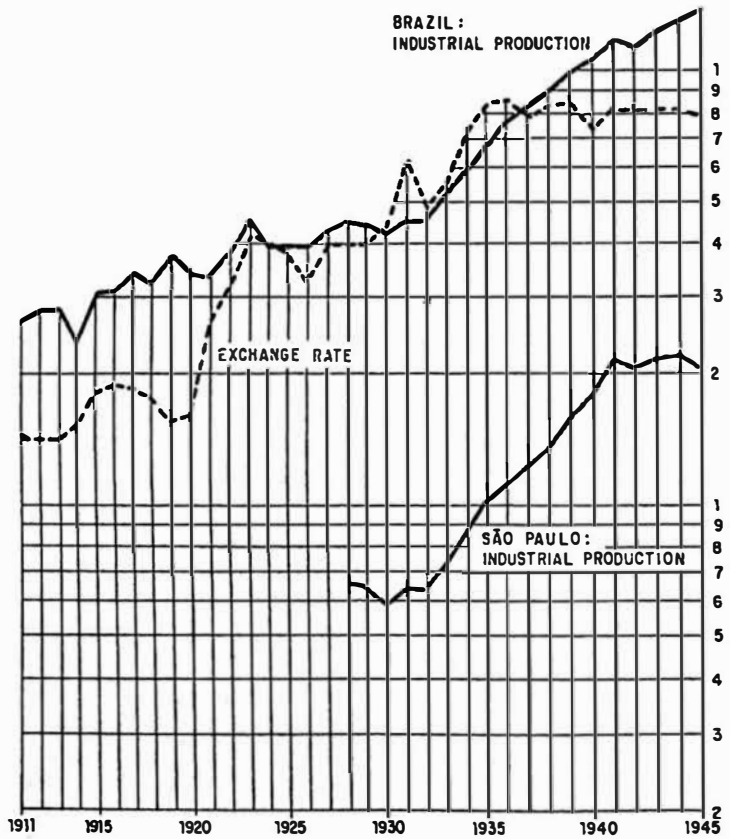
Although no direct evidence exists, it is probable that there was an industrial surge in the first decade of the Republic. This impression is based on the structural changes observed in imports from Great Britain, which was Brazil's principal foreign supplier.<sup>102</sup> Imports of consumer goods declined (especially textiles) and, in spite of a strong exchange devaluation, imports of raw materials, capital goods and coal (used to generate electricity) increased.

<sup>101</sup> *Ibid.*

<sup>102</sup> R. Graham, *Britain and the Onset of Modernization in Brazil, 1850-1914* (Cambridge: Cambridge University Press, 1968), pp. 330-32.

Graph 7

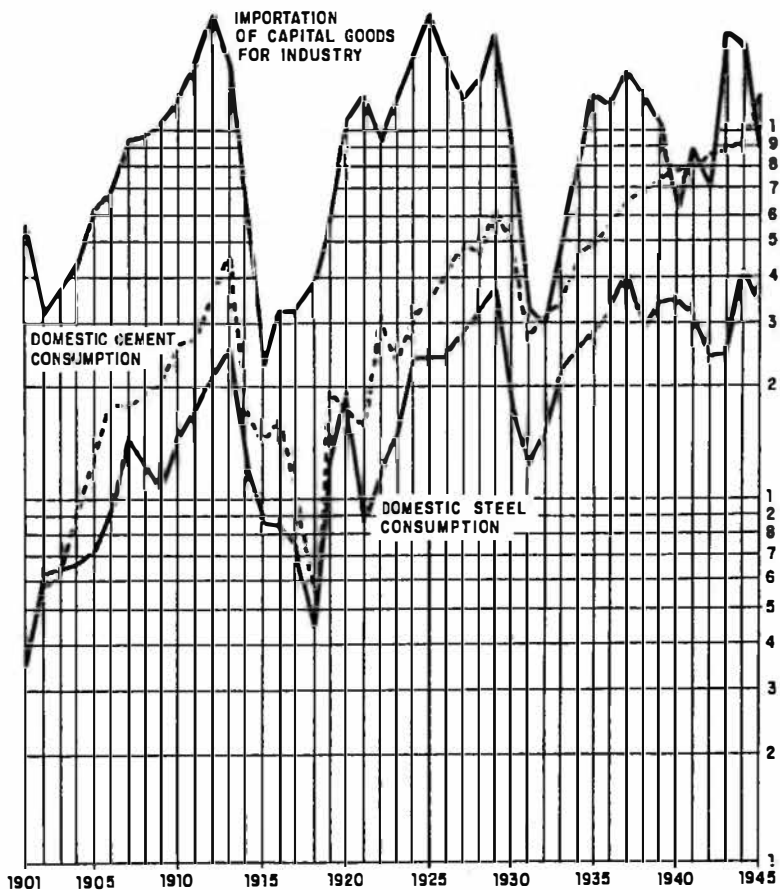
BRAZIL AND SÃO PAULO :  
INDUSTRIAL PRODUCTION, 1911 - 1945



Sources : Statistical Appendix, tables 120, 121, and 126 ; app. F, table 90 .

Graph 8

**BRAZIL:**  
**INDICATORS OF CAPITAL FORMATION IN INDUSTRY,**  
**1901 - 1945.**



Source : Statistical Appendix, table 129.

This surge was interrupted, however, by the stabilization policies adopted towards the end of 1898.

The main industrial surges prior to 1945 occurred in the years 1903-1913, 1920-1929 and 1933-1939. It seems likely that during the first of these, rapid growth of industrial production was accompanied by substantial increases in investments (see graph 8). Large amounts of foreign capital were invested in industry at that time.<sup>103</sup> This spurt was interrupted, however, by World War I. Investment activities declined substantially until 1918, though the level of industrial production from 1915 on was slightly higher than the 1912-1913 level.

From this period onwards, industrial investment and industrial production were increasingly affected by the government's coffee-support program and by the frequent changes in its fiscal, monetary and exchange-rate policies. Changes in the exchange rate had clear repercussions. During periods of appreciation or stabilization, investment activities increased,<sup>104</sup> but industrial production stagnated or even declined (1917-1920, 1924-1926, 1932-1933 and, to a lesser extent, 1940-1945). During periods of exchange devaluation, investments fell, while industrial production rose (1921-1923, 1927-1929, 1930-1931, and 1933-1939). This reflected the fact that exchange-rate appreciations reduced the cost of imports in domestic currency. Investments were thereby stimulated, and domestic production dampened by the relatively lower prices of imported goods. The opposite occurred at times of exchange-rate devaluation. Thus, periods during which productive capacity was expanded and production stagnated were succeeded by periods when production expanded without an accompanying growth of capacity. The former were characteristic of the twenties and the latter of the thirties. In the thirties, however, the most important factor in the recovery of production was not devaluation, but the use of exchange controls. Also, during a number of years (1931-1937) the importation of equipment was prohibited for certain industrial sectors considered to be overproducing.<sup>105</sup>

<sup>103</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

<sup>104</sup> When domestic production stagnated, the importation of cheaper capital goods reflected the expectation of greater future demand by producers. This expectation was based on the growth of output that had previously occurred when exchange devaluation had stimulated domestic production while restricting investment.

<sup>105</sup> This was especially the case for the textile industry. See "Super-produção Industrial?" *Observador Económico e Financeiro*, Ano 2, n.º 14 (March 1937): 91.



In sum, long-run trends in capital formation and industrial production show that World War I interrupted a significant industrial surge. Industrial production subsequently stagnated, in per capita terms, until 1932; simultaneously, however, industrial productive capacity grew substantially until the late twenties. The latter was an important factor in the rapid industrial growth of the thirties, when the previous excess capacity was fully (and at times overly) utilized. In the thirties, import substitution was especially pronounced in cement, metal products, pulp and paper, chemicals, and textiles. Although textile exports rose during World War II, the rate of industrial growth declined by 50% and investments fell, except for the installation of equipment in the government steel complex which was being erected during the war.

Industrial growth was neither smooth nor well-balanced. In 1939 two-thirds of industrial production was still based on traditional sectors. And by the end of World War II most of the equipment used in these sectors was obsolete. Regional inequalities were marked. During the thirties, the rate of growth of industrial production in the state of São Paulo was twice the rate for the country as a whole. In 1939 about 40% of the industrial production of Brazil was concentrated in this state,<sup>100</sup> and in the more dynamic industries the degree of regional concentration was even higher. This was due to the attraction of the external economies of the already highly industrialized region.

It should be stressed, finally, that Brazil's industrial development prior to 1945 was limited due to the absence of policies for promoting industrialization. In fact, policies in defense of the coffee sector, in conjunction with policies designed to provide monetary and exchange-rate stability and a balanced budget, not only contributed to an inefficient allocation of resources, but also absorbed most of the administrative energies of the government. The relative diversification of economic activities and industrial development were attained in spite of these policies.

## 2.4 — Demographic trends

The demographic aspects of Brazil's economic growth, and the disparities therein, are highlighted on the regional level. Until the thirties, international immigration seems to have played a more important role than internal migration. Up to that time there existed definite government policies to subsidize the immigration of free

<sup>100</sup> See app. F, "Industry in the State of São Paulo."

European labor, which was sought as a substitute for slave labor. However, since there was no policy designed to improve the allocation of the labor force through stimulating domestic migration, internal movements occurred spontaneously, with regional economic booms attracting migrants, and droughts leading to out-migration. As a consequence, domestic migration did not always result in rational interregional population transfers. Rural-urban migration led to the creation of an underemployed or even marginalized labor force in new urban centers, and rural-rural migration often constituted a mere transfer of subsistence agriculture. It was only from the thirties on, when barriers to immigration from abroad were erected, that internal migration assumed a more significant economic role.

#### 2.4.1 – Growth of total population

Estimates of long-term demographic trends prior to 1940 are hampered by counting errors in the various censuses.<sup>107</sup> The 1900 census is unreliable due to omissions, and the 1940 census for the opposite reason. Corrections were subsequently made on the assumption that the 1890 and 1940 counts were correct.<sup>108</sup> A geometric annual growth rate for the total population was then estimated for the intercensal period. It is possible to identify an upward turn in the growth rate around 1890. Demographic growth, which had been about 1.85% per year between 1872 and 1890, rose to 2.5% thereafter.

This increase was directly linked to economic, political and social problems. With the abolition of slavery in 1888, coffee planters, especially in the state of São Paulo, favored the importation of free European labor. The government therefore offered to subsidize immigrants, mostly Italians.<sup>109</sup> (It is probable that internal migration could have played the same role. However, Brazilian free laborers considered work on coffee plantations to be "slave labor".<sup>110</sup> Also, there were transportation obstacles and political barriers to the interregional transfer of large numbers of domestic workers.<sup>111</sup>) Foreign immigration peaked between 1890

<sup>107</sup> See app. B, "Demographic Trends."

<sup>108</sup> G. Mortara, "O Aumento da População do Brasil entre 1872 e 1940," in *Contribuições para o Estudo da Demografia do Brasil*, Estudos de Estatística Teórica e Aplicada (Rio de Janeiro: IBGE, 1961), pp. 9-21.

<sup>109</sup> See data from the Departamento Estadual de Estatística de São Paulo, and the Serviço de Imigração e Colonização (app. B).

<sup>110</sup> Graham and Hollanda Filho, p. 43.

<sup>111</sup> *Ibid.*, p. 45.

Table 6

**Brazil: Growth of Total Population, 1872-1940**  
(Adjusted Census Data)

Year	Total Population	Intercensal Growth				
		Total Increase in Period	Net Immigration*	%	Natural Increase	%
1872	10 112 061	—	—	—	—	—
1880	14 333 915	4 221 854	497 796	11.79	3 724 058	88.21
1900	18 200 000	3 866 085	783 104	20.25	3 082 981	79.75
1920	27 500 000	9 300 000	880 871	9.47	8 419 129	90.53
1940	41 252 944	13 752 944	735 339	5.34	13 017 605	94.66
1872-1940	—	31 140 883	2 897 110	9.30	28 243 773	90.70

Source: G. Mortara, "O Aumento da População do Brasil entre 1872 e 1940," in *Contribuições para o Estudo da Demografia do Brasil*, Estudos de Estatística Teórica e Aplicada (Rio de Janeiro: IBGE, 1961), pp. 9-21.

\* Since the net immigration estimates presented by Mortara were considered too high, they were corrected (see app. B)

and 1900, then declined after the turn of the century, especially with the coffee crisis. With World War I and the restrictions on immigration from the thirties on, immigration became less important to the country's demographic growth.

The increase in the growth rate from 1890 on was also related to the natural growth of the population (table 7), which rose substantially after 1890. This was due to a considerable decline in the mortality rate in 1890-1900, in large measure owing to improved sanitary conditions. After this decade, the decline in the death rate was almost entirely offset by a fall in the birth rate. With the decrease in immigration, natural growth came to represent almost the entire population growth in the following years.

It is difficult to establish cause-and-effect relationships between demographic and economic growth for the country as a whole. However, important differences in population growth rates are explained by migratory movements fostered by regional economic spurts. Thus, the rates were much higher in São Paulo, the South and the Center-South than in the North, the Northeast and the East.

#### 2.4.2 – Internal migration and foreign immigration

If it is difficult to gauge demographic growth prior to 1940, it is even harder to study internal migration. The problems are the same: flaws in the census counts. Besides this, the lack of appropriate information has led to the adoption of fairly limiting hypotheses.<sup>112</sup> Thus, the conclusions presented in migration studies based on estimation of survival rates for intercensal years should be viewed as no more than indicators of probable trends.

Until 1940, the highest rates of internal migration were recorded in 1872-1890 and 1920-1940 (table 8). In the other periods, the lower rates of internal migration coincided with periods of higher foreign immigration. Important regional movements took place throughout the time span under study.

An examination of the long-term trends in internal migration confirms generally known facts. In the periods 1890-1900 and 1900-1920 – and especially in 1887-1912, the years of the natural rubber boom – the Amazon (North) was a major region of in-migration. However, since these movements constituted mere transfers of subsistence population,<sup>113</sup> they did not bring long-term economic benefits to the region. As soon as the rubber economy was hit by a

<sup>112</sup> *Ibid.*, chap. 2; and app. B, "Demographic Trends."

<sup>113</sup> Graham and Hollanda Filho, p. 46.

Table 7

*Brazil: Birth and Death Rates, 1872-1940*

Period	Birth Rate 0/00	Death Rate 0/00	Natural Increase 0/00
1872-1890	46.5	30.2	16.3
1890-1900	46.0	27.8	18.2
1900-1920	45.0	26.4	18.6
1920-1940	43.5	24.8	18.7

Source: Same as table 6.

Table 8

*Brazil: National and Regional Migration Rates, 1872-1940*  
(As % of the Population Recorded in the Census Taken in  
the First Year of Each Period)

Region	1872-1890	1890-1900	1900-1920	1920-1940
North	1.16	24.38	16.66	-13.72
Northeast	-10.99	-1.42	-1.68	-.84
East	2.09	-.64	-4.81	-5.37
South	15.49	-.97	5.24	11.73
Center-West	3.46	2.04	11.88	13.37
Brazil	4.67	2.97	3.79	4.99

Source: D. H. Graham and S. B. de Hollanda Filho, *Migration, Regional and Urban Growth and Development in Brazil: A Selective Analysis of the Historical Record, 1872-1970* (São Paulo: Universidade de São Paulo, Instituto de Pesquisas Econômicas, 1973), p. 21.

crisis, many of the migrants left the region. In the period 1920-1940, the North experienced negative migration rates.

The Northeast was a net exporter of manpower throughout the period examined. It is interesting to note, however, that out-migration from the Northeast did not have as great an impact in 1900-1940 as it had had in 1872-1890. The traditional motive for out-migration was drought, and the droughts of 1877 and 1880 were not matched in the later period. Out-migration was therefore due to the attraction of economic activities elsewhere, such as the rubber boom in the Amazon.

In the Eastern region, the Distrito Federal received the largest number of domestic migrants. A large proportion of the latter came from the state of Minas Gerais, which in the years 1900-1940 surpassed the Northeast as a region of out-migration.

Until 1940, the South and Center-West were regions of net immigration. It is noteworthy, however, that prior to the thirties the role of internal migration was of relatively little significance for the economic growth of the southern part of the country, especially for the state of São Paulo. In fact, in this state it was only during the industrial surge of 1933-1939, when foreign immigration was drastically restricted, that internal migration became important.

The foreign immigrant played an important role in the growth and diversification of the Brazilian economy. The state of São Paulo benefited most from immigration, having adopted policies of subsidizing the importation of European workers. These gave continuity to coffee growing by substituting slave labor. With the coffee crises, they became instrumental not only in diversifying agricultural production and cultivating small agricultural properties, but also in developing the industrial sector. As a result of the coffee crises, many migrated to urban centers, where they contributed to the growth of important markets for manufactured products. They occupied important positions as skilled workers and came to form a relevant proportion of the industrial labor force.<sup>114</sup> Immigrants also played an important role in the development of an entrepreneurial class. In 1920, among unincorporated industrial enterprises, those owned by immigrants accounted for more than 50% of invested capital, 48% of the value of production, and 47% of the labor force.<sup>115</sup> The policies instituted from the thirties on, however, were to limit the contribution of foreign immigrants to the economic growth of the region.

### 2.4.3 — Economically active population

Due to the imprecision of the early censuses, it is difficult to estimate the economically active population, whether total or by sector. Moreover, the different criteria used for classifying economic activities make a strict comparison of data almost impossible.<sup>116</sup>

As table 9 reveals, the population was strongly concentrated in primary activities. Employment in industry was slowly rising.

<sup>114</sup> See app. F, "Industry in the State of São Paulo."

<sup>115</sup> IBGE, *Recenseamento Geral do Brasil*, 1920, vol. 5: *Indústria*, p. 1xi.

<sup>116</sup> See app. B, "Demographic Trends."

The service sector engaged an excessive share of the labor force due to the concentration of low-productivity (e.g. household servants) and even marginal activities in the growing urban centers. It should be remembered that such activities still exist not only in Brazil, but in other developing countries as well.

Table 9

*Brazil: Economically Active Population, 1920-1940*  
(1 000 Persons)

Sector	1920	1940
Agriculture	6 377	9 732
Industry	1 264	1 517
Services	1 509	3 412
Total	9 150	14 661

Sources: IBGE, *Recenseamento Geral do Brasil*, 1920 and 1940.

The sectoral distribution of the economically active population changed over the period 1920-1940. The changes observed reflect trends in the growth of the Brazilian economy and in the regional concentration of economic activities. Thus, in the state of São Paulo there was a notable rise in industrial employment; in the Northeast the primary sector continued to employ the large majority; in the East the service sector was dominant.

It is also worth commenting on the degree of utilization of available manpower. In the period 1920-1940, just over half of those in the economically active age group were effectively employed. This reinforces the impression that not only was manpower poorly distributed by region and sector, but also that this abundant factor of production was underutilized.

## 2.5 — Summary: real output, real income and the income of the coffee sector

Graph 9 summarizes the long-term trends of the principal production and income time series and of Brazil's terms of trade until 1945. The aggregate production and income series were estimated only from 1920 on. The reason for this was the unavailability, at

the present stage of research, of information on agricultural output prior to 1920. There exists a series on real industrial output from 1911 on, but it is incomplete. The series on foreign trade are complete as of 1901.

Until the end of the twenties, the Brazilian economy continued to be dominated by agriculture, with a large proportion of agricultural production destined for export. The output of the primary sector accounted for about 30% of the joint value added of agriculture and industry. Since export agriculture was the most important activity of the primary sector, the trends in foreign trade (especially the behavior of the international coffee market) were crucial in determining the rate of growth of the economy. Industry was almost exclusively limited to the production of traditional goods (mainly textiles, clothing, shoes, food products and tobacco) and generally processed domestic raw materials. Thus, the country's industrial production was doubly linked to agricultural growth: through effective demand (which was a function of exports) and through the supply of raw materials. Industry, however, periodically suffered from stabilization policies. The latter resulted in an appreciation of the exchange rate which substantially lowered the protection available to industry. The real output of Brazil therefore evolved basically as a function of agriculture. In fact, until the thirties the trends in total real output reflected the trends in agricultural production.

The long-term trend in real income was closely tied to the international terms of trade. The latter fluctuated substantially because of the instability of international coffee prices. But the coffee sector reached its high point in the twenties. The coffee defense program had gradually evolved into institutionalized permanent support of the sector. By the twenties, coffee prices had reached their highest historical levels. This gave a powerful incentive (in addition to the coffee-support program) to the continuous increase of coffee-producing capacity, and ultimately led to the crisis of overproduction at the end of 1929, which was soon followed by the effects on Brazil of the Great Depression.

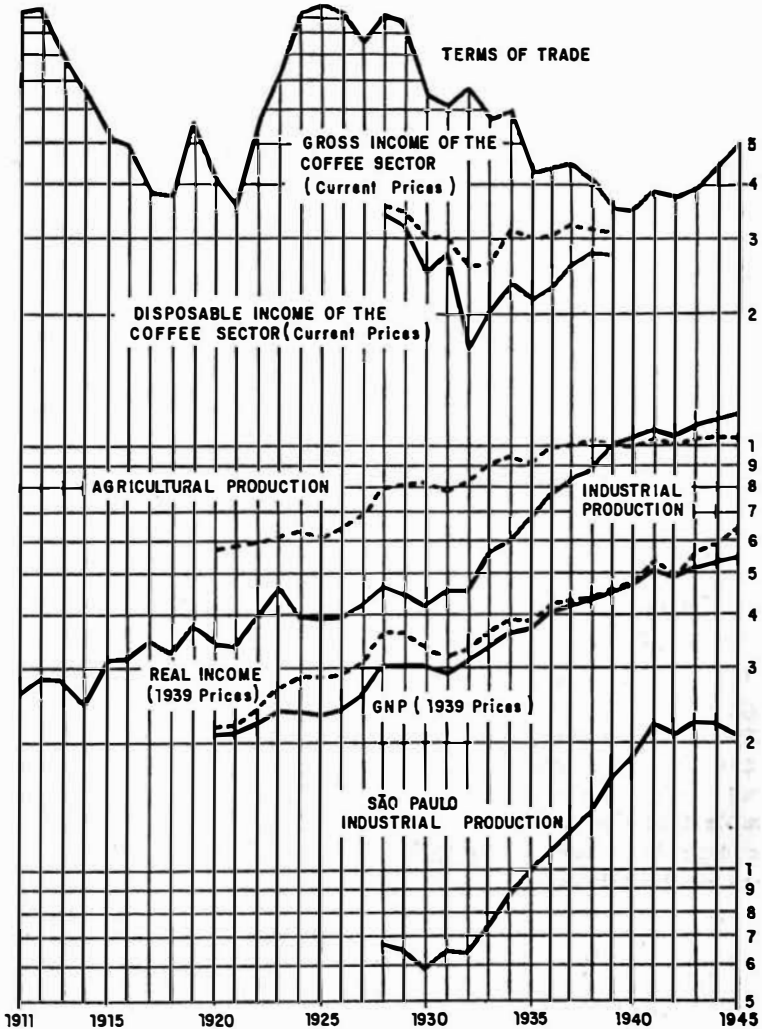
It was during the thirties that important changes occurred in the country's growth trends and in the structure of production. For agriculture, these changes were linked to the now permanent coffee crisis, and for industry they were related to the foreign-exchange shortages which led to exchange controls. Within agriculture, two important changes occurred. First, in export agriculture, coffee lost some of its relative importance to cotton, whose prices were more stable in the international market. Second, crops for the domestic market gained in relative importance, both in terms



Graph 9

**BRAZIL:**

**REAL OUTPUT, REAL INCOME, TERMS OF TRADE, AND  
INCOME OF THE COFFEE SECTOR, 1911-1945.**



Sources: Statistical Appendix, tables 121, 125, 126, 132 and 140; app. F, table 90; Peláez, "Economic Analysis", table M.

of value of output and of area under cultivation. In industry, the dynamic sectors (mainly cement, paper, metals and machinery) grew more rapidly than the traditional ones, despite the fact that the latter continued to represent the largest proportion of industry. This was especially evident in the state of São Paulo, where the external economies created by the dynamic industries contributed to furthering the regional concentration of industrial production.

The evolution of the real product came to depend less on the evolution of agricultural output and more on industry. In fact, the acceleration of the growth of real output during the thirties was possible only because the rapid expansion of industrial production compensated for the stagnation (in per capita terms) of agricultural output. The growth of real output was, however, in large part annulled by adverse foreign-trade conditions.

The terms of trade declined continuously throughout the thirties because of the coffee crisis. In contrast to the twenties, real income grew at only half the rate of the real product. Thus, in per capita terms, the economy stagnated in the period 1928-1929 to 1939-1940.

What truly impeded the recovery of income per capita in the thirties was the continuing coffee crisis. The federal coffee-support program did not have the desired impact. The recovery that began in 1932 was linked, instead, to the budget deficit of the federal government. The latter was caused by the extraordinary expenditures related to severe droughts in the Northeast and to the constitutionalist revolt in the state of São Paulo. Industrial recovery had already begun in 1931 as a result of import restrictions associated with exchange controls.

The coffee crisis worsened throughout the thirties. Even though coffee came to hold less relative importance in the export structure, the decline in the terms of trade was continuous. Thus, the growth of real output was in part canceled by the decreased buying power of the exported part of the domestic product. It is probable that the effects of the Great Depression and the coffee crisis might have been worse had it not been for the rapid industrial growth of the thirties. However, with the advent of World War II, this growth was again interrupted.

During the war, real agricultural output grew at a reduced rate and industrial growth was limited. The traditional industries, especially textiles, once again increased in relative importance. Coffee prices rose again, and the export structure became more diversified (especially with the increase in textile exports). As a consequence, the terms of trade recovered. The thirties therefore

witnessed a reverse of events: real income grew more rapidly than real output. The latter actually declined in per capita terms between 1941 and 1945.

It is clear that up to 1945 the growth and diversification of the Brazilian economy were prejudiced by extreme dependence on foreign trade. And the latter can be mainly attributed to the various coffee-support programs and to the stabilization policies of the federal government.



### 3

## The monetary crisis of the early Republic and economic recovery, 1889-1913

### 3.1 — Introduction

The evolution of the Brazilian economy in the years preceding 1913-1914 was markedly influenced by events surrounding the demise of the Empire and the first years of the Republic. Two of these events deserve special mention. First, the crisis in agriculture, which was related to the abolition of slavery and the severe drought of 1889. Second, the reforms in banking, currency issue, and corporate law, beginning with the banking law of 1888.

The crisis in agriculture occasioned an immediate decline in the production of coffee and foodstuffs for domestic consumption. Imports of foodstuffs were greatly increased. But the price of coffee, which had initially risen due to the diminished output, began to decline with the recession in the industrialized countries. This, in turn, caused a reduction in the balance-of-trade surplus, which was totally absorbed in servicing foreign debts.

The manpower problem of the agricultural sector was resolved by providing incentives for the immigration of European laborers. Moreover, to compensate for the loss of capital resulting from the emancipation of the slaves, the government began to provide credit to farmers through the banking system. This increase in credit, coupled with the monetary expansion fostered by the increase in the number of issuing banks, led to a rapid increase in prices. The economic euphoria of the first years of the Republic climaxed in the crisis of the *Encilhamento* at the end of 1891. The inflation of the period 1889-1898 had its origins in this monetary crisis of the early years of the Republic.

The most important consequence of these events seems to have been exchange devaluation, which had two principal effects. In the first place, by making imports more expensive, it stimulated in-

dustries which processed local raw materials for the domestic market. All indications are that there was an industrial surge in the first decade of the Republic. In the second place, the continual exchange devaluations, by protecting the incomes of coffee growers, stimulated excessive increases in capacity. These facts were important to the evolution of the economy from 1899 on.

Actually, the growth of industrial and coffee output, at the cost of continuing devaluation, came to be viewed as one of the most serious problems of the Brazilian economy. The policies later adopted of appreciating the exchange rate, balancing the federal budget, and reducing the amount of paper currency in circulation must have interrupted the industrial spurt and eliminated the least efficient coffee growers. Although data on output and income in Brazil are not available for this period, it is very likely that there was an economic depression. Prices fell in absolute terms. As far as coffee was concerned, the result was the strengthening of the first schemes for intervening on the production side of the market. However, these were not carried out immediately because prices rose in 1900. Economic recovery began around 1903.

Although the post-1903 economic policy of the Republican governments was inspired by the same principles as its predecessors, it had the merit of introducing the so-called policy of "economic reconstruction", which involved important undertakings such as the building and equipping of several ports, railroad construction, and urbanization works in the capital.

Industry had lost an element of protection with the normalization of the exchange rate, but it had gained some other advantages: the new tariff of 1900 and the gold tariff. Agriculture, on the other hand, was still in crisis. Many cereals and primary products were still being imported to supplement domestic production. Coffee, the most important product, faced declining prices on the world market, and the result was stagnation of the terms of trade, which in turn blocked expansion of import capacity, fundamental to economic growth in dependent economies. The idea of intervening in coffee production regained acceptance, and was not put into practice only because the price of coffee rose considerably in 1904. Prices stabilized, and the federal budget was balanced. The public-works projects started in 1903 were financed through important foreign and domestic borrowing, as well as through the direct participation of the government in some cases.

In 1905-1906, however, the price of coffee began to fall again. The crisis finally led to the Taubaté agreement, the first agreement for coffee valorization. Since the inflow of foreign capital and the

new exchange system might have led to exchange appreciation, which would have further aggravated the plight of the coffee growers, it was decided to create an institute designed to stabilize the exchange rate. In fact, the only immediate gain that coffee growers derived from the agreement was the devaluation produced by the creation of the Caixa de Conversão (conversion fund), which, with an initial capital of £ 20 million, began operations at an exchange rate above the market rate. The principal goals were not attained until 1909-1910. The price of coffee fell until 1908, when controls on supply to the world market were relaxed. In this year, a crisis in the United States caused a decline in the volume of Brazilian foreign trade.

The period 1908-1912 was one of general progress. Public-works projects were accelerated: work was finished on several ports, the railroad network was expanded by one-third of the trackage existing in 1907, and urbanization projects were carried out in Rio de Janeiro. There was a significant inflow of foreign capital, both official (amounting to £ 113 million between 1903 and 1913, or more than twice the debt in 1902) and private (for investment and speculation, due to the remunerative difference between the market rate and that fixed by the Caixa de Conversão. Exchange stabilization, though it may have put a damper on internal production, favored an increase in industrial capacity, inducing the large-scale importation of machinery and equipment for industry and transportation, especially for the railroads. This increase in imports was possible thanks to the extraordinary growth in the capacity to import brought about by an improvement in the terms of trade. The rise in the price of coffee which resulted from valorization and declining harvests was actually more than sufficient to offset the deterioration in rubber prices, which fell on the world market beginning in 1910.

Meanwhile, external and internal indebtedness, as well as government participation in infrastructure investments (principally transportation), increased government outlays enormously, causing a return to the days of growing budget deficits. Price indicators, however, do not reveal inflation in this period, prices having risen by only 5% from 1908 to 1913. Apparently the budget deficits and the issuing of currency by the Caixa de Conversão had no inflationary impact, a fact most certainly due to the rapid economic growth taking place.

This growth, however, was interrupted by the foreign-trade crisis of 1913. As a result of the international crisis, the prices of the principal exports fell substantially, and with them, the terms of trade. Since import levels were maintained throughout 1913, the re-

sult was a large trade deficit. Action by the Caixa de Conversão managed to avert a crisis on the exchange market. Yet when war broke out in 1914, the crisis worsened, restricting the growth of the economy throughout the war years.

### 3.2 — Fiscal and monetary policies

Fiscal and monetary policies had a considerable influence on the evolution of the Brazilian economy from the early years of the Republic to the period immediately preceding World War I. But it was to the socioeconomic crisis at the close of the Empire that the first truly important measures were related. Actually, the first Republican government implemented certain measures that had been recommended since the end of 1888: credit for agriculture and reform of the banking system. It complemented these, however, with measures designed to reduce the federal budget deficits and to reform corporations.<sup>1</sup>

The socioeconomic crisis of the last months of the Empire, insofar as it concerned monetary, fiscal, and credit policies, was seen to consist of three principal problems.<sup>2</sup> First, there was the need to increase credit to agriculture. The freeing of the slaves produced a need for new liquidity creation for financing agricultural production. This need was felt less on the coffee plantations of the South (principally São Paulo), where slave manpower was replaced by European colonists, mainly Italians, whose immigration was subsidized by the federal government.<sup>3</sup> Secondly, there was a shortage of money, due to the policy of rigid government controls on the supply of money. In fact, after an increase of about 19% in 1878, the stock of paper currency had fallen continuously up to 1888.<sup>4</sup> Moreover, the freeing of the slaves almost certainly contributed to aggravating the shortage of money in circulation. Third, there were the budget deficits, financed by growing external and internal indebtedness, which the government was insisting must be reduced.<sup>5</sup>

<sup>1</sup> Ministério da Fazenda (MF), *Relatório*, 1890.

<sup>2</sup> MF, *Relatório*, 1888 and 1889.

<sup>3</sup> A. F. C. Silva, "Formação do Povo Paulistano e o Seu Desenvolvimento Demográfico," *Boletim do Departamento Estadual de Estatística de São Paulo*, September-October 1940, pp. 33-49; Serviço de Imigração e Colonização de São Paulo, *Boletim*, October 1940.

<sup>4</sup> Brazil, Laws, Decrees, etc., *Legislação sobre Papel-Moeda* (Rio de Janeiro: Imprensa Nacional, 1923), pp. xxxiii-xxxvi.

<sup>5</sup> MF, *Relatório*, 1884, p. 21, and 1886, pp. 19 ff.



The origins of the inflation which characterized the early years of the Republic may be found in the steps taken to resolve these problems. Assistance to agriculture had already been initiated in 1888 and was expanded in 1889-1890. The total credit available was set at 100 thousand *contos de réis*, of which the government provided somewhat less than half through the banking system,<sup>6</sup> which in turn provided some complementary credit. In order to give an idea of the relative importance of this amount of credit, it may be noted that the stock of paper money at the end of 1888 amounted to 205 thousand *contos de réis*.<sup>7</sup> At the same time, the government was trying to combat budget deficits through measures designed to increase receipts, since expenditures had risen with outlays for agricultural credit, as well as for the redemption of government bonds, railroad bonds, and currency.<sup>8</sup> Collection in gold of tariffs — the principal source of government revenue — began in 1890-1891, but was quickly replaced by a substantial increase in tariffs in 1892.<sup>9</sup> However, what led to the rapid inflation was the implementation of certain monetary measures, particularly the banking reform.

The banking law of 1888 permitted the establishment of banks with the right to print money. Bank notes replaced treasury notes and resolved the currency shortage. However, a problem arose because the regulations for implementing the reform required that currency be issued within a very short period. In just two years (1890-1891), almost 335 thousand *contos de réis* in bank notes was placed in circulation, increasing the stock of paper money in circulation by 150%.<sup>10</sup>

Prices began to rise rapidly.<sup>11</sup> The atmosphere of economic euphoria that had existed at the fall of the Empire now became even more accentuated, reinforced by the political climate favorable to economic development which appeared with the proclamation

<sup>6</sup> Despite the fact that a good part of the agricultural loans were made from 1889 to 1891, the first Republican government was opposed to an expansion of agricultural credit. Politically, it was preferable to finance nascent industries rather than agriculture, which represented the monarchy. For this reason, the agreements between the treasury and private banks were suspended, and only 47 250 *contos de réis* were provided by the government to the banks for agricultural loans. MF, *Relatório*, 1891, p. 29.

<sup>7</sup> Brazil, *Legislação sobre Papel-Moeda*, pp. 33-36.

<sup>8</sup> MF, *Relatório*, 1891, pp. 6-15.

<sup>9</sup> *Jornal do Comércio* (JC), *Retrospecto Comercial*, 1892, "Tarifas."

<sup>10</sup> C. M. Peláez, "The Economic Consequences of Monetary, Exchange and Fiscal Orthodoxy in Brazil, 1889-1945," pp. 17-20.

<sup>11</sup> See E. M. L. Lobo *et al.*, "Evolução dos Preços e do Padrão de Vida no Rio de Janeiro, 1820-1930: Resultados Preliminares," *Revista Brasileira de Economia* 25 (October-December 1971): "Apêndice Estatístico."

of the Republic. Speculation now began, as firms were created with the sole purpose of offering shares to an avid market. This period has become known as the crisis of the *Encilhamento*.<sup>12</sup> It culminated at the end of 1891 with the bankruptcy of numerous firms which had just been created. After the crisis, issues were paralyzed. Even so, due to the problem of financing the budget deficit, the government was forced to print and circulate large quantities of treasury notes in 1893-1894.

The policy of budget equilibrium, successful in 1891, ran into difficulties from 1892 on, due to growing military expenditures.<sup>13</sup> Yet this did not mean that the policy of budget equilibrium was abandoned. The rise in current government expenditures was, in part, compensated by a reduction in public investment between 1892 and 1894. The economy continued in a state of crisis, and the budget deficits were held to be the fundamental cause, as they led to increases in the supply of money, which was already considered excessive.

Thus, in 1895-1896, the federal budget deficit was again reduced. To this end, current government expenditures were reduced. In addition, the stock of paper money was stabilized. Nonetheless, by the end of 1896, the country found itself with serious exchange problems,<sup>14</sup> and tight monetary and fiscal policies were again looked to for a solution to all problems.

Thus, at the end of 1896 the banking system was once more extensively modified. The government withdrew from the banks the right to print money. This privilege again became a government monopoly.<sup>15</sup> The treasury took over the bank notes already in circulation and incorporated them into its own stock. The goal was to promote the standardization and convertibility of the national currency. However, difficulties in foreign trade precluded the achievement of this goal. A decline in imports resulting from exchange problems reduced government receipts. The budget deficit grew again and was partially financed by new issues.<sup>16</sup>

This situation lasted throughout 1898, and even greater difficulties could be foreseen. The government therefore began nego-

<sup>12</sup> See D. T. Vieira, *Evolução do Sistema Monetário Brasileiro* (São Paulo: Faculdade de Ciências Econômicas e Administrativas, 1962), p. 176.

<sup>13</sup> Cf. data from the Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBRE/CEF), taken from the federal balance sheets.

<sup>14</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

<sup>15</sup> Law 359 of 30 December 1896.

<sup>16</sup> Basic data from FGV/IBRE/CEF, federal balance sheets.

tiations to consolidate the external debt. The outlays required to achieve this consolidation greatly increased the budget deficit in 1898. The implementation of the consolidation was accompanied, beginning in 1899, by a series of restrictive steps designed, among other things, to reduce the stock of paper money in circulation and eliminate budget deficits.

The monetary and fiscal policies put in practice by the federal government in 1899-1902, though along the same lines as those followed since the *Encilhamento*, reversed the trend observed up to that period by substituting deflation for inflation. Practically all the restrictive measures were fully carried out. Paper money in circulation was reduced 13.5% between 1898 and 1902,<sup>17</sup> and the budget deficit was eliminated.

The principal measures taken were the carrying out of the agreement for consolidating the external debt and the return to collecting tariffs in gold.<sup>18</sup> The former permitted a substantial reduction in government expenses. At the same time, one of the clauses of the agreement stipulated that the money supply was to be reduced by withdrawing notes from circulation as bills were issued under the consolidation agreement. The change in the tariff-collection procedure was a means of providing foreign currencies to the government and dissociating federal receipts from variations in the exchange rate. Thus, the basic objective was to eliminate the budget deficit. But the greatest reduction was in the expenditures of the government itself. By 1902, current federal expenditures were 44% lower, in absolute terms and at current prices, than they had been in 1897-1898. The most drastic cut was in public investments; in 1902 they stood at about one-third the 1898 level, which was already rather low.<sup>19</sup>

The results of this policy give some idea of the crisis it must have engendered. By 1902, prices had fallen by about 30%.<sup>20</sup> In September 1900, almost half of the banking system failed. It is probable that the effects of the restrictive policy will never be adequately measured, but beyond doubt this was one of the most critical periods in the economic history of Brazil. Nevertheless, by 1908 recovery had begun.

<sup>17</sup> Brazil, *Legislação sobre Papel-Moeda*, p. xxxvi.

<sup>18</sup> See appendices C and D, "Foreign Trade and Foreign-Exchange Policy" and "The Evolution of the External Debt."

<sup>19</sup> Primary data from FGV/IBRE/CEF, federal balance sheets.

<sup>20</sup> See Lobo *et al.* What is given is not a price index as the term is commonly understood, but a simple indicator of the cost of food and clothing.

In fact, although the policy followed from 1903 on basically continued the restrictive policy of 1899-1902, there occurred what was called at the time a period of "economic reconstruction". This was due solely to the fact that the government, while concerned with maintaining a balanced budget, also initiated extensive public investments in transport infrastructure and in public works in the capital. Since in large part these investments were financed through foreign loans, it was not difficult to achieve budget equilibrium and monetary stability, at least up to 1907.

In 1908, federal revenues plummeted due to the decline in imports occasioned by a foreign-trade crisis. Even so, expenditures, especially public investments, were maintained at more or less the same level. The result was a large budget deficit, which continued to grow in the following years. Government investments augmented even more as of 1910, and came to represent about 24% of total federal public expenditures in 1912.<sup>21</sup> Monetary stability, on the other hand, was shaken. But it was not the budget deficits which frustrated continuation of the policy of control of the money supply. In fact, from 1906 on, issues were placed in circulation with the goal of maintaining exchange stability, which was also the goal of the coffee policy.<sup>22</sup> By 1912, the issues of the Caixa de Conversão had come to represent about 40% of the paper money in circulation.

In 1913 the economy was influenced by the international crisis, with exports being directly affected. The level of domestic activity, nonetheless, seems to have been maintained, with imports and public investments continuing at their previous levels. But the monetary situation had changed. With the crisis produced by the sudden disappearance of the surplus on current account, the foreign-exchange market came to depend on the purchases of the Caixa de Conversão. The switching of funds by the Caixa, however, meant that the amount of paper money in circulation fell, which probably contributed to a deepening of the crisis, aggravated in turn by the war (after July 1914).

The results of the monetary and fiscal policies pursued from 1899 to 1913 are depicted in graph 10 and table 10. Note the periods of monetary expansion and growing budget deficits followed by periods of contraction in the money supply and reduction of deficits. The inflation of the early years of the Republic was caused by the banking reform which created issuing banks but gave them only a very short time in which to use their right of issue. Thereafter, especially after the crisis of the *Encilhamento* at the end of

<sup>21</sup> Primary data from FGV/IBRE/CEF, federal balance sheets.

<sup>22</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

1891, a combination of monetary and fiscal policies was designed to balance the budget and control the money supply. Frequently, however, these goals, were not attained — either due to foreign-trade crises which reduced government receipts by reducing imports, or owing to extraordinary government spending, usually for military purposes or in connection to adjustments in the public debt. From 1899 to 1902, the restrictive policies adopted were effective in reducing the stock of paper money in circulation, eliminating budget deficits, and provoking sharp deflation. Despite continued adherence to the above-mentioned goals, economic activity accelerated as of 1903. This recovery was tied to a public-investment program, initially financed by foreign loans, and subsequently by large budget deficits. It was not the financing of these deficits, however, but the maintenance of the exchange rate, which led to an increase in the

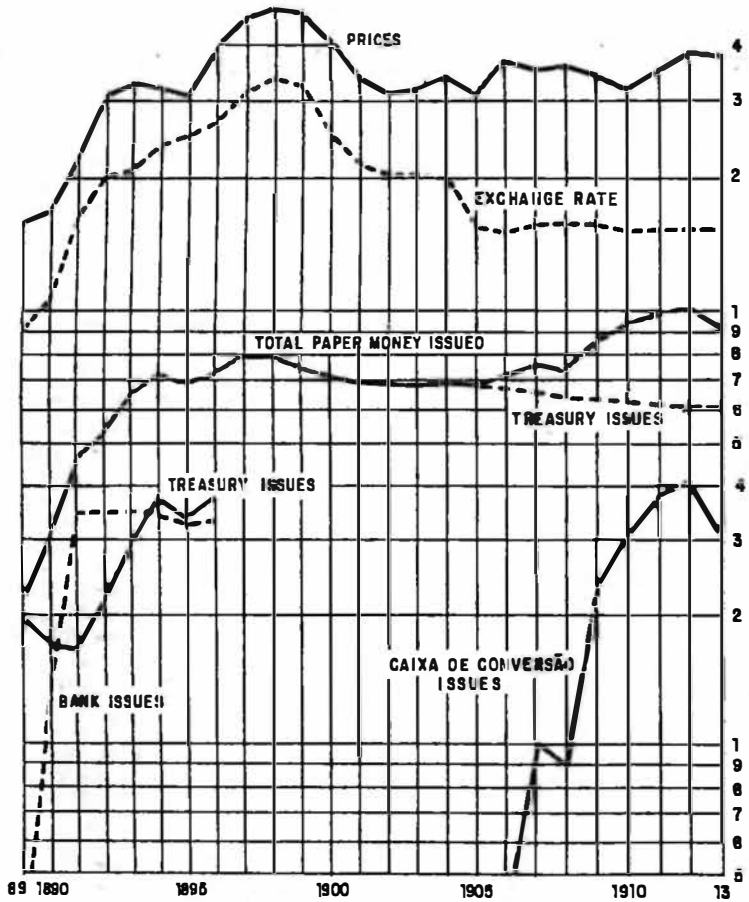
Table 10  
*Brazil: Federal Budget, 1889-1913*  
 (1 000 Contos de Réis)

Year	Revenues	Expenditures	Balance
1889	—	—	— 25.3
1890	195.3	220.6	— 25.3
1891	228.9	220.6	+ 8.3
1892	227.6	279.3	+ 51.7
1893	259.9	300.6	— 40.7
1894	265.1	372.8	—107.7
1895	307.8	344.8	— 37.0
1896	346.2	368.9	— 22.7
1897	303.4	379.3	— 75.9
1898	324.1	668.1	—344.0
1899	320.8	295.4	+ 25.4
1900	307.9	433.6	—125.7
1901	304.9	334.5	— 29.6
1902	343.8	297.7	+ 46.1
1903	415.4	363.2	+ 52.2
1904	442.8	463.5	— 20.7
1905	401.0	374.9	+ 26.1
1906	431.7	423.4	+ 8.3
1907	536.1	522.2	+ 13.9
1908	441.3	511.0	— 69.7
1909	449.9	518.3	— 68.4
1910	524.8	623.5	— 98.7
1911	563.5	681.9	—118.4
1912	615.4	789.2	—173.8
1913	654.4	785.4	—131.0

Source: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBRE/CEF).

Graph 10

**BRAZIL:**  
**INDICATORS OF MONETARY AND EXCHANGE-RATE POLICIES,**  
**1889-1913**



Source: Statistical Appendix, table 120; Caixa de Amortização, Relatório, 1931, pp. 50-54.

Note: Beginning in 1897, the issuing of paper money was taken over by the Treasury, and all paper money in circulation received the backing of the federal government.

money supply. Stabilization of the exchange rate, the other principal goal of economic policy, was directly related to the policy on coffee and agricultural production, as will be seen in the following section.

### 3.3 — Agricultural production and the coffee policy

#### 3.3.1 The abolition of slavery and the crisis in agriculture

The production of the agricultural sector accounted for almost the entirety of Brazilian domestic economic activity around the turn of the century. In 1907, about two-thirds of total value added in agriculture and industry was attributable to agriculture. This production was primarily intended for the foreign market, which in turn supplied a good part of the domestic requirements for foodstuffs of agricultural origin. The growing of coffee in the South and East of the country, the planting of sugar, cocoa and tobacco in the Northeast, and the extraction of rubber in the North were the most important activities. Rubber extraction depended on a special kind of manpower: beves of national migrants, mainly from the Northeast, who sought the region as though it were a new Eldorado.<sup>23</sup> The other products were all more or less dependent on slave labor. It was to be expected, then, that abolition would profoundly affect agricultural production.

The disappearance of slave labor was most deeply felt in sugarcane production in the Northeast and coffee growing in the East (southern Minas Gerais and the state of Rio de Janeiro). In the coffee fields of the South, particularly in São Paulo, the loss of slave manpower seems to have had much less of an impact. In fact, in the state of São Paulo slaves were much less important than in Minas Gerais, Rio de Janeiro and the Northeast.<sup>24</sup> Coffee growers had begun, even before the emancipation of the slaves, a

<sup>23</sup> D. H. Graham and S. B. de Hollanda Filho, *Migration, Regional and Urban Growth and Development in Brazil: A Selective Analysis of the Historical Record, 1872-1970* (São Paulo: Universidade de São Paulo, Instituto de Pesquisas Econômicas, 1973), p. 43.

<sup>24</sup> The slave population of Brazil in 1887 was estimated at around 637 thousand, of which 56.5% were in Minas Gerais and the state of Rio de Janeiro, 25% in the Northeast, and only 16.9% in the state of São Paulo. S. J. Stein, *Vassouras, A Brazilian Coffee County, 1850-1900* (Cambridge: Harvard University Press, 1957), p. 295.

broad program of importing European settlers (mainly Italians), and this program was stepped up from 1888 on. The importation of foreign manpower received a double stimulus: (1) subsidies from the state government, and (2) the Italian policy of incentives to emigration. Yet it was ultimately the good situation of coffee on the international market which made it possible for coffee growers to bear the burden of such an investment in a period in which capital losses resulting from emancipation became important for individual producers. Another factor was the substantial increase in agricultural credit offered as part of the government assistance to the agricultural sector.

An additional problem that farmers had to face was the severe drought of 1889, which affected the principal agricultural regions. The output of foodstuffs for domestic consumption was considerably reduced following this drought.<sup>25</sup> Brazil had already been importing cereals, jerked beef, and livestock products; and imports of farm products now experienced a substantial increase.

These two problems, along with the continuous exchange devaluation which protected the income of the coffee sector from falling prices on the international market, were responsible for the most important trends in agricultural production in the period prior to World War I. Production of foodstuffs for domestic consumption was neglected in the years immediately following the crisis. Coffee achieved a position of absolute predominance among export crops. Thus, when the first period of overproduction and falling prices occurred, the stage was set for two important modifications in agriculture: increased production of foodstuffs, and the adoption of the first coffee-support programs.

### 3.3.2 — Import substitution of agricultural products

The Brazilian dependence on foodstuff imports had increased with the crisis of 1888-1889. Imports of agricultural products through the port of Rio de Janeiro<sup>26</sup> (table 11) rose substantially from 1889 to 1899. This is clear even using 1888, when imports were unusually high due to a bad harvest,<sup>27</sup> as a basis for comparison.

<sup>25</sup> JC, *Retrospecto Comercial*, 1889 and 1890.

<sup>26</sup> Statistics for Rio de Janeiro — though incomplete — are representative of the bulk of Brazilian imports, since Rio was the country's largest port in terms of volume and value of imports.

<sup>27</sup> JC, *Retrospecto Comercial*, 1888, "Importação."



Table 11

*Port of Rio de Janeiro: Foodstuff and Feed Imports, 1888-1899*  
(Annual Averages)

Product	1888	1889-1890	1891-1894	1895-1899
Alfalfa (Bales)	76 968	171 532	334 434	265 289
Rice (Sacks)	393 538	724 111	1 267 566	1 214 000
Fats (Barrels)	35 833	95 517	69 227	117 233
Jerked Beef (Tons)	***	***	48 013	48 880
Bran (Sacks)	45 940	12 189	65 261	26 604
Corn (Sacks)	274 422	660 787	396 050	873 712
Salt Pork (Barrels)	***	***	38 288	41 227

Sources: *Jornal do Comércio (JC)*, *Retrospecto Comercial*, various years.

As a percentage of domestic consumption, these imports were most significant in the case of rice and possibly jerked beef. Complete national data are available only for 1907, when imports of agricultural products represented about 13% of total domestic consumption. For years prior to 1907, Brazilian imports can only be compared to production in the state of São Paulo. In 1903, for example, countrywide rice imports were 5.3 times greater than the total produced in São Paulo, one of the principal rice-growing states. Similar figures for other products are considerably lower, at 17% for beans (*feijão*), and less than 1% for corn.<sup>28</sup>

With the crisis in coffee at the turn of the century, changes occurred in the agricultural sector. Although levels of agricultural imports remained high, some import substitution did occur prior to 1914 (see table 12), mostly of corn, rice, and jerked beef. Imports of unmilled wheat, on the other hand, increased substantially. The reason for this was that the growth of milling operations had done away with the need to import flour, but increased the demand for the raw material, i. e. wheat, which was not produced in Brazil. Only with the outbreak of World War I were agricultural imports in general to decline. At the same time, nontraditional agricultural exports rose and partly compensated for the declines in the prices of traditional exports, especially rubber and coffee. Natural rubber was decisively competed off international markets

<sup>28</sup> Production data are from the *Repartição de Estatística e Arquivo do Estado de São Paulo, Anuário Estatístico de São Paulo*, 1903, pp. 558-59. Import data are from the *Ministério da Fazenda, Serviço de Estatística Econômica e Financeira, Comércio Exterior do Brasil*, 1903.

by rubber produced in other countries. The crisis in coffee, on the other hand, received an original solution, though it had only temporary effects.

Table 12  
*Brazil: Foodstuff Imports and Exports, 1901-1915*  
 (Tons)  
 (Annual Averages)

Product	1901-1905		1906-1910		1911-1915	
	Imports	Exports	Imports	Exports	Imports	Exports
Rice	383 451	220	86 760	181	48 019	144
Beans	34 301	144	38 185	282	32 693	360
Corn	38 696	0 748	46 708	21	22 626	488
Jerked Beef	260 778	338	169 969	2 060	70 076	1 061
Potatoes	107 913	—	103 885	3	104 355	9
Wheat	840 862	—	1 314 056	—	1 905 898	—

Sources: Ministério da Fazenda, Serviço de Estatística Económica e Financeira, *Comércio Exterior do Brasil*, various years.

### 3.3.3 — The first coffee crisis and the first coffee-support program

Up to the close of the Empire, coffee growing in Brazil was affected by the evolution of internal prices (a function of the level of economic activity in importing countries), as well as by climatic changes and plant diseases within the country. After the emancipation of the slaves and the proclamation of the Republic, the domestic factors became more important.<sup>29</sup> Abolition shifted coffee-growing activities to the South, namely the state of São Paulo. São Paulo's policy of subsidizing the immigration of European labor was the decisive factor in this shift. The policies adopted in the first years of the Republic, moreover, stimulated coffee growing to excess; this was to lead to the first crisis of overproduction.

The inflation that occurred in the first years of the Republic and the ensuing exchange devaluations were the most important factors underlying the growth of the coffee sector. In local currency, coffee prices were not only maintained but rose, while world prices were falling. This raised the profitability of coffee-growing at a time when shortages of farm goods for local markets were

<sup>29</sup> C. M. Peláez, "An Economic Analysis of the Brazilian Coffee Support Program, 1906-1945: Theory, Policy and Measurement," in *Essays on Coffee and Economic Development* (Rio de Janeiro: Instituto Brasileiro do Café, 1973), pp. 49-50.

becoming apparent. The result was a tremendous increase in the capacity of the coffee sector, at the expense of delayed agricultural diversification. By the turn of the century, coffee overproduction was evident, and the idea of government intervention to limit supplies first appeared.

Beginning in late 1898, the growth of the coffee sector became the target of restrictive government policies. Noting that inefficient growers were able to stay in the market due to continuing exchange devaluation,<sup>30</sup> the government adopted a corrective measure in the form of maintenance of the exchange rate.<sup>31</sup> Once this protection to coffee growers' incomes was ended, the movement for government intervention rapidly gained adherents. However, two successive increases in the international price of coffee (1900 and 1904) delayed any such action. Only with the forecast of an unusually large crop in 1906-1907 did the government intervene on the supply side.

The first coffee-valorization scheme was formally approved in February 1906 by the presidents of the states of São Paulo, Minas Gerais and Rio de Janeiro; this was the Taubaté agreement. The fundamental objective of the plan was to establish a floor price for coffee in local currency. To facilitate this, surplus production was to be withheld from the market, using funds obtained from a large foreign loan. At the same time, exports of inferior grades of coffee were to be reduced, and a publicity campaign to encourage coffee consumption abroad was to be carried out. Above all else, coffee growers demanded a national institution to protect them from exchange fluctuations; their real goal, of course, was to avoid exchange appreciation.

It was therefore decided to create a fund for stabilizing the exchange rate, the Caixa de Conversão. By initially providing a small devaluation and then stabilizing the rate, the Caixa served to protect the wealth of the coffee planters. By offering a rate slightly above the going market rate, the Caixa ensured the profitability of coffee growing despite the strong pressure — which lasted until 1912 — to appreciate the rate of exchange.<sup>32</sup>

By the end of 1907, more than eight million bags of coffee had been withheld from the market, using funds provided by coffee traders, since a foreign loan had not been obtained.<sup>33</sup> But the results were not seen until 1909. From 1906 to 1908, the international coffee price showed little variation (graph 11). In 1909 came a substantial

<sup>30</sup> MF, *Relatório*, 1899, "Introdução ao Relatório do Ministro Joaquim Murinho," pp. xiv ff.

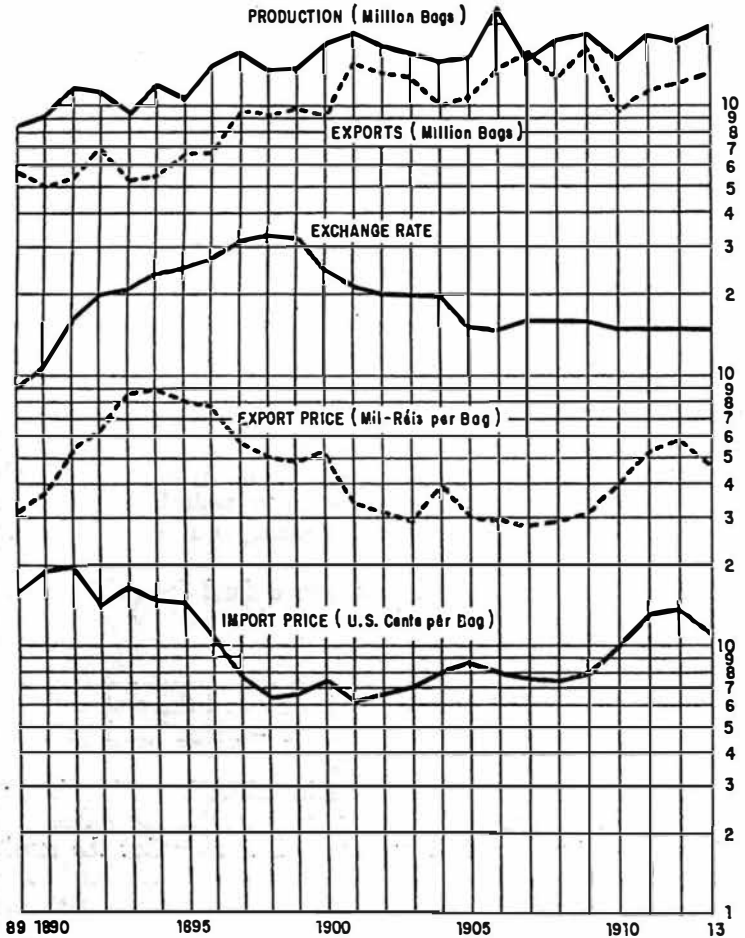
<sup>31</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

<sup>32</sup> *Ibid.*

<sup>33</sup> Peláez, "Economic Analysis," pp. 76-77.

Graph 11

**BRAZIL :**  
**VARIABLES IN THE COFFEE MARKET,**  
**1889 - 1913.**



Source : C.M. Pelérez, "An Economic Analysis of the Brazilian Coffee Support Program, 1906 - 1945 : Theory, Policy and Measurement," in Essays on Coffee and Economic Development (Rio de Janeiro: Instituto Brasileiro do Café, 1973), table M.

increase, with further increases from 1910 to 1912, when prices were twice those prevailing in the period 1906-1908.

The world crisis of 1913 and World War I brought a halt to the rising-price trend, but the idea that coffee valorization was a good policy had been accepted. Actually it would be difficult to prove that the high prices of 1909-1912 were caused by the scheme. As a matter of fact, the valorization of 1906 had been followed by significantly smaller crops than that of 1906-1907, which had led to the scheme. This must have facilitated the success of the plan. The institutionalization of an artificial mechanism for price and income maintenance in the coffee sector represented a serious distortion in the economy and contributed to lower growth rates in other sectors.

### **3.4 The expansion of foreign trade prior to World War I**

The evolution of foreign trade up to 1914 was mainly determined by the behavior of coffee in the world market. Oscillations in the price of coffee produced fluctuations in the terms of trade. Due to the burden of its foreign debt, Brazil had to maintain a hefty surplus in its balance of trade, limiting imports when export receipts declined. The prewar trade structure, especially as regards imports, was also influenced by internal factors linked to the agricultural problems of the early years of the Republic and subsequent economic policies.

The agricultural crisis had two important effects on foreign trade. First, the reduction in output diminished the quantity available for export. Since the rise in prices in 1889-1891 did not offset the decline in the amount exported, export receipts fell. Second, the reduction in farm production, by decreasing the domestic supply, led to an increase in food imports. Throughout most of the prewar period, imports of cereals, meat, and livestock products were at high levels.

Coffee prices, after rising slightly in 1893, declined up to the close of the decade. Rubber emerged as the second most important export, but the revenues derived therefrom were not sufficient to overcome the general stagnation and subsequent fall in export earnings. There was probably a decline in the terms of trade, along with a limitation of import capacity, in this period. Industries for processing local raw materials seem to have registered some growth due to import restrictions.

Imports were reduced by the tariff policy and by the accelerating pace of exchange devaluation during the first decade of the Republic. The most important restrictions were probably the gold

tariff, introduced in 1890-1891, and a heavy general increase in customs duties in 1892. But the greatest disincentive to imports was the continuing exchange devaluation from 1889 to 1898. Imports virtually stagnated up to 1895 and fell thereafter. Thus, foreign trade seems to have passed through a long crisis in the first years of the Republic. This crisis was to worsen in the years that followed, at least until 1902, as new restrictive measures were taken.

Beginning in late 1898, a further tightening of government policy had a noticeable effect on trade. Perhaps the most important goal to be achieved was appreciation of the exchange rate, which would naturally stimulate imports and discourage exports. However, since exchange appreciation could only occur if the country's balance on current account improved, the government attempted to limit imports at the same time it strengthened the currency.

Certainly the return to the collection of tariffs in gold was not primarily designed to restrict imports. It was mainly instituted to provide the government with a fund of foreign currency without having to enter the exchange market directly, since government intervention had been a source of short-run fluctuations and long-run devaluation in the past. While the barrier to imports which resulted from the gold tariff was quite imposing,<sup>34</sup> it was the tariff of 1900 that was to prove the most important restrictive measure.<sup>35</sup>

Imports remained at low levels until 1902. On the other hand, thanks to the increase in coffee prices in 1900, export receipts grew considerably, with resultant large surpluses on current account (graph 12). The goal of exchange appreciation had been fully achieved, but at the cost of a reduction in the level of economic activity.

From 1903 to 1913, foreign trade showed a rising trend. Up to 1908, however, this expansion was only partial; the volume of imports increased, but the terms of trade and the capacity to import (purchasing power of exports) remained practically stagnant. This partial recovery was due to the performance of coffee on the world market. At this time, coffee provided more than half of all export receipts, followed by rubber.

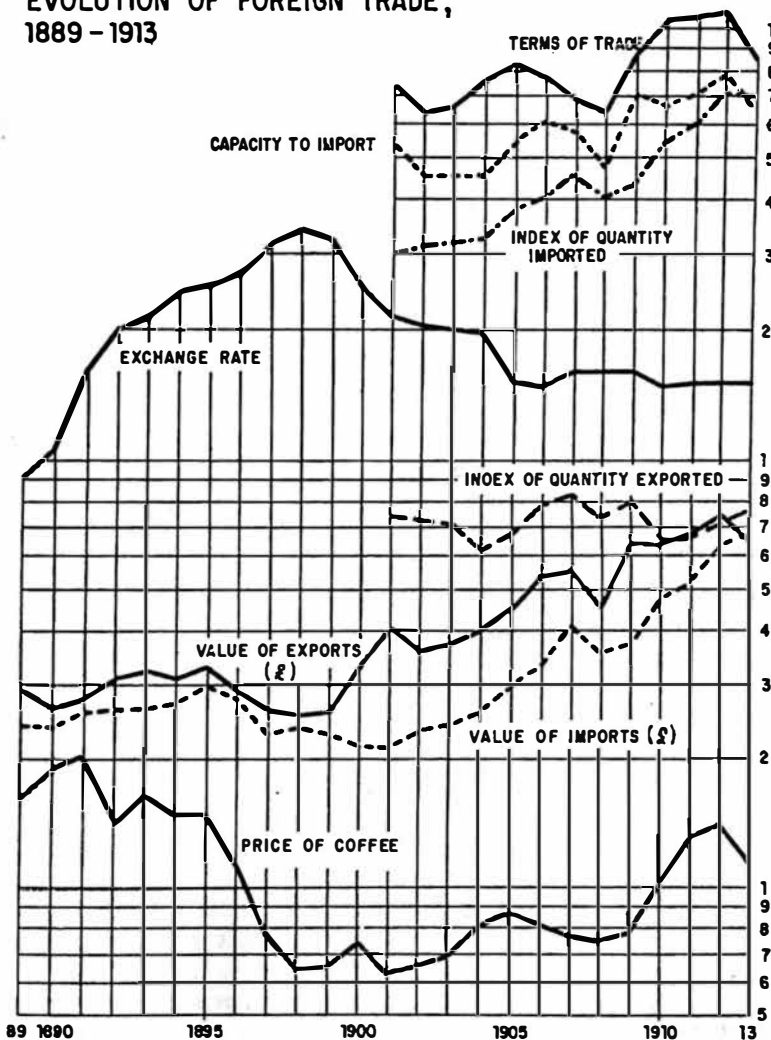
As seen above, coffee prices, after a significant rise in 1904, dropped until 1908, thereby temporarily frustrating the first valorization scheme. The decline in export prices in 1907-1908 was apparently the result of a business contraction in the United States, Brazil's principal market. From where, then, did the funds to finance increased imports come?

<sup>34</sup> See app. E, "The Protection of Industry,"

<sup>35</sup> JC, *Retrospecto Comercial*, 1900, pp. 3 and 23.

Graph 12

### BRAZIL: EVOLUTION OF FOREIGN TRADE, 1889 - 1913



Source: Statistical Appendix, tables 120, 131 and 132; Peláez, "Economic Analysis," table M.

The rise in the volume of imports after 1903 was related to government policies. It may be observed (graph 12) that a substantial portion of the increase was due to the impact of capital goods for the public investment program of 1903. The greater part of these goods was allocated to port improvement and railroad equipment. Financing came from abroad. Between 1903 and 1908, several large foreign loans were obtained for financing the investments in transport and improvements.<sup>36</sup> Additional stimuli to imports were the exchange appreciation up to 1906 and the subsequent stabilization of the exchange rate by the Caixa de Conversão.

Beginning in 1909, coffee prices climbed to more than twice the 1907-1908 level. And despite the fall in world rubber prices in 1910, the terms of trade and capacity to import rose considerably (67% and 57% above the 1908 level, respectively). Besides all this, foreign capital inflows in general revived, in the form of loans and direct private investments.<sup>37</sup> Taken together, these factors allowed for high import levels and, at the same time, substantial servicing of the foreign debt.

Thus, most notable in the growth of Brazilian trade prior to World War I was the increase in imports. Public investments, mainly in ports and railroads, were intensified. Private investment in the industrial sector probably accompanied these infrastructure projects. This explains why the largest increases in imports were in capital goods and construction materials (graph 13).

This period of expansion was interrupted by the international crisis of 1913. The prices of the principal exports fell abruptly, causing a sudden decline in the terms of trade. Export receipts were substantially reduced. Since import levels were at first maintained, a deficit occurred in the balance of trade, something that had not happened for some time in Brazil. The impact on the exchange market was moderated by two factors: the action of the Caixa de Conversão, which sold exchange for its outstanding notes, and the continued inflow of foreign capital. This situation, however, could not be sustained once war broke out in 1914, and foreign trade entered a period of profound depression. Nonetheless, the expansion of foreign trade which occurred prior to the war contributed to industrialization in the period through improvements in the transport infrastructure and through the importation of equipment and materials.

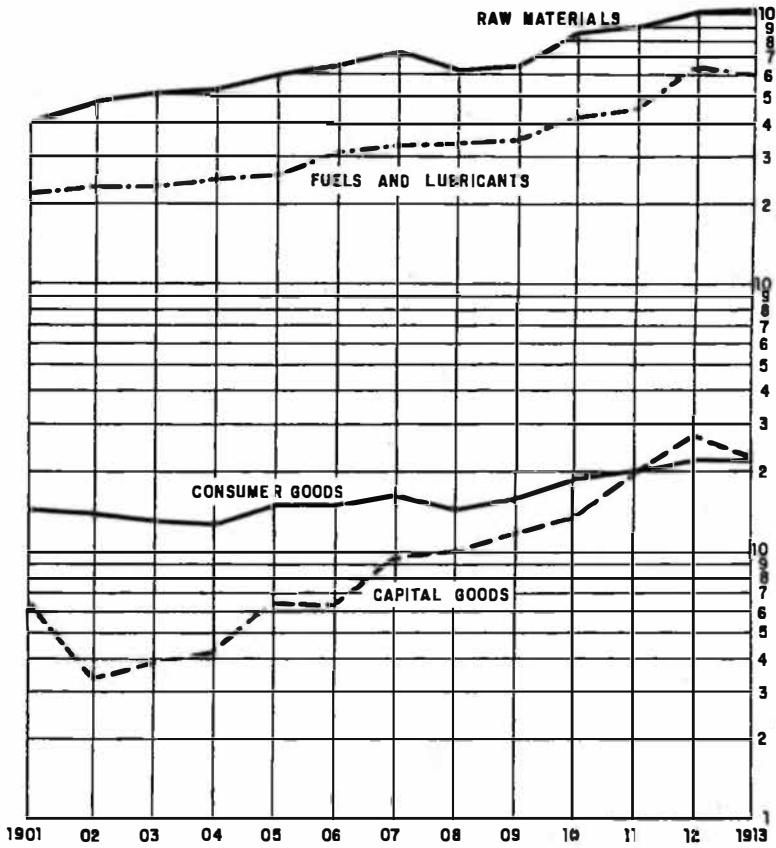
<sup>36</sup> See app. D, "The Evolution of the External Debt."

<sup>37</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."



Graph 13

**BRAZIL :**  
**IMPORTS BY TYPE OF COMMODITY,**  
**1901 - 1913.**



Source: Statistical Appendix, table 133.

## 3.5 – Industrialization

Primary data relating to the evolution of Brazilian industrial output from the proclamation of the Republic to World War I are not available at present. However, there is partial evidence in the form of figures on imports. Despite data limitations, it is possible to describe industrial evolution in this period as discontinuous, apparently consisting of two growth spurts. The conditions which led to these two surges and their ensuing decline, as well as the results of these movements, are the subject of what follows. Before beginning, it would be useful to discuss the principal factors that allowed for the development of industry within a predominantly agricultural economy.

### 3.5.1 – The Republic and the strengthening of industry

Although industrial activity in Brazil dates from shortly after the arrival of the royal family in 1808, it only acquired a measure of dynamism in the 1850s, due to the entrepreneurial spirit of Mauá. It was with the creation of the Republic that industrial development first achieved a rapid pace.

A combination of factors permitted the appearance of an industrial sector in a nineteenth-century Brazil dominated by coffee and possessing an entrepreneurial class mainly comprised of farmers and importers. The disaggregation presented here is based principally on observations from the history of the state of São Paulo, even though this state was not the country's original industrial center. In fact, as regards the production of textiles (the leading industry at the time), São Paulo was in fourth place in 1881, behind Bahia, the Distrito Federal and the state of Rio de Janeiro.<sup>38</sup> As late as 1907, when the first systematic industrial survey was made, the Distrito Federal was still the main industrial center of the country. By 1919, however, the value of São Paulo's industrial output represented 35% of the total and 1.65 times that of the Distrito Federal.<sup>39</sup>

Industrial development was aided by the inflow of European labor to work on coffee plantations on the São Paulo plateau, a moving frontier to which coffee growing had shifted while declining in the Vale do Paraíba. These immigrants, unlike their predecessors on the plantations, received a cash wage; they also had a broader range

<sup>38</sup> See R. C. Simonsen, *A Evolução Industrial do Brasil e Outros Estudos* (São Paulo: Cia. Editora Nacional, 1973), p. 25.

<sup>39</sup> Data from the census taken by the Centro Industrial do Brasil, *O Brasil, Suas Riquezas Naturais, Suas Indústrias* (Rio de Janeiro, 1909), vol. 3.

of tastes. The dimensions of this change are indicated by figures on the foreign population in the state of São Paulo. Whereas foreigners represented only 3.5% of the total population in 1872, by 1900 they accounted for 23.2%; the figure declined slightly (to 18%) in 1920.<sup>40</sup>

Many of these immigrants abandoned the coffee plantations and moved to cities, mainly the state capital, either because they could not adapt to farm work or because of the crisis produced by excess coffee production. These Europeans became a valuable source of industrial manpower, supplying not only labor and administrative help, but also entrepreneurial skills, thus competing with coffee growers and importers.

In his study of industrial entrepreneurs in the state of São Paulo, Dean suggests that the sequence of sources of entrepreneurs was approximately the following: first coffee planters, then importers, and finally immigrants.<sup>41</sup>

Initially, the bulk of investments by the planter-entrepreneurs, outside their coffee interests, went into infrastructure creation, principally railroads. Planters built the Companhia Paulista, the Mogiana and the Sorocabana, for example. Before 1900, the majority of the cotton-textile mills were founded by planters. They also had investments in foundries, sawmills, breweries, factories for processing jute and sugar, glass plants, etc. In 1901, of the 12.7 thousand workers employed in the 50 largest industries in São Paulo, approximately 5.5 thousand worked for firms controlled by planters.<sup>42</sup>

Importers who became industrialists had two advantages over their competition: they knew the market well, since they rarely specialized in any given line, and their ready access to credit allowed them to arrange financing for importing the necessary equipment and machinery.<sup>43</sup> These advantages, combined with the higher prices for imports which resulted from the rising tariffs in the first years of the Republic and the continued exchange devaluation, induced many importers to diversify by investing in manufacturing. Out of a total of 59 importing firms operating before World War I, at least 33 were engaged in or had invested in industrial activity.<sup>44</sup> By 1917, 11 of the 13 textile factories built in São Paulo before 1900 were controlled

<sup>40</sup> Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil*, 1939-1940, p. 1302.

<sup>41</sup> W. Dean, *São Paulo's Industrial Elite* (University Microfilms, 1964), pp. 9-72.

<sup>42</sup> *Ibid.*, p. 9.

<sup>43</sup> *Ibid.*, pp. 28-33.

<sup>44</sup> *Ibid.*, p. 33.

It was believed that the creation and strengthening of a class of industrialists was important, and even necessary, to the maintenance of the Republic. Be this as it may, the economic policy of the time did not represent a set of measures capable of promoting industrialization.<sup>51</sup> The period of credit expansion and the increase in the number of banks of issue in 1890-1891 was quickly followed by one of restrictive policies.

The industrial growth of the time largely depended on foreign trade. Capital formation required the importation of machinery and equipment, and output demanded the importation of raw materials and fuels. Thus, the evolution of foreign trade — which in large part meant the performance of coffee on world markets — governed the appearance of industrial spurts or periods of rapid growth in industrial production. In this sense, rural interests continued to make their influence felt, and to a certain extent hindered large-scale industrialization. The most outstanding example was the case of government policy from 1899 to 1902.

Even so, industry did experience a minor boom in the first decade of the Republic, and the growth observed appears to have resulted, at least indirectly, from government policies. By way of raising government revenues, a gold tariff on imports was introduced in 1890-1891. It was soon abolished and replaced by a substantial increase in tariff rates. The check that this represented on imports provided some protection to industries which processed local raw materials. Moreover, the continuing exchange devaluation up to 1898 had a similar effect, despite its having been designed to protect incomes in the coffee sector.

These measures were taken at a time when the domestic scene was favorable for industrial expansion. The domestic market was growing rapidly, as immigrants poured in. Railroads were expanding.<sup>52</sup> Hydraulic potential began to be exploited at a more rapid pace.<sup>53</sup>

The result of this convergence of government measures and exogenous trends appears to have been import substitution, but only in traditional industries. This seems logical, taking into account the types of incentives offered. The high tariffs and exchange devaluation

<sup>51</sup> For an analysis of the principal measures and their contradictions, see app. E, "The Protection of Industry."

<sup>52</sup> In the first decade of the Republic, 5.3 thousand additional kilometers of track were laid, an amount equivalent to the total built from 1854 to 1883 (see app. H, "Transport").

<sup>53</sup> The installed capacity of hydroelectric plants rose from .3 megawatts in 1891 to 5.3 megawatts in 1900 and 32.7 megawatts in 1901 (see app. G, "Electric Energy").

affected not only imports of consumer goods, but also imports of capital goods and raw materials. While a policy did exist to exempt capital goods from high tariffs, it was infrequently applied, in view of the treasury's need for finances.

The data in table 13, though only partial, indicate that industrial growth picked up in the period 1896-1899. Imports of fuels and

Table 13

*Brazil: Indicators of the Growth of Industrial Production at the Beginning of the Republic*

(1) — *Port of Rio de Janeiro - Manufactured Imports, 1891-1899 (Annual Averages)*

<i>Industrial Sector and Products</i>	<i>1891-1896</i>	<i>1896-1899</i>
<b>Fuels</b>		
Coal (Tons)	454 078	564 676
Kerosene (Cases)	427 433	456 186
<b>Raw Materials</b>		
Cement (Kegs)	146 341	155 604
<b>Chemicals</b>		
Matches (Cases)	17 029	4 963
<b>Textiles</b>		
Hemp Fabric (Bales)	2 017	607
<b>Food Products</b>		
Wheat Flour (Kegs)	472 016	321 617
Dough (Cases)	40 833	2 793
<b>Beverages</b>		
Beer (Cases)	57 036	3 302

(2) — *Exports from England to Brazil, 1885-1899 (Values in £ Million)*

<i>Products</i>	<i>1885-1889</i>		<i>1896-1899</i>	
	<i>Value</i>	<i>%</i>	<i>Value</i>	<i>%</i>
Cotton Thread and Textiles	14.0	47.0	11.2	36.2
Wrought and Crude Iron	2.5	8.3	3.4	10.8
Coal and Coal Products	1.6	5.2	2.9	9.4
Machinery	2.3	7.6	2.3	7.5
Others	9.3	31.9	11.2	36.1
<b>Total</b>	<b>29.7</b>	<b>100.0</b>	<b>31.0</b>	<b>100.0</b>

Sources: (1) JC, *Retrospecto Comercial*, various years.

(2) R. Graham, *Britain and the Onset of Modernization in Brazil, 1850-1914* (Cambridge: Cambridge University Press, 1968), pp. 330-32.

basic raw materials, such as cement and iron, rose in this period, while imports of consumer goods fell. The products affected were mainly textiles, foodstuffs and beverages. Apparently, increased industrial output relied on more intensive use of installed capacity rather than on new capacity creation. Machinery imports from England, the main supplier at the time, remained at the levels of 1885-1889. This might be expected, as continuing exchange devaluation would raise prices for imported capital.

All indications are that this industrial spurt was brought to a halt at the end of 1898 by severe restrictive measures on the part of the government. As a matter of fact, one of the enunciated goals of the policymakers at the time was the curtailment of "artificial industries" which had developed behind the protection afforded by exchange devaluation and tariffs.<sup>54</sup> And some of this industry was quite artificial. A picturesque example is match production. Beginning in 1896, domestic production completely replaced imports (see table 13). But this was simply a trick in terminology, as all components of the matches — the sticks, boxes, even the labels — were imported in the guise of "raw materials". It is clear that exchange devaluation was one way of protecting industry, and must be admitted that such protectionist measures may have been necessary to stimulating industrialization. After all, one of the most notable industrial undertakings of the Empire, the Ponta da Areia shipyard of Mauá, was forced to close once tariff protection was withdrawn.<sup>55</sup>

Although the government's deflationary policies continued in effect in the first years of this century, they did not prevent the appearance of a new industrial spurt in 1903; this surge subsequently picked up momentum from 1905 to 1913. Apparently the deflationary effects of monetary and exchange policy, and also of fiscal policy up to 1907, were offset by the stimulus of increased autonomous government expenditures, especially from 1908 on. While these public investments stimulated economic activity in general, they provided special encouragement to industry through the creation of a more extensive transportation network. The railroads were expanded rapidly, and more adequate equipment was provided in the main ports.

Important contributions to industrialization were also made by developments in the coffee sector. The coffee prices at the turn of the century produced a flow of European immigrants from the plantations to the cities. Here their contribution was threefold. First, they created a much more compact market for manufactured goods. Sec-

<sup>54</sup> MF, *Relatório*, 1899, "Introdução."

<sup>55</sup> See Visconde de Mauá, *Autobiografia, Documentos Históricos* (Rio de Janeiro: Edições de Ouro, Tecnoprint Gráfica, 1942).

ond, they provided an important source of semi-skilled manpower for industry; in some sectors they outnumbered native-born laborers, and they often held the most important posts.<sup>56</sup> Third, immigrants began to compete with coffee growers and importers as industrial entrepreneurs.<sup>57</sup>

Yet it was the coffee policy adopted in 1906 that provided the major stimulus to the acceleration of the industrial surge in the period 1909-1913.<sup>58</sup> The valorization plan produced its first practical results in 1908, and from 1909 on coffee prices rose significantly. In turn, both the terms of trade and import capacity increased in an extraordinary fashion. This permitted high levels of industrial capital formation (see table 14), principally in the period 1910-1913. To all appearances, it was this tremendous increase in capacity up to 1913 that allowed industrial production to grow during the war, a period which many authors have erroneously classified as one of rapid industrialization.<sup>59</sup>

Table 14

*Brazil: Indicators of Capital Formation in Industry, 1901-1913*

Period	Domestic Cement Consumption (1 000 Tons)	Domestic Steel Consumption* (1 000 Tons)	Industrial Capital-Goods Imports (1939 = 100)
1901-1902	48.0	48.1	44.3
1903-1906	116.9	73.2	51.9
1907-1909	193.0	127.7	73.1
1910-1913	341.3	197.1	157.8

Source: Statistical Appendix, table 129.

\* Except imported rails.

The result, as already mentioned, was substantial import substitution. Imports of raw materials and capital goods rose, while imports of traditional consumer goods declined. In this latter category were textiles, clothing, shoes, food products, beverages, and tobacco.<sup>60</sup>

<sup>56</sup> Centro Industrial do Brasil, *O Brasil*, vol. 3.

<sup>57</sup> Dean, p. 9.

<sup>58</sup> The opportunity cost of the valorization plans, in terms of the effect on long-run growth prospects, is not considered here.

<sup>59</sup> See chap. 4.

<sup>60</sup> See Statistical Appendix, table 136.

The structure of imports as presented in table 15 evidences this change. Important qualitative changes included a rise in the importation of metallic raw materials and of capital goods for manufacturing and transportation. As the domestic processing of metallic raw materials grew, so did the dependence on foreign countries for the necessary capital goods.

Table 15  
*Brazil: Imports by Type of Commodity, 1901-1913*  
(% of Total)

Class	1901-1902	1903-1906	1907-1909	1910-1913
Consumer Goods	40.1	36.6	31.3	30.7
Durable	3.7	5.5	7.0	8.4
Nondurable	36.4	31.1	24.3	22.3
Fuels and Lubricants	9.8	7.7	8.3	8.7
Raw Materials	42.0	48.6	48.4	46.3
Industrial {				
Metallic	6.6	9.0	12.3	11.3
Nonmetallic	34.2	37.5	32.9	30.5
Other	1.2	2.0	3.2	4.5
Capital Goods	5.6	7.1	12.0	14.3
Industrial	.8	1.8	3.3	3.7
Transport	.8	1.5	4.0	5.0
Other	4.0	3.8	4.7	5.6
Miscellaneous	3.0	.1	—	—
Total	100.0	100.0	100.0	100.0

Source: Statistical Appendix, table 133.

The world crisis of 1913 and the ensuing world war prevented the continuation of this spurt. The effect on trade was to lower the terms of trade and cut import capacity. Industrial capital formation fell to a fifth of the prewar high. Although industrial output grew during the wartime period, industrialization probably stopped, as the next chapter demonstrates.



## 4

# The foreign-trade crisis and the impact of World War I, 1913-1918

### 4.1 — Introduction

The foreign-trade crisis which began in 1913 worsened during World War I. Export prices fell to extremely low levels, producing a sharp reduction in purchasing power and a corresponding reduction in the volume of imports. Also contributing to diminishing import flows was the difficulty of supply during wartime. Low import levels, in turn, implied a drop in the receipts of the federal government, as two-thirds of all revenue came from import levies. Large budget deficits appeared, despite attempts to increase receipts through raising the tariff rates on imports and imposing a tax on internal transactions. This deficit forced large issues of paper money to cover government debts, as neither domestic nor foreign loans could be obtained. The deflationary monetary and fiscal policies of the 1980s and early 1900s were now abandoned.

In spite of the fall in receipts, the government continued to make investments in social overhead capital such as water reservoirs (*açudes*), railroads, highways, and telegraph lines. Expenditures in this area accounted for 23.6% of total federal expenditures in the years 1914-1918. Current government outlays were sharply reduced, falling from 52% of total outlays in 1911-1914 to 30% in 1915-1918, and priority was given to repayment of the public debt.

The crisis in foreign trade affected industrial activity in two ways. First, the production in raw-material, fuel, and capital-goods imports hindered attempts to expand capacity. Second, existing capacity was used more fully, especially in plants producing cotton textiles, sugar, and chilled and frozen meat. All three of these products, but especially sugar and meat, were exported in large quantities. In general, industrial production grew during the war due to better utilization of existing capacity.

Beginning in 1915, successful efforts were made to diversify the exportation not only of manufactures, but also of manganese, cotton, wood, and agricultural foodstuffs such as rice, beans, oils, etc. Since prices remained at prewar levels for these products, export receipts recovered somewhat.

Thus, the impossibility of continuing deflationary policies during World War I diffused the negative effects such policies had produced in the economy before the war. The negative impact of falling receipts from coffee and rubber must have been offset in good measure by the continuing high level of public investments, new issues of paper money, and export diversification.

## 4.2 – The impact of the war on foreign-trade <sup>1</sup>

In 1913, a foreign-trade crisis began which was to last until 1918. The sharp fall in the price of the major exports led to a situation which had not occurred for some time – a deficit in the balance of trade. The terms-of-trade index worsened abruptly, and since the volume of imports remained constant, a deficit resulted. It should be noted that the exchange rate was stable throughout 1913, despite pressures for a devaluation. In fact, this was due to large capital inflows, including both risk capital and official loans. This capital inflow was reinforced by the actions of arbitrageurs, who imported convertible currency and exchanged it for notes issued by the Caixa de Conversão when the market rate fell far enough below the Caixa rate <sup>2</sup> to make this operation profitable.

The persistence of international tensions and the outbreak of war in July 1914 stopped the inflow of foreign capital. <sup>3</sup> The remittance of £ 10 million in debt amortizations led to the collapse of the exchange market. In August 1914, the free-market exchange rate depreciated below the official rate; the Caixa de Conversão exhausted its reserves defending the official rate, and was closed. The government attempted to deal with this by consolidating the foreign debt. A second funding loan was signed on 19 October 1914, providing that all debt amortizations would be suspended for 13 years. Despite this agreement, the exchange rate continued to depreciate until 1917. The Caixa de Conversão was not reopened,

<sup>1</sup> Since World War I affected mainly the external sector of the economy, it was felt that this chapter should begin with a look at foreign trade, instead of following the pattern of other chapters in beginning with monetary and fiscal policies.

<sup>2</sup> See app. C for details on the operation of the Caixa de Conversão.

<sup>3</sup> Banco do Brasil, *Relatório*, 1914, pp. 20-23.

and the Banco do Brasil initially experienced difficulty in providing all the foreign exchange demanded. Beginning in 1915, however, the shortage of exchange was alleviated by surpluses in the balance of trade stemming from the diversification of exports.

The bulk of the new exports was made up of nondurable consumer goods, which accounted for an average of 3.8% of the value of all exports from 1901 to 1913 and an average of 15.2% in the period 1914-1918. The volume of such exports rose by a factor of 10 during the war (see graph 14). This diversification of exports, though slight, helped offset the deflationary effects of declining prices for coffee and rubber. The table below outlines the behavior of the balance of trade over this period:

Table 16

*Brazil: Value of Exports and Imports, and the Balance of Trade, 1913-1918*  
(£ 1 000)

Year	Exports	Imports	Balance of Trade
1913	65 451	67 166	— 1 715
1914	46 803	35 473	11 330
1915	53 951	30 088	23 863
1916	56 462	40 369	16 093
1917	63 031	44 510	18 501
1918	61 168	52 817	8 351

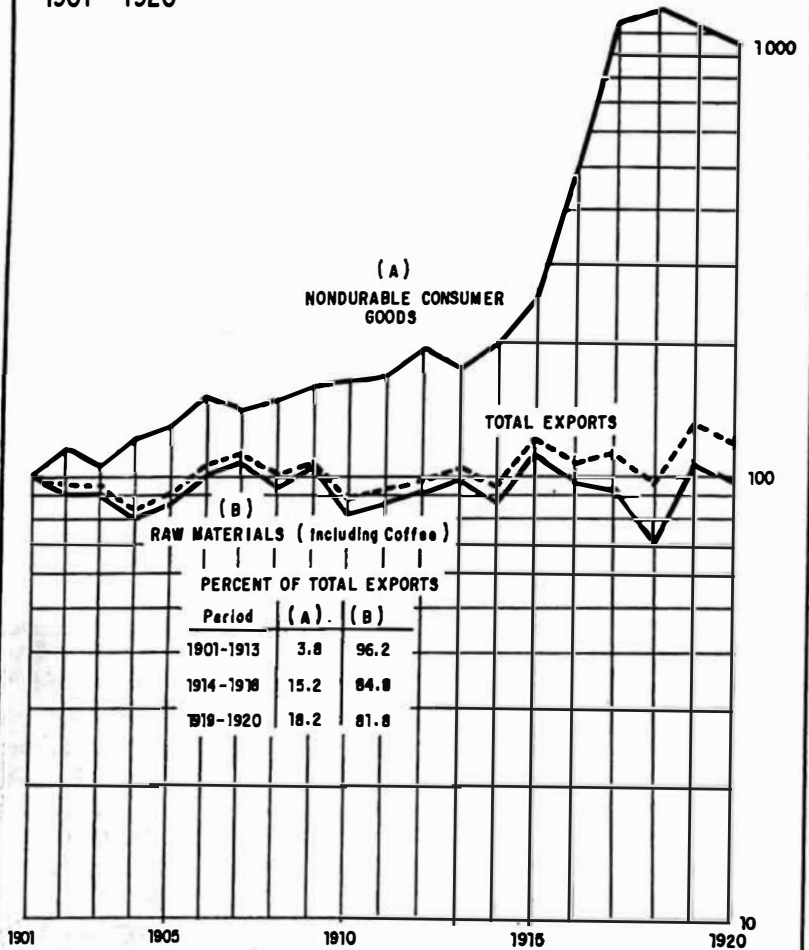
Source: Ministério da Fazenda, Serviço de Estatística Econômica e Financeira (MF/SEEF), as published in Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil*, 1939-1940, pp. 1 358-59.

At the same time, the downward trend in coffee and rubber prices continued to have adverse effects on the terms of trade, which by 1917-1918 had fallen to almost one-third of the 1911-1912 level. This affected the purchasing power of exports, of course, and imports declined (due to this fall in purchasing power and to wartime supply difficulties), as indicated in graph 8.

The tendency for coffee prices to fall was aggravated by prospects of an enormous harvest in 1917-1918. This led to the second governmental intervention; more than three million bags of coffee were purchased and placed in storage in 1917. An expansion of the money supply was used to pay for this coffee, as foreign loans were out of the question in wartime.

Graph 14

**BRAZIL :**  
**EXPORT QUANTUM INDEX,**  
**1901 - 1920**



Source: Statistical Appendix, tables 132 and 133.

Then, in June 1918, a severe frost damaged 300 of the 800 million coffee trees in production. The consequent decline in output, coupled with the reopening of European markets after the war, produced a reversal of the trend in coffee prices.

### 4.3 — Monetary and fiscal policies

The decline in the prices of traditional exports had a severe deflationary impact on the Brazilian economy, an economy in which coffee and rubber exports accounted for 79% of the total value of exports in 1901-1910. As a result of this decline, the tax receipts of the federal and state governments were sharply reduced, since at the time taxes were mainly in the form of levies on imports and exports. The resulting budget deficits could not be financed by noninflationary means such as loans.

Throughout World War I, federal receipts remained at extremely low levels, even below those predicted, while expenditures grew beyond the expected levels, as indicated in table 17. There was a tendency for deficits to fall, however, and the actual deficit in 1918 was less than that of 1913.

Table 17

*Brazil: Federal Finances, 1913-1918*  
(1 000 Contos de Réis)

Year	Budgeted			Actual		
	Receipts	Expenditures	Surplus or Deficit	Receipts	Expenditures	Surplus or Deficit
1913	616	971	-355	654	785	-131
1914	607	797	-190	423	766	-343
1915	561	533	28	404	688	-284
1916	600	596	4	478	680	-208
1917	613	623	- 10	537	736	-199
1918	712	644	68	619	738	-119

Source: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Econômicos (FVG/IBRE/CEF).

The decline in receipts from import duties, the main source of federal receipts, led the government to turn to taxes. Thus, from 1914 to 1917, the rates at which consumer goods were taxed were raised, and the number of products taxed also increased considerably. Regulations were issued for these taxes, and collection procedures were improved. As a result of these actions, receipts from taxes on internal transactions grew from an average of 13.1% of total federal tax receipts in 1912-1913, to 32% in 1917-1918 (see table 18).

Table 18

*Brazil: Import-Duty and Internal-Tax Collections, 1912-1918*  
(Contos de Réis)

Year	A Total Receipts	B Import Duties	B/A (%)	C Taxes on Internal Transactions	C/A (%)
1912	487 632	348 242	71.4	62 639	12.8
1913	483 899	344 327	71.2	65 091	13.5
1914	303 001	195 115	64.4	52 223	17.2
1915	295 217	152 609	51.7	67 936	23.0
1916	349 909	184 264	52.7	83 828	24.0
1917	365 339	158 361	43.3	117 720	32.3
1918	372 585	171 431	46.0	119.719	32.1

Source: Same as table 17.

As far as public expenditures are concerned, outlays for gross fixed capital remained at the high levels reached in 1910 and averaged around 23.6% of total outlays over the years 1914-1918. On the other hand, current expenditures were sharply reduced from an average of 52% of total expenditures in 1911-1914 to 30% in 1916-1918. Priority was given to amortization of the public debt. Expenditures for this purpose rose from an annual average of 20% of total outlays in 1911-1913 to 32% in 1915-1918. Tables 115 and 116 in the Statistical Appendix trace the evolution of public expenditures by item and provide a breakdown of outlays for fixed capital formation.

The only alternative open to the government for financing these expenditures was to issue notes. Thus, on 28 August 1915, a decree authorized the issue of 350 thousand *contos de réis* for the purposes of covering the budget deficit, providing assistance to national production, and increasing the capital of the Banco do Brasil, so that the latter could rediscount commercial and public debt obligations.<sup>4</sup> On November 11, the government approved a contract with the Banco do Brasil, in which a loan for 50 thousand *contos de réis* was provided by the former to the latter. The program to assist national production was to be carried out by the Banco. In May 1916, the government approved modifications in the statutes of the Banco to allow the rediscounting of commercial-debt obligations and treasury notes. Here, then, was a great turnabout in monetary policy. Authorization was given for a large new issue of money to cover the federal deficit, and the Banco do Brasil was substantially restructured and tied more closely to the government. These actions relaxed the policy of monetary containment which had been followed up to the war.

In the new regulations for the Banco do Brasil, provision was made for aid to industry as a part of the program to assist national production. In 1919 the Banco was authorized to extend credit to the textile industry, taking stocks of merchandise as security. An issue of 50 thousand *contos de réis* was made to provide the necessary funds.

Graph 15 and the data in the last column of table 17 outline the monetary and fiscal policies followed during this period and illustrate their interdependence.

In the years immediately preceding 1914, the exchange rate was maintained at a level close to that set by the valorization scheme (which corresponded with the second period of note issue). The exchange crisis of 1914 forced rapid devaluation, but this was followed by some attempts at exchange stabilization in the form of controls on the exchange market.

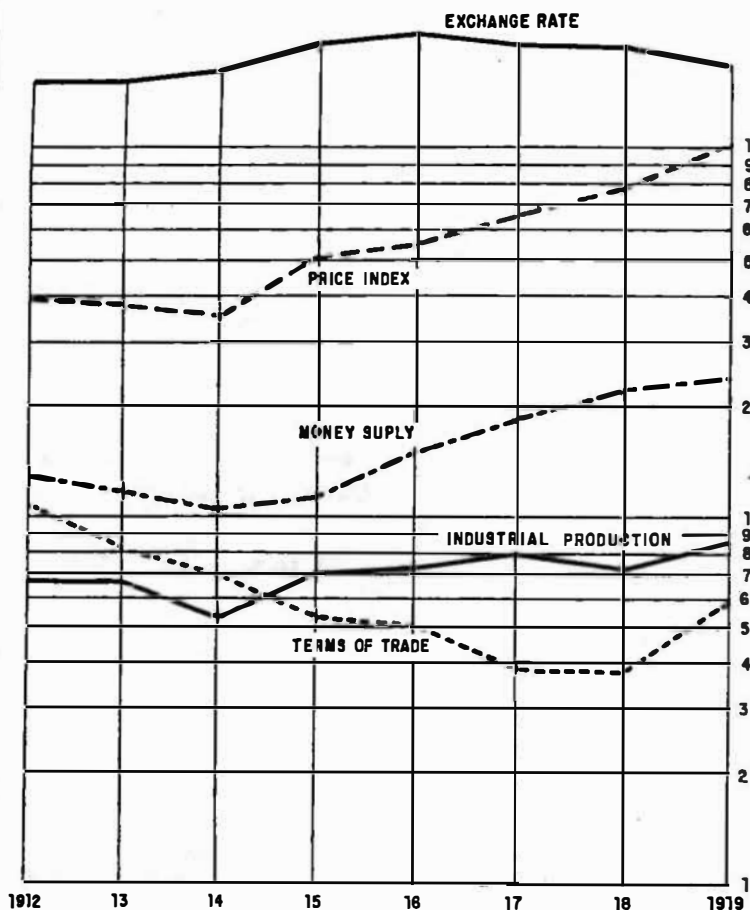
The terms of trade only began to improve as of 1919, largely as a consequence of the frost of 1918, which induced a rise in coffee prices.

Continued additions to the money supply after 1915 — stemming from new issues — caused prices to rise at a faster rate as of 1917.

<sup>4</sup> C. M. Peláez, "The Economic Consequences of Monetary, Exchange and Fiscal Orthodoxy in Brazil, 1889-1945." The aspects of monetary policy being discussed here are covered on pp. 68-69 of the aforementioned monograph, which was specially prepared for our study.

Graph 15

**BRAZIL :**  
**INDICATORS OF EXCHANGE-RATE AND MONETARY**  
**POLICIES AND OF INDUSTRIAL PRODUCTION,**  
**1912 - 1919**



Source : Statistical Appendix, tables 114, 120, 121 and 132 .



During the period under study, the evolution of the level of industrial output does not seem to have been related to other indicators in any clearly defined pattern.

#### 4.4 — Agricultural production

As has been noted above, world coffee prices declined during the war. The effects of this decline were aggravated by the expectation of a tremendous harvest in 1917-1918. Although this expectation was not met due to a frost, it did lead to the second government valorization scheme. Two factors joined to produce a recovery of coffee prices thereafter: the frost of 1918 and the reopening of the European market.

As far as production of foodstuffs for domestic consumption is concerned, the war had a rather favorable impact, accelerating the process of import substitution described in chapter 3. For example, in 1916-1917, Brazilian corn output was the second largest in the world, the country being second only to the United States in area cultivated and volume produced, and actually surpassing the United States in output per hectare, as table 19 indicates.

Table 19

*Brazil and the United States: Corn Output, 1916-1917*

	Brazil: 1916-1917	USA: 1916
Area Cultivated (ha)	3 058 043	42 878 524
Output (Quintals)	61 746 494	656 169 046
Output/ha (Quintals)	16.9	15.3

Source: Ministério da Agricultura, Serviço de Estatística da Produção.

Although data on agricultural output before 1920 are not available, some idea of the import-substitution process can be gained from trade data. Table 20 reveals that not only did foodstuff imports decline sharply, but that after 1916 exports exceeded imports in each of the products listed.

Table 20

*Brazil: Foreign Trade in Foodstuffs, 1911-1918*  
(Export Surpluses in Tons)

Year	Rice	Beans	Potatoes	Corn
1911	-16 480	-3 058	-17 846	-3 798
1912	-10 189	-9 388	-28 971	-6 262
1913	- 7 728	-3 540	-29 800	-8 892
1914	- 6 532	-5 310	-18 970	-1 119
1915	- 6 945	1 042	- 8 757	-2 066
1916	410	44 599	- 4 526	3 551
1917	44 603	93 402	4 401	23 867
1918	27 914	70 883	4 766	12 976

Source: Basic data from MF/SEEF.

#### 4.5 — Industrial production

In studies of the industrial evolution of Brazil, the consensus of opinion<sup>5</sup> is that, although a large number of firms existed prior to World War I, especially in the cotton-textile and food-product sectors (see chapter 3), it was during the years 1914-1918 that the first great surge in industrial output took place. This surge supposedly determined a good part of the future development of the industrial sector.

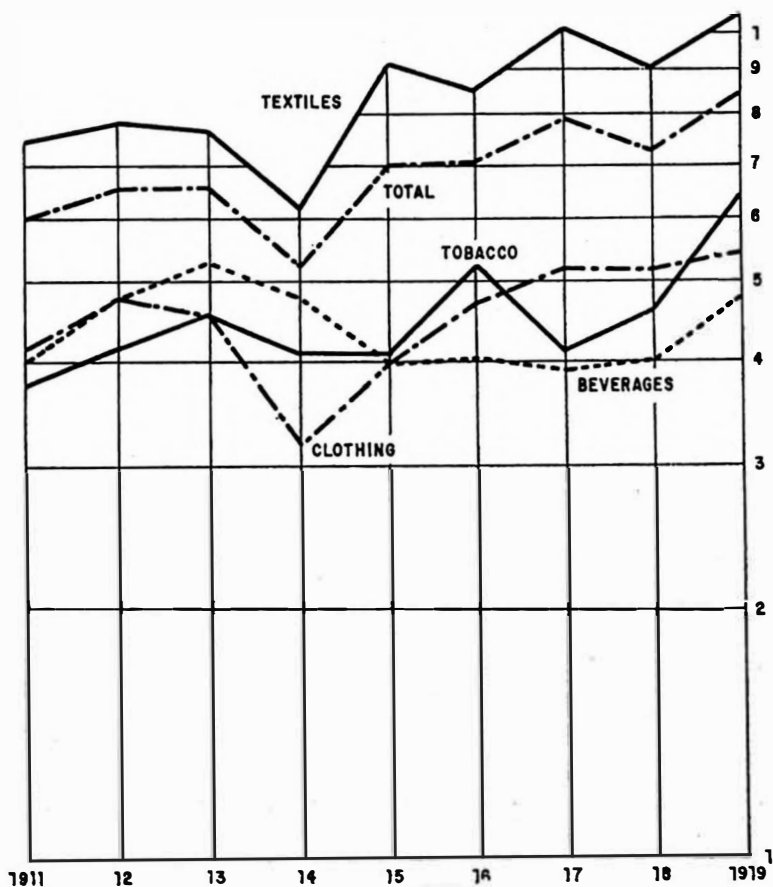
An attempt is made in what follows to show that available data do not lead to such a conclusion. Indicators of industrial output for four different industries that processed mainly local raw materials<sup>6</sup> do not show any marked acceleration over the war years (graph 16). Some oscillation did occur, mainly in the textile industry, which was the most important activity, accounting for 24.6% of the net value added of manufactures in 1907 and 29.6% in 1919.

<sup>5</sup> Originally propounded by R. C. Simonsen, *A Evolução Industrial do Brasil e Outros Estudos* (São Paulo: Cia. Editora Nacional, 1973), pp. 25, 30, and 36, and followed by C. Prado Junior, *História Econômica do Brasil* (São Paulo: Editora Brasiliense Ltda., 1945) p. 287, and N. V. Luz, *A Luta pela Industrialização do Brasil* (São Paulo: Difusão Européia do Livro, 1960), p. 145. W. Dean, in his work *São Paulo's Industrial Elite, 1890-1960* (University Microfilms, 1964), pp. 80-83, appears to have been the first to have refuted the contention that industrial growth occurred during World War I.

<sup>6</sup> And which accounted for 50% of all value added in manufacturing in 1919, according to the industrial census of 1920.

Graph 16

**BRAZIL:**  
**INDICATORS OF REAL INDUSTRIAL OUTPUT,**  
**1911 - 1919**



Source: Statistical Appendix, table 125.

Analysis of foreign-trade statistics shows that on the average the purchasing power of exports <sup>7</sup> fell 44% from 1911-1913 to 1914-1918, causing a 55.4% reduction in the quantity imported during the same two periods. This decline in the amount imported was even larger for capital goods, followed by diminishing import coefficients for raw materials, consumer goods and fuels (table 21).

It is far from apparent that a spurt of industrialization could have occurred at a time that industrial capital-goods imports were declining, since imports were virtually the only source of machinery, steel, cement, raw materials, and fuels (domestic coal was of minimal importance). What does seem to have arisen was an increase in the foreign demand for certain industrial and semi-industrial products.

The food-products industry was given a fortuitous stimulus by the war, previous investments having been made in sugar refining and in meat processing and freezing. The latter industry was also benefited by an increase in the availability of electric power, for generating capacity increased by almost 100% from 1910 to 1914 (see table 98). Exports of sugar (previously sporadic and of little importance) and of chilled and frozen meat (none before 1914) rose appreciably during the war and remained at rather high levels until 1920. Another semi-industrialized product which was exported in increasing amounts during this period was lard. This surge of food exports was due to modifications in import structure in the allied countries, where purchases of less essential items were reduced and priority was given to cereals and proteins.

Even the cotton-textile industry, which had never exported before, began to supply South Africa and Argentina in 1917; exports continued until 1923. However, these sales were unimportant compared to the domestic market (see Statistical Appendix, table 130).

It is significant that exports of these four products — sugar, frozen meat, lard, and textiles — which in 1914 accounted for less than 2% of the value of all exports, in 1918 accounted for 16%. By 1920, however, they represented less than 10% of the value of all exports.

The data presented in table 22, graph 16, and table 19 suggest that over the years 1914 to 1918 growth in industrial output occurred due to the stimulus of increased external demand for food products, rather than to increased domestic demand for products which had formerly been imported (imports of consumer goods in

<sup>7</sup> Which is the principal determinant of import capacity, though the latter also takes into account capital inflows. Export purchasing power is calculated by adjusting gross exports by the terms of trade.

Table 21

*Brazil: Imports by Type of Commodity, 1911-1918*

Period	Consumer Goods	Raw Materials	Fuels	Indicators of Industrial Capital Formation		
				Industrial Capital Goods	Domestic Steel Consumption	Domestic Cement Consumption
1911-1913	100.0	100.0	100.0	100.0	100.0	100.0
1914-1918	45.1	47.8	65.0	22.2	38.5	35.0

Sources: Statistical Appendix, tables 129 and 135.

1914-1918 averaged 45% of the level reached in 1911-1913). Existing productive capacity was probably used more fully through employment of extra shifts and extensive import substitution of certain intermediate goods whose apparent domestic consumption declined (e.g., imported pig iron and coal were replaced by domestic materials).

Table 129 in the Statistical Appendix provides data which suggest that an industrial surge took place from 1905 to 1912 rather than from 1914 to 1918, since the indicators of industrial capital formation — mainly equipment and machinery — show a sharp upward trend interrupted by the outbreak of hostilities. Imports of equipment and industrial machinery did not surpass the 1912 level until 1925. Over this period (1905-1912) the first valorization scheme was implemented, and the exchange rate remained at around 15 *mil-réis* per pound sterling, compared to the rate of 20 *mil-réis* which prevailed from 1901 to 1904. This rate favored the import of industrial capital goods; average annual imports of such goods from 1911-1913 were more than four times the 1901-1904 average.

It should be pointed out that exports of industrial and semi-industrial products practically disappeared after the war, which indicates that their prices may not have been competitive. As will be seen later, another surge of manufactured exports (particularly textiles) occurred in 1939-1945, only to cease after the war, when traditional suppliers reappeared in the market.

Finally, it may be appropriate to ask whether the industrial spurt that seems to have taken place in the years 1905-1912 may not have led to a process of industrialization had World War I not occurred.

Table 22

## Brazil: Industrial Exports, 1912-1920

Year	Quantity				Value (Contos de Réis)			
	Cotton Textiles (Million Meters)	Sugar (1 000 Tons)	Refrigerated Meat (1 000 Tons)	Lard (1 000 Tons)	Cotton Textiles	Sugar	Refrigerated Meat	Lard
1912	0	4.8	—	0	0	839	—	0
1913	0	.6	—	0	—	155	—	0
1914	0	11.3	0	0	—	2 127	0	0
1915	0	37.0	8.5	0	0	8 256	6 122	0
1916	0	40.9	33.7	0	0	20 851	28 193	0
1917	.1	127.6	66.5	10.2	112	68 889	60 133	17 745
1918	.7	106.6	60.5	13.3	1 116	94 565	60 755	26 161
1919	.7	69.0	51.6	20.0	874	57 357	56 799	39 889
1920	.8	80.3	60.9	11.2	1 649	83 764	53 614	22 459

Source: MF/SEEF, *Comércio Exterior do Brasil*, various years.  
Code: 0 = amount insignificant.

## 5

# The heyday of the export economy, 1919-1928

### 5.1 – Introduction

Taken as a whole, the twenties can be considered the heyday of the export economy, despite the trade crisis of the period 1920-1923 and the onset of the Great Depression in 1929. The result of the third coffee valorization (1922-1923) was that coffee prices stabilized at a high level. This, in turn, bettered the terms of trade for Brazil up until 1928, and allowed an increase in imports. Beginning in 1928, inflows of foreign capital, both official and private, reinforced this favorable turn in the terms of trade. The value of exports over the years 1924-1928 was the highest of the entire period 1889-1939 (1919 exports were also around the same level). Import value reached its peak for the years 1889-1939 in 1928.

Export agriculture continued to be the dynamic sector of the economy. In response to high prices, export crops doubled in output and registered an average annual growth rate of 9% (coffee predominating) between 1920 and 1928. In contrast, since prices rose very little for agricultural goods consumed domestically, their output grew only 13% over this period. The average annual rate of growth was 4.5% for agricultural production as a whole, and only 3.9% for industrial production.

In 1920 total population was approximately 30.6 million, up 71% from the population of 1900, indicating that over this 20-year span the population increased at the rate of 2.7% per annum. The Northeast remained the most populated region, though it accounted for only 36.7% of the national population in 1920, down 2% from its share in 1900. The state of São Paulo and the southern regional continued to grow, together accounting for 23.4% of the national population in 1900, compared to 26.5% in 1920.<sup>1</sup>

<sup>1</sup> See app. B, "Demographic Trends."

Immigration accelerated as coffee prospered. During the twenties, the country received 840 thousand immigrants, a level exceeded only in the decade 1891-1900, when more than 1.1 million arrived. In the year 1926 alone, 100 thousand immigrants entered Brazil.<sup>2</sup>

The era of the highway began in the twenties. By the end of the decade, Brazil possessed a road network of some 121.8 thousand kilometers, or four times the existing railroad track. The railroads added only 3.7 thousand kilometers in this period, in comparison to 6.2 thousand kilometers in the previous 10 years (1911-1920). In 1930, the track in use totaled 32.5 thousand kilometers.<sup>3</sup>

As far as monetary, exchange-rate, and fiscal policy are concerned, the decade was characterized by alternating inflation and deflation. This slowed down overall growth. From 1920 to 1926, for example, it is estimated that GNP grew by 12%, while from 1926 to 1928 it increased by 26%. Due to the improvement in the terms of trade, real national income grew more than GNP. It should be noted, however, that from 1924 to 1926, both real national income and GNP stagnated. In the period 1920-1928, the average annual rates of growth of GNP and national income were 4.7% and 6.3%, respectively.

Since it was export agriculture – and mainly the coffee sector – that enjoyed high prices in this era, it is probable that a large part of the increase in real income accrued to that sector.

## 5.2 – Monetary and fiscal policies

The depression of the twenties in the industrialized countries was reflected in a decline in the price and volume of Brazilian coffee exports. In turn, this led to an exchange devaluation, alerting the government to the rigidities of the banking system, which was causing problems not only in financing coffee operations, but in other transactions as well. It was argued that this was due to the lack of a lender of last resort,<sup>4</sup> which caused many banks to operate with at least 50% of their reserves on hand. The remedy provided was the creation of a rediscount and issue department (Carteira de Redescontos e Emissão) within the Banco do Brasil. This department was supposed to produce the following results: (1) increase the elasticity of the money supply, (2) reduce bank

<sup>2</sup> *Ibid.*

<sup>3</sup> Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil*, 1939-1940, p. 275.

<sup>4</sup> The monograph "The Economic Consequences of Monetary, Exchange and Fiscal Orthodoxy in Brazil, 1889-1945," especially prepared for the present study by C. M. Peláez, was used extensively in what follows.



reserves in order to improve the difficult monetary situation, and (3) lower interest rates, so as to hasten economic recovery.

The Carteira de Redescontos e Emissão could discount bills of exchange and promissory notes endorsed by banks with capital of more than five thousand *contos de réis*. It could not discount speculative commercial papers, however. The interest rate was 6%, and loans were made for four months at the outset; the commercial papers discounted were exchanged for promissory notes having legal force. Subsequently, the treasury issued notes directly, though these were printed by the Banco do Brasil. The initial limit for such issues was 100 thousand *contos de réis*; this limit was later raised to 400 thousand *contos*.

The goals of the Carteira were not reached. Commercial banks derived little benefit from the new arrangement because it was generally used only for transactions with the federal government. Consequently the Carteira was abolished in 1923, and the Banco do Brasil was again given the monopoly of note issue.

The economy had not completely recovered from the previous depression, and it was believed that the remedy for this lay in a restriction of the money supply. The Banco do Brasil was accordingly reorganized to deal with this problem. Congress authorized the executive branch to consolidate the federal debt by means of credit operations and the transfer to the Banco do Brasil of £ 10 million from the funds used to back the national currency. The treasury transferred its monopoly of note issue to the Banco do Brasil for a period of 10 years. The Banco's issues were to be backed by one-third in gold and two-thirds in commercial papers. If the reserves of the Banco should rise to the level of 100 thousand *contos de réis*, it was to begin taking treasury notes out of circulation using funds from its own profits and from the dividends on government stock in the Banco. These funds were to be used to buy gold at the rate of 12 pence per *mil-réis*. The notes of the Banco were legal tender and were to be exchangeable for gold if the rate set was maintained for three consecutive years.

The Banco do Brasil now became the financier of the government. In each budget, the federal government was to specify the credit it needed, up to a limit of 24% of anticipated receipts. This loan was to be repaid in the course of the budget year.

This monopoly of issue, like so many other monetary reforms in Brazil, did not last very long. In 1925 the Banco do Brasil stopped issuing money. Here the causal factor was the monetary and fiscal doctrine of the government that took office in 1926.

It is useful to remember that in Brazil the years 1922-1925 were a period not only of a coffee crisis — which led to the valorization of 1922-1923 — and a lessening of the influx of capital and migrants, but also of political disturbances in 1922 and 1924. All these events had prejudicial effects on the economy.

In December 1926 a new monetary reform was decreed. Brazil was to return to the gold standard, with full convertibility to gold at the rate of 200 milligrams per *mil-réis*. Financial backing was to be obtained by using stocks of gold, budget surpluses, and credit operations, among other means. A new exchange stabilization fund was created — the Caixa de Estabilização, which was later incorporated into the Banco do Brasil. The Caixa was to hold gold stocks, issuing notes to purchase gold supplies. Part of import duties were to be collected in gold at the new parity. As was the case with the first stabilization fund, the exchange rate was initially set slightly above the market rate. This was done to effect a slight depreciation, after which the rate was to be stabilized. A single rate was set for both purchases and sales of gold. This rate was 40 *mil-réis* to the pound sterling, a rate which soon became known in commercial sectors as the “vile rate” (*taxa vil*).

Restrictions on the money supply and exchange stabilization were complemented by a policy of balance budgets, as will be seen below. Once again, Brazil adopted the model offered by other countries with different problems and institutions.

The Caixa de Estabilização was quite successful in the initial goal of slightly depreciating and then stabilizing the exchange rate. Large amounts of foreign capital were sent to Brazil up until the coffee crisis of 1929: £ 10 million to the exchange department of the Banco do Brasil and £ 20 million to the Caixa. However, by maintaining the gold standard during the crisis of 1929, Brazil wound up losing all its reserves of gold and exchange as capital fled.

Balanced budgets had been a principal goal of fiscal policy since 1900, but this goal was rarely achieved. Surpluses occurred only in the years 1902-1903 and 1905-1907. Nevertheless, efforts were made to balance budgets, as can be seen by comparing projected budgets with actual expenditures and receipts.

The period 1919-1922 was characterized by the largest budget deficits registered up to that time. There was no tendency for these deficits for 1921 and 1922 were quite large. The fall in receipts which occurred in 1921 was a reflection of the international recession, which affected the domestic economy.

Over the years 1923-1926, however, a noticeable effort was made to balance the budget. In these years — excepting 1925 — actual

expenditures were less than budgeted expenditures, primarily reflecting drastic cuts in government investment. The result of these efforts was a sharp reduction in deficits.

Real success was achieved in 1927-1929, when there was almost no discrepancy between planned and actual expenditures, and receipts actually exceeded predictions. The result was a budget surplus in 1928 and 1929, something not seen in Brazil since 1907. Table 23 illustrates the evolution of the federal budget from 1919 to 1929.

Table 23

*Brazil: Federal Finances, 1919-1929*  
(1 000 Contos de Réis)

Year	Budgeted			Actual		
	Receipts	Expenditures	Surplus or Deficit	Receipts	Expenditures	Surplus or Deficit
1010	716	673	43	626	932	-306
1020	737	787	-50	922	1 226	-304
1021	1 025	1 041	-15	891	1 286	-395
1022	1 076	...	...	972	1 428	-456
1023	1 244	1 733	-489	1 258	1 405	-147
1024	1 385	1 854	-469	1 511	1 630	-119
1025	1 385	1 424	-39	1 734	1 756	-22
1026	1 562	2 061	-499	1 645	1 824	-179
1027	1 798	1 905	-107	1 960	2 008	-48
1028	2 089	2 080	9	2 207	2 018	189
1029	2 210	2 144	66	2 305	2 225	80

Source: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBRE/CEF).

Code: ... = not available.

Throughout the period 1919-1929, import duties and taxes on internal transactions were the main sources of federal receipts. On the average, they accounted for 75% of tax collections, with import duties comprising about two-thirds of this. The income tax was introduced in 1924, but in 1929 it still accounted for only 3.8% of total tax receipts.

As regards expenditures, the pattern begun in 1911 continued from 1919 to 1922, i. e., public investments continued at high levels, accounting for an average 25% of government expenses in each of these four years. Current expenditures were held down, and large sums were spent on amortizing the public debt (an average 23.6% of total outlays).

Then, in the period 1923 to 1929, expenditures on public capital formation fell abruptly in both relative and absolute terms;

on the average, they represented only 5.3% of total outlays. On the other hand, current expenditures rose to an average 60.7% of the annual totals, and debt amortization to 29%. The restrictive monetary and fiscal policies of these years were clearly carried out at the cost of public works.

Table 24 illustrates this aspect of budgetary policy. Note that despite the price inflation of approximately 56% from 1919 to 1929, gross fixed capital formation in the latter year was less than half what it had been in 1919. Expenditures on gross capital formation had not been less than 52 thousand *contos de réis* (the 1923 figure) since 1905.

Table 24

*Federal Government: Gross Fixed Capital Formation, 1919-1929*

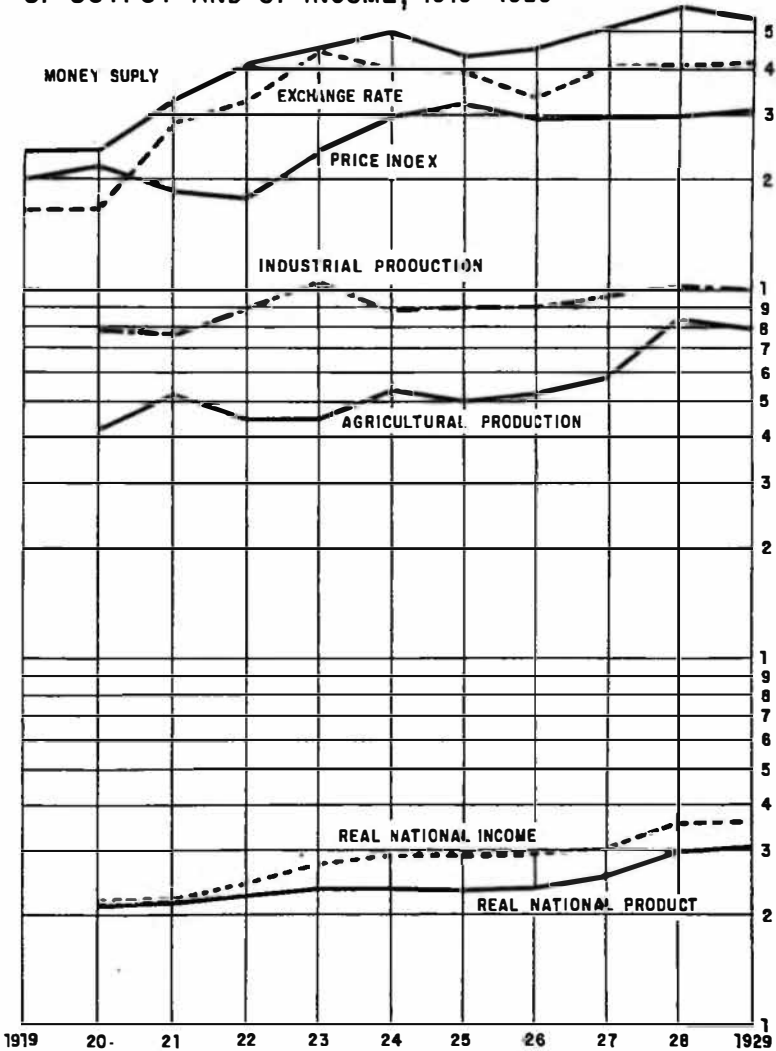
Year	Value (1 000 <i>Contos de Réis</i> )	% of Total Expenditures
1919	240	25.6
1920	296	24.1
1921	330	25.7
1922	367	25.7
1923	52	3.7
1924	92	5.6
1925	125	7.1
1926	151	8.3
1927	75	3.7
1928	107	5.3
1929	106	4.8

Source: FGV/IBRE/CEF.

Graph 17 and the last column of table 23 depict the interplay of monetary, fiscal, and exchange policies from 1919 to 1929. The exchange rate was apparently an important factor in industrial development, since industrial production did not show an upward trend until the policy of exchange stability was abandoned in 1920. Moreover, the exchange appreciation stemming from the deflationary policies followed in 1923-1926 seems to have caused industrial output to decline in 1924 and stagnate until 1926. Beginning in 1927, the Caixa de Estabilização depreciated the exchange rate; the goal was to protect coffee growers, but industry also seems to have benefited.

Graph 17

**BRAZIL :**  
**INDICATORS OF EXCHANGE-RATE AND MONETARY POLICIES,**  
**OF OUTPUT AND OF INCOME, 1919-1929**



Source: Statistical Appendix, tables 114, 120, 121, 126 and 140.

In 1920 and 1921 the money supply grew rapidly, and prices fell as a result of the depression in the industrialized nations. Yet the impact of this depression was moderated by temporary abandonment of the policy of austerity. The money supply grew by 45%, and the rediscount window of the Banco do Brasil opened for business. Budget deficits amounting to almost half the value of receipts forced new issues.

From 1923 on there was a return to deflationary policies and balanced budgets. The growth of the money supply was restricted in 1923-1924; and when the supply fell in 1925-1926, prices declined. Budget deficits were reduced, and surpluses were recorded in 1928 and 1929.

The period 1919-1929 was characterized by alternating inflationary and deflationary policies. This obviously increased uncertainty and made investment a risky affair, thereby retarding economic growth.

Gross national product grew by only 12% from 1920 to 1926. However, due to an improvement in the terms of trade, real national income grew by 31% in the same period. In 1927 and 1928, in part stimulated by the exchange depreciation of 1927 and the subsequent stabilization, both GNP and national income achieved their highest growth rates of the decade.

### 5.3 — Agricultural production

At the beginning of the twenties, the Brazilian economy was still predominantly agricultural. The economic census of 1920 shows that in 1919 net farm output accounted for about 79% of the economy's total physical product.<sup>5</sup>

Agricultural production was heavily oriented toward foreign markets. The most important crop was coffee, followed by cotton, tobacco, and cocoa. In 1919, these four crops accounted for approximately 60% of total value of agricultural production and 50% of total cultivated area.<sup>6</sup>

Moreover, analysis of the indices of the physical volume of agricultural output reveals that this period was one in which the importance of the export sector increased. As table 25 indicates, production for export grew at an annual rate of 9.0% in 1920-1928,

<sup>5</sup> Total physical output here means the sum of net value added of agricultural and industrial output. See the estimates of physical product in the Methodological Appendix.

<sup>6</sup> Data from the Ministério da Agricultura, Serviço de Estatística da Produção.

while the rest of the agricultural sector expanded only 4.5%. This growth in export agriculture, especially coffee, was stimulated by a faster rise in prices for export crops than for crops for domestic consumption. In the case of coffee, the differential was the fruit of a policy of defending coffee prices in the world market.

Table 25

*Brazil: Annual Rates of Growth of Agricultural Output and  
Agricultural Prices, 1920-1928*  
(%)

	Real Output	Prices
Crops	5.2	5.4
For the Domestic Market	1.5	3.1
For Export	9.0	8.9
Raw Materials for Industry	.0	— .2
Livestock	1.7	3.5
Extractive Activities	2.9	3.1
Total	4.5	5.3

Source: Statistical Appendix, table 121.

Prediction of a bumper coffee crop in 1920-1921 led to a precipitate decline in prices and renewed valorization programs. The state of São Paulo used part of the profits left from the preceding valorization scheme to buy part of the stocks in Santos, and then almost immediately obtained a loan (£ 2 million, US\$ 10 million, and 18 million florins)<sup>7</sup> to back the state's credit institutions, which provided capital for coffee production. The federal government entered this third valorization scheme in March 1921. Initially, the government provided credit through the Banco do Brasil, which by the end of 1921 had purchased 1.5 million bags of coffee. Then, in 1922, it obtained a loan of £ 9 million to consolidate its coffee liabilities.

The Banco do Brasil was assigned an important role in this valorization effort, which was to last until February 1924. All in all, more than 4.5 million bags of coffee, equal to a little less than one-third of the 1920-1921 crop, were taken off the market during the course of the scheme.

The third valorization scheme helped institutionalize valorization programs. In fact, even the words used to describe government actions were changed, the phrase "permanent support"

<sup>7</sup> Peláez, "Economic Consequences," pp. 96-109.

(*defesa permanente*) being applied to the bureaucracy concerned. In 1921 it had been proposed that an institute for the permanent support of coffee be created, on the grounds that irregular crops and shortages of marketing credit — required to hold stocks until prices rose — led to prices that did not reflect demand accurately. In June 1922 federal legislation provided for such a program. While this law was never implemented, the idea interested the state of São Paulo, which set up a permanent-support program with its own resources.

Graph 18 illustrates the circumstances which gave rise to the third valorization scheme. A large increase in production in 1920-1921 was accompanied by a major decline in world coffee prices, which was partially offset in Brazil by exchange depreciation. At the beginning of the valorization effort, the money supply increased considerably as a result of the liberal monetary and fiscal policies adopted. After 1923, balanced budgets and restrictions on growth of the money supply stabilized the exchange rate.

At the end of 1924, the São Paulo institute for the permanent defense of coffee was created (originally called the Instituto Paulista da Defesa Permanente do Café, its name was changed shortly thereafter to the Instituto do Café de São Paulo). This institute was financed through a "gold" tax levied on coffee transported within the state; a foreign loan was obtained with the pledge of these tax revenues. The institute had five goals: (1) to regulate the supply of coffee to Santos; (2) to promote agreements with other coffee-growing states, with a view to extending the transport tax to the rest of the country; (3) to provide credit to coffee growers and merchants, with coffee stocks used as security for loans; (4) to purchase coffee in Santos or elsewhere when required by market conditions; (5) to organize coffee statistics and advertising.

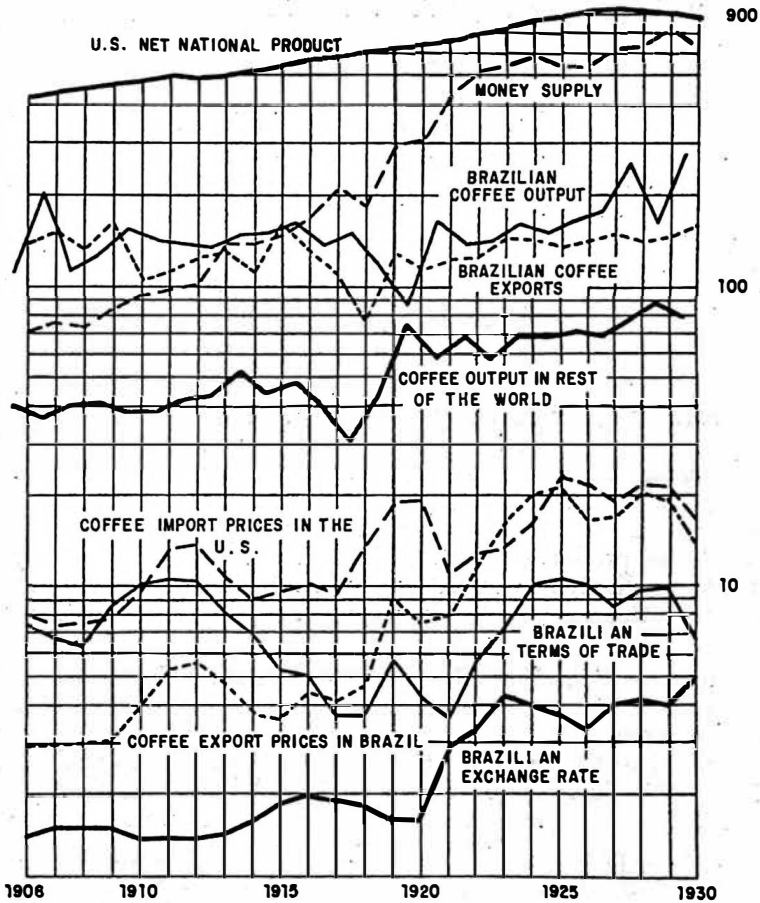
When the program began, São Paulo stocks amounted to nearly five million bags. By mid-1925, this had been reduced to 1.8 million bags, but inventories subsequently mounted until they reached 3.3 million bags in 1927. The size of these inventories was one reason the state of São Paulo was chosen to administer the permanent-support effort. In the first phase of valorization, the level of coffee stocks in the regulatory institute's warehouses was relatively low, since current production was easily exported in the following year. Little attention was given to problems of limiting supply.

However, in 1927-1928 the institute had to intervene again, as the crop was enormous — almost 10 million bags more than the previous record output. The institute concentrated on three objectives: limiting sales, advertising, and providing credit. Sales were limited through an agreement between the states of Minas Gerais, Rio de Janeiro, Espírito Santo, Paraná, Bahia, Pernambuco and São Paulo



Graph 18

**BRAZIL :**  
**VARIABLES IN THE COFFEE MARKET,**  
**1906 - 1930**



Source : C. M. Péláez, "An Economic Analysis of the Brazilian Coffee Support Program, 1906 - 1945: Theory, Policy and Measurement," in Essays on Coffee and Economic Development (Rio de Janeiro: Instituto Brasileiro do Café, 1973), table M.

to control the rate of coffee shipment to the ports. Advertising was financed through a 200-réis tax on each bag. The Banco do Estado de São Paulo provided credit to coffee growers in the form of an advance of 60 mil-réis per bag.<sup>8</sup>

The most important of these measures was doubtless the loan program. The amount to be advanced was determined on the basis of the price of coffee in storage, net the cost of production. Thus, the institute did not take into account the substantial reduction in cost of production per bag which occurs in abnormally large crops. Meanwhile, the coffee growers did not realize that continued accumulation of coffee stocks would bring down the price of coffee; the flood of money they received as credit made them look upon the amount advanced per bag as a valid indicator of future coffee prices. Credit on coffee stocks was therefore utilized to plant more coffee trees. São Paulo bankers saw their situation menaced by the prospect of insolvency in the coffee sector.

Another important aspect of the valorization scheme was the protection it gave to inefficient growers in the state of São Paulo. Table 26 provides estimates of the costs of coffee production in São Paulo, by region and by average age of coffee tree. Coffee trees in old regions were more than 35 years old; those in the intermediate region were between 20 and 35 years old. Neither old nor intermediate regions had any coffee trees less than 20 years old. The price policy of the institute did not vary according to whether coffee came from an old, intermediate, or new region. In new regions, the advance on coffee amounted to about half the cost of production; in intermediate and old regions it was about one-third of the production cost. This difference is explained by the fact that productivity was extremely low in the old regions due to primitive techniques, high labor costs, and a greater incidence of diseases.

The protection afforded to inefficient growers during more than two decades seriously damaged the comparative advantage of Brazil in coffee production. The lack of quality control in the valorization program led to the export of eight million bags of low-grade coffee in 1927-1928. This coffee was in such bad condition that public-health authorities in New York ordered part of it dumped in the sea.

In sum, price policies were the cause of the debacle which occurred after 1929. Early valorization schemes were apparently successful, bumper crops being followed small crops as trees were worn out in large numbers and required some time to recover. For

<sup>8</sup> The Banco do Estado de São Paulo was created on 4 November 1926, with capital obtained through a loan of £ 10 million from Lazard Brothers. Peláez, "Economic Consequences," p. 104.

Table 26

*São Paulo: Cost of Coffee Production and Number of  
Coffee Trees by Region, 1928*

Region	Cost of Production (Mil-Réis)		Number of Trees in Region (Million)
	Per Arroba <sup>a</sup>	Per Bag	
Old	42.8	171.2	600
Intermediate	35.8	143.2	300
New	32.7	131.8	100

Source: J. C. Muniz, "O Custo de Produção de Café em São Paulo, in *Jornal do Comércio, Retrospecto Comercial*, 1928, pp. 316-22.

Note: Cost of production includes labor, transportation, marketing, administrative expenses, interest on capital, and depreciation.

<sup>a</sup> 1 arroba = 14.4 kg or 31.7 lbs.

example, the valorization program of 1906 would surely have failed if the bumper crop of 1906-1907 had been followed by large crops. When the valorization schemes were made permanent in the twenties, however, the situation changed. Since coffee growers thought the state would resolve any problem of overproduction, they began to increase capacity rapidly. The 1929-1930 crop was 28.9 million bags, and during the thirties Brazil produced an average of 20 million bags of coffee per year. This high level of production was the result of the large-scale planting of coffee trees which took place at the end of the twenties in response, as indicated, to the artificial prices created by the São Paulo institute. Thus, the permanent-support scheme created a permanent crisis for coffee. This is an example of how market intervention aimed at protecting the wealth of one social class at the expense of others can seriously damage the economy as a whole.

Graph 18 indicates the sharp decline in coffee prices in 1929-1930, a trend which had begun in 1928. Both the money supply and the exchange rate were stabilized. In 1930, however, the money supply was reduced, and it proved impossible to maintain the existing exchange rate. Actually, the money supply was reduced in a vain effort to maintain the exchange rate. In view of the large increases in coffee production in 1927-1928 and again in 1928-1929, it can be concluded that the crisis in the coffee sector would have gone out of control even if the Great Depression had not occurred.

## 5.4 – Foreign trade

The increase in coffee prices after 1917 (the result of the valorization program of 1917 and the severe frost of 1918) and the recovery of demand with the end of World War I led to brisker foreign trade. The index of terms of trade, which had been falling, leveled off in 1918 and began to improve in 1919, with the result that a surplus appeared in the balance of trade, despite increased demand for imports. The exchange rate, which had appreciated with the adoption of a new policy in 1917,<sup>9</sup> now rose even more (i.e., Brazilian currency became worth more in foreign currency). This led to an increase in imports in 1920, the main part of which were capital goods – imports of which had been at extremely low levels – and consumer goods (see graph 19). When coffee prices subsequently fell and the level of exports declined in response to a depression in the industrial countries, imports remained at high levels and a deficit in the balance of trade resulted. Heavy capital remittances combined with the foreign-trade situation caused a deficit in the balance of payments.<sup>10</sup>

Problems persisted in foreign trade until 1923. Coffee prices declined until 1923, when the effects of the third valorization program began to be felt. The index of the terms of trade consequently remained at levels below those prevailing before the war. The terms of trade were sustained somewhat by high levels of non-traditional exports up until 1923; these exports, mainly frozen meat, had begun during the war. The deficit in the balance of trade in 1921, coupled with a deficit in the balance of payments due to capital remittances,<sup>11</sup> led to exchange depreciation. The traditional expedient was applied and new foreign loans were obtained, resulting in an increase in overall foreign debt of more than 15% in 1921-1922.

Despite improvement in the terms of trade after the third valorization scheme in 1922-1923 and surpluses in the balance of trade, exchange difficulties continued due to the burden of service on the foreign debt. Pressure was especially severe in the period between coffee crops, when little was exported. It had become difficult to obtain foreign loans,<sup>12</sup> so the government was obliged to devise new measures to avoid depreciation and fluctuations in the exchange rate.<sup>13</sup> Basically, three steps were taken: (1) exchange receipts from

<sup>9</sup> *Jornal do Comércio (JC)*, *Retrospecto Comercial*, 1910, p. 65.

<sup>10</sup> *JC*, *Retrospecto Comercial*, 1920, pp. 23-25.

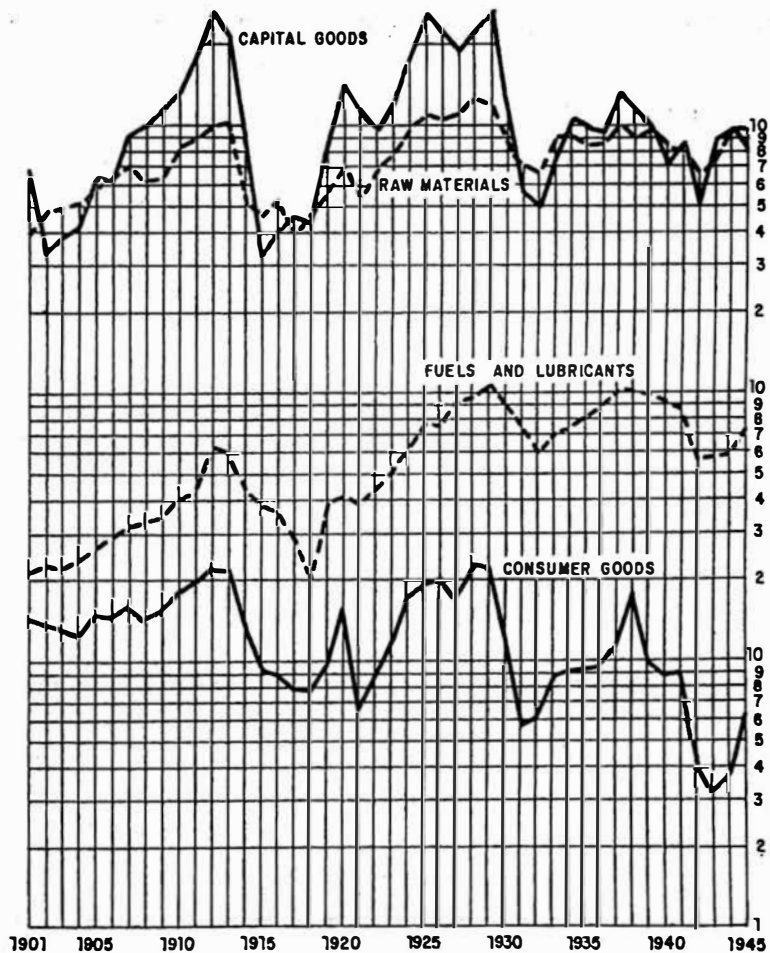
<sup>11</sup> *Banco do Brasil, Relatório*, 1923, p. 5.

<sup>12</sup> *Ibid.*, p. 8.

<sup>13</sup> *Ibid.*, pp. 15-18.

Graph 19

**BRAZIL :**  
**IMPORT QUANTUM INDICES BY TYPE OF COMMODITY,**  
**1920 - 1929**



Source : Statistical Appendix, table 133.

coffee sales were sold in a more regular fashion, (2) a regulatory fund was established at the Banco do Brasil, and (3) purchases of foreign exchange for debt service were split up.

From 1923 till 1928, the level of foreign trade increased (see graph 6). Maintenance of world coffee prices at high levels through control of supply resulted in a healthy recovery of the terms of trade. This, coupled with official and private capital inflows, allowed the economy to increase imports (see graph 19) and pay debt service of extremely large amounts. Some £ 20 million was paid in debt service in one year, in fact. The exchange market was stabilized in 1923 after undergoing a period of strain from 1920 to 1923, and a valorization scheme that lasted from 1923 to 1926 was later carried out by the Banco do Brasil to protect certain domestic interests. Beginning in 1927, the exchange rate was held at 40 *mil-réis* to the pound by the Caixa de Estabilização. This strengthened the position of coffee exporters and stimulated an expansion of coffee growing, while simultaneously encouraging industries that processed local raw materials through raising the price of imported substitutes.

## 5.5 – Industrial production

At the beginning of the twenties, the structure of Brazilian manufacturing had not changed much from the pattern of 1907, as table 27 illustrates. It was basically designed to produce final consumer goods.

Table 27

*Brazil: Share of Principal Industries in Net Value of Total Output, 1907 and 1919 (%)*

Sector	1907	1919
Textiles	24.6	29.6
Clothing and Footwear	8.0	8.7
Food Products	19.1	20.5
Beverages	6.0	5.7
Total	57.7	64.5

Sources: Estimates derived from the industrial survey of 1907 and the industrial census of 1920.

Note: Comparison of absolute values from the two data sources would not be valid, since the 1907 survey emphasized firms employing more than five workers. However, it does seem acceptable to compare the structure of output, or, in this case, the shares of the leading industries.

By the end of the decade, this pattern of industrial output still remained essentially the same. Although data on the composition of industrial output are scarce, it is possible to obtain a general picture of this structure through grouping data on imports by sector and type of commodity. This is done in tables 28 and 29.

Table 28

*Brazil: Imports by Industrial Sector, 1901-1929*  
(% of Total)

Sector	Average for Period		
	1901-1910	1911-1920	1920-1929
Mining	6.2	8.8	5.5
Manufacturing (Principal Sectors)	83.6	78.7	80.8
Metallurgy	12.3	13.0	13.8
Machinery	4.8	4.7	7.4
Electrical Equipment	1.0	1.8	3.0
Transport Equipment	2.6	4.0	8.0
Chemicals	5.6	9.0	11.9
Textiles	15.1	10.9	12.1
Food Products	19.4	12.8	8.9
Beverages	6.0	4.1	2.1
Nonmanufactured Products*	10.2	12.5	13.7
Total	100.0	100.0	100.0

Source: Estimates based on data provided by the Ministério da Fazenda, Serviço de Estatística Econômica e Financeira (MF/SEEF).

- \* Principally unmilled wheat.

It should be noted in table 29 that the relative importance of consumer goods fell appreciably throughout the period, while imports of raw materials and capital goods for industry increased their share. Among the industrial branches in which imports declined most relative to the others are textiles, food products and beverages. Taken together, these three groups accounted for an annual average of 40.5% of all imports in 1901-1910, but only 23.1% in 1920-1929. Cotton textiles alone represented 15.4% of all imports in 1911-1913, but only 7% in 1928-1929 (see table 130 in the Statistical Appendix). The growth in the relative importance of nonindustrialized products is largely explained by unmilled wheat imports having replaced flour imports.

Table 29

*Brazil: Imports by Type of Commodity, 1901-1929*

Type of Commodity	Average for Period		
	1901-1910	1911-1920	1920-1929
Consumer Goods	35.2	27.0	20.8
Durable	5.8	7.0	10.2
Nondurable	29.4	19.8	10.6
Fuels and Lubricants	8.2	12.5	11.5
Raw Materials	47.1	50.4	53.7
Capital Goods	8.8	10.1	14.0
For Industry	2.2	3.1	3.9
Unclassified Goods	.7	—	—
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Same as table 28.

These changes in import structure suggest that, with respect to consumer goods, Brazilian manufactures gained in relative importance throughout the twenties. However, it seems plausible that at the end of the decade Brazilian manufacturing was still producing mainly consumer goods. This is corroborated by the fact that heavy industry, such as steel and cement, did not really begin to grow until the mid-twenties.

It was during the twenties that the state of São Paulo began to rapidly supplant the Distrito Federal and the state of Rio de Janeiro as the major industrial center of the country. This trend was already noticeable in the period 1907-1919 (table 30).

In these years, the tremendous increases in available electrical energy allowed industry to mechanize. Electric power was obtained from new plants on the rivers of the São Paulo — Rio de Janeiro region.<sup>14</sup> Installed generating capacity increased more than sixfold from 1907 to 1919; then from 1919 to 1929 it rose by 419 thousand kilowatts, or more than doubled. Installed horsepower in manufacturing jumped from 109 thousand horsepower in 1907 to 363.3 thousand

<sup>14</sup> Large-scale development of electric power was basically the result of the efforts of two foreign firms, which up until the fifties continued to supply almost two-thirds of the country's needs. These companies were Brazilian Traction, Light & Power Co. (Canadian) and Empresas Elétricas Brasileiras (U.S.).



Table 30

*Brazil: Value of Industrial Production and Industrial Employment by State, 1907 and 1919*  
(% of National Total)

State	1907		1919	
	Value of Production	Employment	Value of Production	Employment
Distrito Federal	30.3	23.4	22.4	20.3
Rio de Janeiro	7.5	8.9	6.1	6.1
São Paulo	15.9	16.0	33.1	30.6
Rio Grande do Sul	13.5	10.1	11.8	9.0
Others	32.8	41.6	26.6	34.0
<b>Brazil</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Sources: Centro Industrial do Brasil, *O Brasil: Suas Riquezas Naturais, Suas Indústrias* (Rio de Janeiro: Oficinas Graphicas M. Orosco & C., 1907a 1909), 3: 265, and "Quadros Estatísticos," 148; Instituto Brasileiro de Geografia e Estatística (IBGE), *Recenseamento Geral do Brasil, 1920*, vol. 5: *Indústria*.

horsepower in 1919,<sup>15</sup> for an increase of over 200%. Of this capacity, electrical power accounted for only 4.2% in 1907, but for 47.2% in 1919.<sup>16</sup> Installed horsepower per worker rose from .72 in 1907 to 1.32 in 1919.

In terms of the average annual growth rate, the twenties were sluggish compared to the period 1911-1919, as table 31 indicates.

This low rate of growth of industrial output was primarily the outcome of the slow expansion of the textile industry; the rapid-growth activities contributed only a small part to total industrial production. Table 126 in the Statistical Appendix permits more detailed discussion of the evolution of industrial output in this period. Whereas 1920 and 1921 were years of stagnation, 1922 and 1923 witnessed a boom in total industrial production. As a matter of fact, 1923 was the high-water mark of the twenties; the level

<sup>15</sup> Data from the censuses of 1907 and 1920.

<sup>16</sup> In comparison, in the United States, electric energy provided the following percentages of total industrial horsepower: 1904, 62.2%; 1909, 74.5%; 1919, 82.0%. See H. Jerome, *Mechanization in Industry* (New York: National Bureau of Economic Research, 1934), pp. 215-17.

Table 31

*Brazil: Yearly Growth Rates of Industrial Output by Sector, 1911-1928*  
(%)

Sector	1911-1919	1920-1928
Textiles	4.5	1.9
Clothing and Footwear	3.3	5.6
Beverages	3.5	5.2
Tobacco	6.0	3.9
Nonmetallic Minerals	...	.6
Metallurgy	...	7.5
Chemicals	...	8.8
Perfume, Soap, and Candles	...	11.4
Food Products	...	5.0
Total	4.3	3.6

Sources: Statistical Appendix, tables 125 and 126.

Code: ... = not available.

attained in 1923 was not surpassed until 1933, when the economy began to recover from the Depression. Stagnation returned in 1924-1926, with production levels 16% below those of 1923. The years 1926-1927 marked a recovery, and in 1929 the Depression began. It is instructive to compare the troughs and peaks in textile production those in overall industrial output; the two indices move together, as might be expected given the relative importance of textiles (30% of total output in 1919).

Fluctuations in output can be explained by reference to the changes in general economic and financial conditions briefly outlined above. The years 1922-1923 — marked by budget deficits, an expanding money supply, rising prices, and a falling exchange rate — were also the years in which industrial output reached its highest levels. On the other hand, the outcome of the deflationary policies of 1924-1926 was industrial stagnation. When the money supply began to grow again in 1927-1928 and the rate of exchange depreciated (with a subsequent period of stability), industrial production recovered, though its growth rate did not match that of 1922-1923. Graph 17 illustrates these relationships.

If the quantum index of imports of industrial capital goods is taken as a proxy for capital formation in the industrial sector, then it appears that changes in exchange-rate policy affected capital formation as well. During the exchange devaluation of 1921-1923 industrial output rose, reaching a peak in 1923. Capital-goods imports

were adversely affected by this depreciation, declining through 1922, then rising in 1923. During the period of exchange stability that industrial output rose, reaching a peak in 1923. Followed, industrial production ceased to grow, while capital imports increased rapidly, reaching a high in 1925. Capital-goods imports declined in 1926-1927, then recovered in 1928-1929; the exchange rate was devalued in 1927 and subsequently stabilized. Graph 20 displays the possible relationships between industrial output, industrial investment, and the exchange rate.

By the end of the twenties, Brazilian textile production amounted to more than 93% of apparent domestic consumption, as demonstrated in table 130 in the Statistical Appendix. Although it has been argued that tariff protection was nil by this time due to the effects of inflation,<sup>17</sup> it seems reasonable to suppose that it was sufficient to shelter domestic production of coarse fabrics, which made up the bulk of national textile production.<sup>18</sup>

Table 130 also demonstrates that textile production declined from 1922 to 1931. Oddly enough, the largest imports of looms, machines for stamping cloth, and accessories occurred between 1923 and 1926. Comparable levels of imports had not been observed since 1913.<sup>19</sup> Explanations that have been suggested for this decline in cotton-textile production include British dumping and declining real rates of tariff protection.<sup>20</sup> Since imports of cotton textiles never surpassed 8% of apparent domestic consumption from 1924 to 1930, and since domestic output was basically coarse fabric, it seems untenable to maintain that competition from foreign imports caused a decline in Brazilian output. Absolute levels of textile imports, it may be noted, did not vary over the period 1925-1927. One possibility is that the stimulus given imports by exchange appreciation from 1923 to 1926, coupled with industrialists' expectations of growing sales, encouraged excessive importation of machinery, thus increasing productive capacity beyond demand. Another plausible hypothesis is that domestic demand for finer textiles began to appear, and that existing plants could not be adapted to meet this changing requirement.

During the twenties, two new basic industries appeared in Brazil: steel and cement. By 1918, Brazilian pig-iron output had reached 11.7 thousand tons per annum. This iron was produced in small

17 N. V. Luz, *A Luta pela Industrialização do Brasil* (São Paulo: Difusão Européia do Livro, 1950), p. 183.

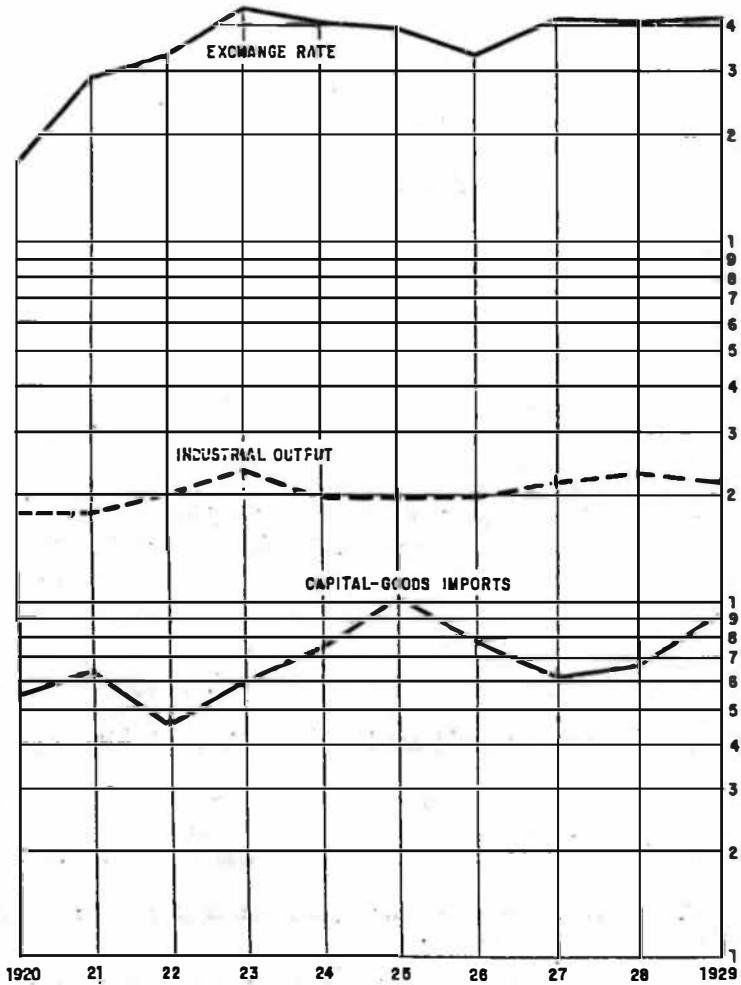
18 See app. E, "The Protection of Industry."

19 Data from the Ministério da Fazenda, Serviço de Estatística Econômica e Financeira.

20 "Super-produção Industrial?" *Observador Econômico e Financeiro*, Ano 2, n.º 14 (March 1937): 91-103.

Graph 20

**BRAZIL :**  
**EXCHANGE RATE, INDUSTRIAL OUTPUT, AND**  
**CAPITAL - GOODS IMPORTS, 1920 - 1929**



Source : Statistical Appendix, tables 120, 128 and 130.

inefficient furnaces isolated from markets. Still, it satisfied national requirements, as measured by apparent domestic consumption. It should be remembered that imports were not available at this time due to the war. Beginning in 1920, the import situation was normalized and domestic production came to supply an average of about 76% of national needs, with broad fluctuations occurring.

The production of steel ingots did not begin until 1924.<sup>21</sup> Output was 4.5 thousand tons in 1924, and rapidly rose to 26.8 thousand tons in 1929, an amount which represented 75% of the national demand. By way of contrast, domestic production had satisfied only 38% of the demand in 1924.

Production of rolled steel began in 1926, when a modest 16 thousand tons were milled. By 1929, nearly 30 thousand tons were being produced annually. On the average, domestic production did not satisfy more than 5% of demand from 1926 to 1929.

The fuel used in these operations was charcoal, since imported coal was quite expensive and Brazilian coal deposits were of low quality and located far from the furnaces. Since the national steel market was small, the installation of coke ovens would have been uneconomic.

The government attempted to stimulate steel production through a series of measures. In 1910, a decree exempted iron and steel factories from taxes on internal transactions and provided them with reduced rates on government railroads.<sup>22</sup> In 1911, the government promised to provide transportation for the inputs and outputs of the industry.<sup>23</sup> As nothing came of this program of guarantees, a group was selected which seemed to have the most reasonable plan; this group was awarded a monopoly on iron and steel production,<sup>24</sup> with such an exaggerated number of guarantees, concessions, and bonuses that in 1912 Congress voted to either annul the decree in question or extend its provisions to all who might wish to go into the business. In 1918, new legislation appeared providing privileges such as federal tax exemption for 25 years and preferential railroad rates, as well as loans for amounts up to the subscribed capital of the firm, with a limit of five thousand *contos de réis*.<sup>25</sup> Finally, in the twenties, two companies, Queiroz Junior and Belgo-Mineira, actually received loans.

<sup>21</sup> Although the Companhia Siderúrgica Belgo-Mineira was formally established in 1921, its output was not worth measuring until 1924.

<sup>22</sup> C. M. Peláez, "The State, the Great Depression and the Industrialization of Brazil" (Ph. D. dissertation, Columbia University, 1968), chap. 4.

<sup>23</sup> *Ibid.*

<sup>24</sup> *Ibid.*

<sup>25</sup> *Ibid.*

These loans and concessions helped create artificial profits in the charcoal-based plants of the day. The reduction in freight rates hurt railroad finances.

The cement industry also received foreign entrepreneurship and capital at this time.<sup>26</sup> The Companhia Brasileira de Cimento was installed in 1924, mainly with Canadian capital, at Perus in the state of São Paulo.<sup>27</sup> Production began in 1926. The original capacity of 60 thousand tons per year was soon raised to 125 thousand tons and to more than 200 thousand tons by 1927.<sup>28</sup>

Liberal incentives were offered to encourage the development of the cement industry. Firms that used exclusively local raw materials and fuels and produced 30 thousand tons or more per year were exempted from customs duties on imports of machinery and other equipment. They were also exempted from taxes on internal transactions, and granted special freight rates for machinery and raw materials by the railroads and merchant marine.<sup>29</sup> The decree stipulated that these rates were only to be provided for national raw materials or machinery, or for imports not produced in Brazil. Also, Brazilians were to form 50% of total employment and 30% of output was to be sold to the government.

It is worth noting that despite the frequent reforms made in the Banco do Brasil during this period, the government never attempted to create institutions for the specific purpose of financing industrial development, either through the Banco do Brasil or through investment banks along the lines of the French *Crédit Mobilier*,<sup>30</sup> an institution which had played an important role in European economic development. Forgotten was the example of Mauá, a man who, as Alberto de Faria has shown,<sup>31</sup> was organizing the banking house of Mauá, McGregor & Cia. at the same time the Pereire Brothers were forming the *Crédit Mobilier* (1852). Mauá's bank, structured along the lines of the "sleeping partnership" or *société en commandité* (with shares), was designed to supply the medium and long-term capital required by manufacturing firms.

<sup>26</sup> According to Peláez ("The State," chap. 6), the first Brazilian cement plant was installed in São Paulo in 1897, but was forced to close down several times due to technical problems. Its installed capacity was 25 thousand tons per year. Operations were definitively suspended in the early 1920s.

<sup>27</sup> Peláez, "The State," chap. 6.

<sup>28</sup> *Ibid.*

<sup>29</sup> *Ibid.*

<sup>30</sup> *Encyclopedia of the Social Sciences*, 1959 ed., s.v. "Investment Banking," by J. I. Bogen.

<sup>31</sup> A. Faria, *Mauá, Irineu Evangelista de Souza, Barão e Visconde de Mauá, 1813-1889* (Rio de Janeiro: Paulo, Pongetti & Cia., 1926), pp. 244-61.

This it did from 1854 to 1873, though in 1860 it had to revert to a partnership form of organization due to legal changes. Perhaps the abuses of the Pereire Brothers<sup>32</sup> and Mauá's contretemps discouraged the bureaucrats of the twenties, who ignored the fact that the model established by the *Crédit Mobilier*, when suitably adapted, had greatly influenced the development of investment banking in Western Europe.<sup>33</sup> It was not until 1937 that an agricultural and industrial credit department was established in the Banco do Brasil to provide medium and long-term credit for the purchase of machinery and equipment.

<sup>32</sup> See M. Aycard. *Histoire du Crédit Mobilier, 1852-1867* (Paris: Librairie Internationale, 1867), pp. 549-60.

<sup>33</sup> *Encyclopedia of the Social Sciences*, "Investment Banking."





## 6

# The Great Depression and the stagnation of real income, 1929-1939

### 6.1 — Introduction

The economic expansion of the years 1926-1928, based on the surge in export agriculture, lost its dynamism in 1929. From that year until 1932, both Brazil's GNP and its national income declined in absolute terms. The principal causes of the decline were the Great Depression, which severely hurt Brazil's foreign trade, and the coffee crisis. In spite of the coffee-support program, in 1931 the price of coffee stood at only one-third the levels reached in 1925-1929. During the Depression, the terms of trade fell to half what they had been in the late twenties, and export receipts (measured in pounds sterling) to a third despite the fact that the volume of exports remained constant. The depressive impact on national income of the decline in export receipts was partially attenuated, however, by a decrease in the volume of imports, which dropped to one-fourth the 1929 level.<sup>1</sup> Nonetheless, the accompanying reduction in import duties contributed to increasing the budget deficit. The latter was also aggravated by the expenditures associated with the revolt of São Paulo in 1932 (which was, nevertheless, an important factor in the economic recovery which started in that year).

In the period 1933-1939, per capita income remained near the 1928 level (see graph 21); and had industrial production not substituted export agriculture as the economy's dynamic sector, it would have declined. Although agriculture still accounted for about 57% of total physical output at the end of the thirties, the industrial sector had made impressive relative gains. These gains were partly due to positive effects of the Depression in the form of exchange controls which accelerated the import substitution of industrial

<sup>1</sup> See C. M. Peláez, "A Balança Comercial, A Grande Depressão e a Industrialização Brasileira," *Revista Brasileira de Economia* 22 (March 1968): 15-47.

goods. This process had previously been slow for a number of reasons — e. g. the sporadic nature of protection to industry, lack of financing, etc.

Table 32

*Brazil: Average Yearly Growth Rates of the Economy, 1920-1939*  
(%)

	1920-1929	1929-1933	1933-1939
<b>Production by Sector</b>			
Agriculture	4.0	2.5	1.6
Export Agriculture	7.5	3.7	1.1
Industry	2.8	4.4	11.2
Total Physical Output	3.9	2.9	4.9
	1919	1939	
<b>Composition of Physical Output</b>			
Agriculture	79.0	57.0	
Industry	21.0	43.0	
Total	100.0	100.0	

Sources: Methodological Appendix and Statistical Appendix.

At the same time, the revolution of 1930 and the Great Depression strengthened the urban classes, and gradually diminished the power of the rural classes, especially that of the coffee growers. This was reflected in the significant increase in the urban population. Whereas cities of 20 thousand inhabitants or more counted 4.6 million residents in 1920, the corresponding figure was 6.2 million in 1940. It was no coincidence that the major destination areas for Brazilian migrants — the Eastern region and the state of São Paulo — were also the two largest industrial centers of the country, and that both were experiencing rapid development.<sup>2</sup> These were also the regions that were registering the fastest growth of urban

<sup>2</sup> D. H. Graham and S. B. de Hollanda Filho, *Migration, Regional and Urban Growth and Development in Brazil: A Selective Analysis of the Historical Record, 1872-1970* (São Paulo: Universidade de São Paulo, Instituto de Pesquisas Econômicas, 1973), p. 67.

population: in 1940, there were already two cities with populations of more than a million — Rio de Janeiro and São Paulo.<sup>3</sup>

It should be noted that the thirties represented the transition from international immigration to domestic migration. To a great extent, the population growth of the Distrito Federal and the state of São Paulo depended on internal migration. In the period 1934-1940, the state of São Paulo received about 322 thousand Brazilian migrants, of whom 67% came from Bahia and the Northeast.<sup>4</sup>

During the Depression, the government became increasingly involved in shaping economic policies, not only for monetary affairs and the coffee sector, but also for a number of other activities. Special attention was given to servicing the foreign debt.<sup>5</sup> In 1934 the Conselho Federal de Comércio Exterior (federal foreign-trade council) was created. As Ianni has correctly observed,<sup>6</sup> the Conselho, given its ample scope,<sup>7</sup> may be considered the first government planning agency in Brazil. During the thirties, various agencies were organized to deal directly with specific economic and administrative problems. These included, among others, the agricultural and industrial credit department (CREAI) of the Banco do Brasil, the ministry of labor, industry and commerce, and a department for the administration of public services.

In the field of monetary and fiscal policies, the goals of stabilization and balanced budgets were continually sought, even in the midst of the Depression. As a result, the thirties were the years in which expenditures on capital formation, as a proportion of total expenditures, reached their lowest.

## 6.2 — Monetary and fiscal policies

In 1930, already in the midst of the Depression, the Banco do Brasil recommended a return to the philosophy of deflation which had been practiced at the beginning of the century.<sup>8</sup> The Caixa de Estabili-

<sup>3</sup> See app. B, "Demographic Trends."

<sup>4</sup> Graham and Hollanda Filho, p. 66.

<sup>5</sup> See app. D, "The Evolution of the External Debt."

<sup>6</sup> O. Ianni, *Estado e Planejamento Económico no Brasil, 1930-1970* (Rio de Janeiro: Civilização Brasileira, 1971), p. 28.

<sup>7</sup> See Conselho Federal de Comércio Exterior, *Dez Anos de Atividades, 1934-1944* (Rio de Janeiro: Imprensa Nacional, 1944).

<sup>8</sup> The analysis of monetary policies presented in this section is partly based on the monograph written for this project by C. M. Peláez: "The Economic Consequences of Monetary, Exchange and Fiscal Orthodoxy in Brazil, 1889-1945," pp. 87-89 and 107.

zação was closed, and many of its notes were withdrawn from circulation. At the end of the year the government confiscated the notes that had been issued by the Banco (592 thousand *contos de réis*), and in 1931 incorporated them into the treasury notes in circulation. Later on, the Banco was again permitted to issue notes (300 thousand *contos de réis*), but only part of this sum was placed in circulation (170 thousand *contos de réis*). The gold left in the Caixa was directed toward payment of the foreign debt.

In order to avoid a general panic, a bank holiday of 120 days was decreed on 12 December 1930. In addition, during the early thirties, the government took two important steps to maintain confidence in the banking system. In 1932 it created CAMOB within the Banco do Brasil. CAMOB was designed to function as a lender of last resort. It could advance funds to banks in exchange for their assets. These loans, which could be extended up to five years, could be employed only in activities related to the assets presented to CAMOB; that is, they could not be used for new banking operations. Since the main purpose was to avoid insolvencies, only assets which existed at the time of the creation of CAMOB could be discounted. This was the first attempt to supply medium- and long-term credit. However, the banks made little use of the CAMOB facilities.

Another step, taken in December 1935, was to raise the lending capacity of the Carteira de Redescontos to 300 thousand *contos de réis*. This was independent of the 600-thousand-*conto* lending capacity of the Departamento Nacional do Café. New Carteira operations in government bonds (federal, state and municipal) were prohibited. The most important change was the possibility of re-discounting industrial and agricultural bills. This, without a doubt, reflected the pressures resulting from the industrial growth taking place at the time.

It is the total money supply that most clearly reveals the inconsistency of the monetary policy of the time. At the beginning of the Depression, the reserves of the Banco do Brasil declined drastically — from 500 to 132 thousand *contos de réis*. As a result, interest rates rose substantially. This led to the sum in the vaults of the Banco do Brasil rapidly increasing to 264 thousand *contos de réis*. The amount of money in circulation was further reduced by the monetary policy of 1930 and 1931, which dictated keeping high levels of cash in the Banco do Brasil. However, the constitutional revolution of São Paulo in 1932 made the continuation of this policy impossible, and the high military expenditures resulted in the emission of 400 thousand *contos de réis*. The government

issued an equivalent amount of bonds to be sold through the Banco do Brasil. Once sold to the public, the money obtained was to be burned.<sup>9</sup>

Graph 21 illustrates the inefficiency of monetary management during the Depression.

Tight monetary policies were matched by constant attempts to restrain government expenditures. It is interesting to note that attempts to balance the budget, and even to obtain surpluses, continued during and after the Great Depression. Although *ex-post* figures did not always correspond to planned expenditures (table 33), the latter clearly reflect the intentions of the government to restrain the growth of expenditures.

An example of the government's preoccupation with balancing the budget can be gathered from the remarks of Souza Costa, who was finance minister from 1934 to 1945. While still president of the Banco do Brasil in 1933, he stated that:

No matter how confused the current opinions on economic science — a field in which the most contradictory theories exist and in which the most risky experiments are being conducted — there is one point on which there seems to be general agreement: the need for a balanced budget. There is no one who has had the courage to state that riches can be accumulated when more is spent than is earned.<sup>10</sup>

Until 1936 the government continually tried to contain expenditures, while its receipts increased with the economic recovery. But from 1937 on, political considerations prevailed over the finance minister's convictions concerning balanced budgets, and large deficits began to appear.

As a consequence of the Depression, in 1930 government tax receipts were 30% less than predicted. The policymakers believed that the crisis was due to inflation<sup>11</sup> and to the budget deficit. Thus, they adopted a policy of expenditure cuts and tax increases. As a result, the tax burden increased, since in the years 1930 and 1931 the GNP declined in real terms while government tax receipts rose. A good indicator of the government stabilization policies in the midst of the Depression is the fact that the planned budgets

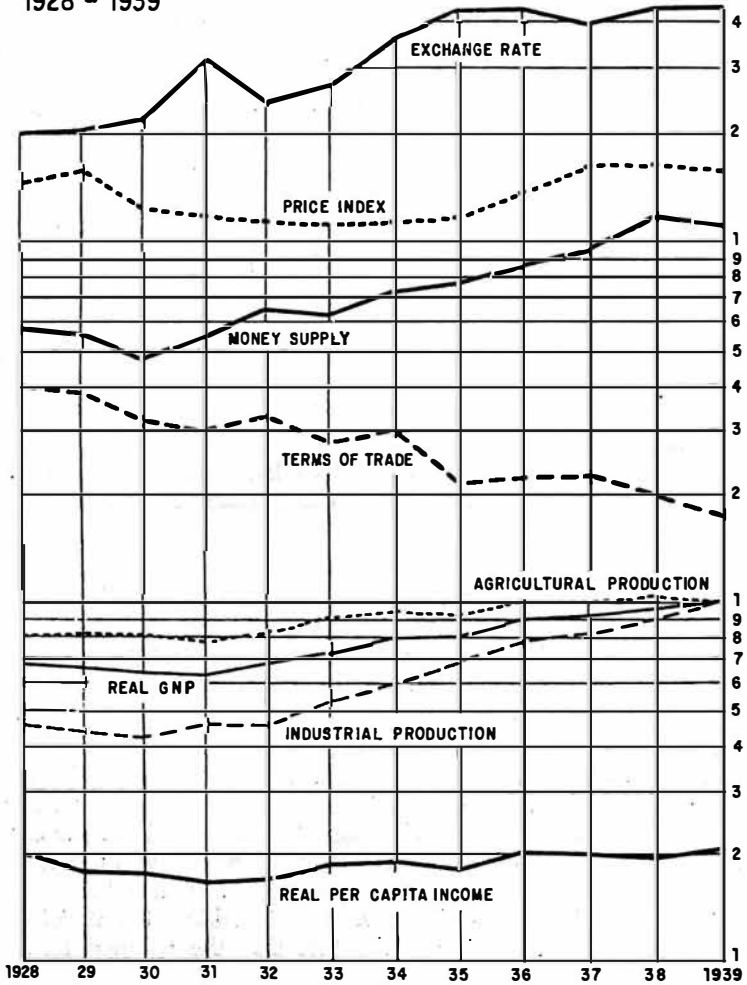
<sup>9</sup> Decree 27 717 of 10 August 1932.

<sup>10</sup> Banco do Brasil, *Relatório*, 1933, p. 14.

<sup>11</sup> Banco do Brasil, *Relatório*, 1930, pp. 15-20.

Graph 21

**BRAZIL :**  
**INDICATORS OF EXCHANGE-RATE AND MONETARY**  
**POLICIES, OF OUTPUT AND OF INCOME,**  
**1928 - 1939**



Source : Statistical Appendix, tables 114, 120, 121, 126 and 140.

for the period 1930-1933 were in surplus. The actual results were quite different, however. As previously mentioned, the expenditures connected with the São Paulo revolution of 1932 and the aid to the drought-stricken Northeast made the budget deficit of 1932 (in current prices) the largest in the history of the Republic to that time.

Table 33

*Brazil: Federal Finances, 1930-1939*  
(1000 Contos de Réis)

Year	Budgeted			Actual		
	Receipts	Expenditures	Surplus or Deficit	Receipts	Expenditures	Surplus or Deficit
1930	2 365	3 020	-655	1 074	2 610	- 836
1931	2 670	2 452	218	1 752	2 046	- 294
1932	2 242	2 217	25	1 605	2 869	-1 164
1933	2 125	2 101	24	2 096	2 392	- 296
1934	2 086	2 355	-269	2 518	3 050	- 532
1935	2 169	2 691	-522	2 723	2 872	- 149
1936	2 537	2 893	-356	3 127	3 226	- 99
1937	3 218	3 726	-508	3 462	4 143	- 681
1938	2 824	3 875	- 51	3 880	4 735	- 855
1939	4 070	4 065	- 5	4 297	4 850	- 553

Source: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBRE/CEF).

The evolution of taxes during the thirties is traced in tables 117 and 118 in the Statistical Appendix. The weight of import duties in federal receipts declined continuously. At the same time, taxes on internal transactions gained in importance. This reflected the structural changes that were taking place in the Brazilian economy, especially the increasing importance of industry. Thus, by 1940 receipts from import duties were already less than receipts from taxes on internal transactions. The income tax, which contributed only 6% to total federal revenues in 1931, accounted for 11.5% in 1940.

As far as the structure of public expenditures is concerned, the proportion going to gross capital formation in the thirties was extremely low, amounting to only 6%. In 1931, the worst year of the Depression, the policy of trimming outlays in order to obtain a budget surplus resulted in government investments amounting to only 58% of such expenditures in 1930! Tables 114 and 116 in the Statistical Appendix show the evolution of public expenditures and the composition of capital expenditures.

In 1939, the Brazilian government introduced a special public-works and national-defense plan. It was created by Decree-Law 1 058 of 19 January 1939, and its objectives were: (1) the execution of public works; (2) the provision of adequate facilities for national defense; and (3) the creation of basic industries.<sup>12</sup> It was to be carried out over a five-year period at a cost of three thousand *contos de réis* in own funds, without affecting the regular government budget. The plan was to be financed through credits originating from special taxes on exchange-rate operations, profits from banking operations in which the treasury participated, and earnings from the sale of gold abroad. Since its execution coincided with World War II, its provisions for defense expenditures received priority. This scheme was not only the country's first experience in global public-investment planning, but also the beginning of direct government participation in basic industries.

From 1934 on, industrial activity expanded rapidly. This increased demands on the country's financial institutions, which were already being pressured by the needs of agriculture. However, as already shown, Brazil's financial institutions were inadequate for the type of credit needed by industry. The small amount of credit which the Banco do Brasil offered to industry through its *Carteira de Redescontos* was of a short-term nature. Since it was a commercial bank and thus depended on deposits for its leading activities, its behavior was not different from that of other banks. Thus, there was a need for financial institutions which could supply medium- and long-term industrial credit. In October 1937, legislation was introduced to enable the Banco do Brasil to lend to agriculture and industry through CREAÍ.

Although the country was still in need of a real development bank (which was organized only in 1952), the establishment of CREAÍ represented an important step forward in the country's financial markets. The areas covered by this new institution included: financing for interharvest periods, for the acquisition of agricultural machinery and livestock, for the purchase of raw materials, and for the improvement of industrial machinery. Initially, CREAÍ could not participate in new industrial establishments. This was later

<sup>12</sup> J. S. Gama e Silva *et al.*, "Planejamento do Trabalho Governamental na Administração Brasileira," presented at the Seminar on Organization, Direction and Functioning of the Auxiliary Services and Staff Agencies, conducted under the joint sponsorship of the Brazilian government (Fundação Getúlio Vargas), the United Nations and UNESCO, Rio de Janeiro, 4 February - 5 March 1952 (Mimeographed. FGV, série C: Monografias Brasileiras, SP/P./9.), p. 86.



changed, however, and CREAM was enabled to finance new basic industries such as pulp and paper, aluminum, and steel (Companhia Siderúrgica Nacional).

The operations of CREAM were always linked to collateral. The upper limit for agricultural loans was one-third of the expected crop, and that for industrial loans was 40% of the value of improvements or equipment purchases. The initial capital of CREAM consisted of 100 thousand *contos de réis* of new shares in the Banco do Brasil which had been bought by the federal government.

Graph 21 and table 32 show the interrelations between the principal indicators of monetary, fiscal and exchange-rate policies on the one hand, and their impact on the development of the economy on the other hand. The latter is demonstrated through indices of the real output of agriculture and industry, as well as through real GNP and real income per capita. Outstanding is the strong expansion of industry from 1932 on. This counterbalanced the stagnation of agriculture, which was mainly caused by the coffee crisis. Even so, in terms of real per capita income, the economy as a whole stagnated in the years 1928 to 1939. Had it not been for the growth of industrial production, a more severe crisis would have occurred, resulting in a decline in per capita income. As will be seen, the development of industry was considerably influenced by exchange-rate policies which led to controls over trade.

## 6.3 — Agricultural production

### 6.3.1 — Structural changes: the predominance of agricultural output for the domestic market

It was only during the Great Depression that there occurred substantial changes in the structure of agricultural production. The steep drop in international coffee prices discouraged the planting of new coffee trees. Nevertheless, coffee output continued to increase during this period as a result of extensive planting prior to the Depression. The new trees began to produce during the Depression years, and their productivity was much higher than the previous average because they had been planted in more fertile soils. Thus, the reactions to the high prices of the late twenties were felt only in the thirties, aggravating the impact of the Depression.

Although coffee output grew, there was a pronounced decline in its relative position. This can be seen in table 34. At the same

time, cotton grew in relative importance, and during the war it became the most important agricultural product. There was also a remarkable increase in cotton exports. The emergence of cotton as the second largest export product reduced the effects of the coffee crisis on the country's foreign-trade position. The rise of cotton was in large measure due to the research of the Instituto Agronômico de Campinas in the state of São Paulo. It not only developed a special long-fiber cotton, but also succeeded in substantially raising the productivity of cultivated areas.

Table 34

*Brazil: Value of Agricultural Output by  
Principal Crop, 1925-1929/1939-1943*

Product	% Average for Period		
	1925-1929	1932-1936	1939-1943
Cotton	5.9	14.0	21.6
Rice	5.2	6.7	11.0
Cocoa	1.4	1.8	2.2
Coffee	48.0	29.5	16.1
Sugar Cane	3.5	5.7	7.5
Beans	5.4	3.8	5.5
Tobacco	2.9	2.6	2.2
Manioc	4.7	6.8	7.0
Corn	16.3	15.9	16.0
Wheat	.9	.8	1.3
Others	5.8	12.4	9.6
Total	100.0	100.0	100.0

Source: Primary data from Ministério da Agricultura, Serviço de Estatística da Produção (MA/SEP).

During this period there also occurred an extraordinary increase in the relative importance of crops destined for the internal market (rice, beans, sugar cane, manioc, corn, wheat, etc.). These came to represent 58% of the total value of crop output.

Changes in the proportions of land devoted to the principal crops are shown in table 35. These clearly reveal the above-mentioned trends.

Table 35

*Brazil: Area Cultivated by Principal Crop, 1931-1932/1940-1941*

Product	% Average for Period		
	1931-1932	1937-1938	1940-1941
Cotton	6.5	16.9	18.7
Rice	7.3	6.9	7.2
Cocoa	1.5	1.3	1.8
Coffee	35.8	25.5	18.7
Sugar Cane	3.2	3.4	4.3
Beans	6.1	7.2	7.5
Tobacco	.8	.7	.7
Manioc	2.4	3.2	4.5
Corn	32.2	29.9	30.5
Wheat	1.4	1.2	1.8
Others	2.8	3.8	4.3
Total	100.0	100.0	100.0

Source: Same as table 34.

The changes observed in table 35 are corroborated by table 36, which shows the rates of growth of the quantum index of agricultural output and of the prices of farm products. Whereas the total agricultural sector grew at annual rates of 2.1%, crops for the in-

Table 36

*Brazil: Annual Rates of Growth of Agricultural Output and  
Agricultural Prices, 1930-1939*  
(%)

	Real Output		Prices	
	1930-1931	1930-1939	1930-1931	1930-1939
Crops	- 8.7	2.6	-29.2	- .0
For Domestic Consumption	4.6	3.3	- 8.9	1.6
For Export	-17.3	2.2	-46.2	-3.6
Raw Materials for Industry	- 6.4	.7	- 1.0	2.7
Livestock	2.0	.3	5.4	5.3
Extractive Activities	11.3	5.6	- 5.6	6.0
Total	- 6.0	2.1	-22.1	.7

Source: Statistical Appendix, table 121.

ternal market grew at yearly rates of 3.2% and crops for export at 2.2%. The prices of export crops, mainly coffee, fell in absolute terms between 1930 and 1939. In the latter year they stood at a little more than half of the 1925-1929 price level. This probably comprised an incentive to transfer resources from coffee to cotton growing.

### 6.3.2 — The coffee economy and coffee policies <sup>13</sup>

The Great Depression reinforced the already negative impact of the coffee-support program. This can be observed in graph 22, which shows the factors affecting the Brazilian coffee market. Since coffee prices continued to fall throughout the thirties, even after the national income of the United States started to recover in 1933, it is clear that the price behavior of coffee cannot be linked to the Depression alone. In fact, the international price of coffee fell to lower levels than in the first years of the 1908 crisis.

Since a coffee tree becomes fully productive only after eight years, the increased output of 1925 could be traced back to the plantings of 1917-1918. These plantings were supposed to partially replace the coffee trees that had been destroyed in the recent frost. The harvest of 1926-1927 was the first warning that productive capacity substantially exceeded export possibilities. This warning was not readily perceived, however, because of the ample funds supplied by the Instituto do Café de São Paulo and because of the general belief that the plan for the permanent support of coffee would assure the sale of the entire coffee output at a "just price". International coffee stocks reached a new high. Moreover, as a result of the institutionalization of the coffee-support program, the record crop of 1926-1927 was followed by three other record crops. Only in 1936-1937 was there an attempt to adjust production to demand.

According to available evidence, the crisis in the coffee sector would have been of lesser intensity had it not been for the program of the Instituto do Café de São Paulo. The prejudicial effects of the plantings and land speculation of 1926-1927 were felt in the first years of the Depression.

Towards the latter part of 1929, with the end of official support from both the federal government and the state of São Paulo,

<sup>13</sup> This section is partly based on Peláez, "Economic Consequences," pp. 117-66, 203-10, and 241-79.

the coffee sector (especially in São Paulo) faced serious financial difficulties. The commercial banks that had financed the coffee growers, as well as the Banco do Estado de São Paulo, were without funds. At the same time, coffee planters did not even have funds to pay for rail shipments to the ports. The federal government refused to issue paper money to help the coffee sector since its principal objective was to achieve monetary and exchange-rate stability. Thus, coffee exports might have been paralyzed had the state of São Paulo not turned to the banking firm Schroeder & Co. for help.

In cooperation with other banking firms, Schroeder & Co. granted a loan of £ 20 million, which came to be known as the "coffee realization loan" (*empréstimo da realização do café*). One of the conditions stipulated in the plan for the use of these funds was that the state of São Paulo stop interfering in the market. Even so, the results of the loan were disappointing due to its precarious management.

The federal coffee policy was modified with the change in administration resulting from the revolution of 1930. In February 1931, the federal government committed itself to buy through the treasury all coffee stocks which existed as of 30 June 1930 (except for the coffee-realization-loan stocks, which were to have been temporarily withdrawn from the market and held in São Paulo). The price at which the federal government was to purchase coffee was set at a maximum of 60 *mil-réis* per bag, of which the state of São Paulo was expected to contribute 20 *mil-réis*. In order to adjust future coffee production to world demand, a tax of one *mil-réis* per coffee tree was instituted. Finally, a 20% tax in kind was to be paid on all coffee exported.

In April 1931 the coffee crisis worsened. There were 18 million bags of coffee stored in São Paulo and the 1931-1932 crop was expected to be 17.5 million bags. Since exports stood at about 9.5 million bags, the coffee surplus would amount to 26 million bags. What was worse, these estimates did not include the stocks of other coffee-producing states. The state of São Paulo therefore proposed a new accord among the producing states. This accord was signed on 24 April 1931, and was to last four years. Its basic instrument was an export tax of 10 shillings per bag exported, to be paid in foreign exchange. This was a specific tax which could not be used to finance state activities. The revenues were to be employed to buy, and eventually destroy, coffee stocks in order to balance supply and demand. Perhaps one of the most important aspects of the accord was the establishment of the Conselho dos

Estados Produtores (council of producing states) to administer it, i. e. collect the tax, and supervise the purchase and destruction of excess coffee.

The entrance of the federal government into the coffee-support program, which had been led by the state of São Paulo, gave rise to the need for a stronger and more centralized institutional base. This was to be the Conselho Nacional do Café (CNC), created in May 1931 and endowed with the following responsibilities: (1) management of the sales of coffee from the coffee-realization-loan stocks; (2) administration of the federal aid to the coffee sector, i. e. of the purchase and destruction of coffee in accordance with the February plan; (3) management of the 10-shilling tax proposed by the producing states; (4) control of the shipping regulations.

In December 1931 the producing states greatly modified their coffee-support program. They increased the export tax from 10 to 15 shillings per bag. Five shillings were to be used to make payments on the coffee-realization loan and the other 10 shillings to continue to be used for the activities of the Conselho Nacional do Café. The latter would pay for the coffee bought by the federal government as foreseen in the February plan, would purchase coffee surpluses itself, and would also be in charge of destroying one million bags of coffee per month. The new accord was turned into law by the state of São Paulo and the federal government on 7 December 1931.

The accord gave rise to fears on the part of coffee exporters that the Conselho would sell coffee abroad, thus displacing them from business. It was therefore specially stipulated that the Conselho would only perform certain activities: it would execute the agreement with the firm Hard, Rand & Co. to barter coffee for wheat;<sup>14</sup> it would select the stocks which could be bought in order to guarantee that only high-quality coffee enter the market; it would dampen the cycles of the coffee price; and, finally, it would not sell coffee abroad.

<sup>14</sup> The accord with Hard, Rand & Co. consisted of the federal government granting the firm a monopoly on the sale of stocks connected with the coffee realization loan in exchange for a delay in the sale of the coffee concerned. The barter agreement consisted in exchanging 1 275 thousand bags of coffee for 25 million bushels of wheat. The subsequent sales of this wheat in Brazil would yield the government 189 thousand *contos de réis* which could be used to buy coffee stocks. The contract stipulated the gradual sale of the coffee in the United States in order to avoid an even greater fall in coffee prices. See Peláez, "An Economic Analysis of the Brazilian Coffee Support Program, 1908-1945: Theory, Policy and Measurement," in *Essays on Coffee and Economic Development* (Rio de Janeiro: Instituto Brasileiro do Café, 1973), p. 128.

Four alternatives were suggested at the time with respect to the 1931-1932 crop: (a) that the crop not be harvested – which could result in permanent damage to many coffee trees and in unemployment; (b) that a policy of international dumping be practiced – thought to be difficult due to the inferior quality of Brazilian in comparison to Colombian coffee; (c) that stocks be destroyed – which would keep productive capacity intact and maintain prices, thereby increasing competition; (d) that additional stocks be formed to keep more coffee off the market – a policy that would have been expensive and hard to administer given the already large stock and its high annual growth rate. Under these circumstances, the destruction of stocks appears to have been the only practical solution.

By 1932 the importance of the Conselho Nacional do Café had increased significantly. Whereas it was initially a tool of the producer states, it had evolved into the institution linking the state and federal governments for the formulation of coffee policies. As was to be expected, the Instituto do Café de São Paulo lost much of its power and became mainly engaged in marginal activities such as the control of cooperatives, technical assistance to producers, etc. In December 1932 the state of São Paulo abolished all coffee taxes except for a general charge of five *mil-réis* per bag.

In April 1932, with the aim of reducing productive capacity to a level compatible with world consumption, the Conselho Nacional do Café began charging a tax of one *mil-réis* for each new coffee tree planted. In November of the same year, the planting of new coffee trees was forbidden, except in Paraná and in states having less than 50 million coffee trees. However, new trees could be planted in each state only up to this limit. The Conselho was given the power to decide over annual production and the share of each state.

The federal coffee-support program had been run through the Banco do Brasil since the revolution of 1930. In December 1931, the government authorized the Carteira de Redescontos of the Banco do Brasil to increase its operationing funds by 400 thousand *contos de réis*. The Carteira was also authorized to discount bills of the Conselho Nacional do Café which had the backing of the 10-shilling tax; the Conselho eventually deposited all receipts from this tax at the Banco do Brasil. By 31 December 1932, total loans of the Banco do Brasil to the Conselho amounted to 258.6 thousand *contos de réis*. In the meantime, the treasury had advanced to the Conselho a credit of 250 thousand *contos de réis*.

Tables 123 and 124 in the Statistical Appendix show the origin of resources for the coffee-support program in the period May 1931

to February 1933. It will be noted that the purchase and destruction of coffee stocks were mainly financed by new taxes on exports. In fact, since the loans of the Banco do Brasil and the treasury were based on export-tax receipts, they cannot be considered as representing the creation of new money in the strict sense. Thus, there is some doubt as to the basis of Celso Furtado's claim that the government's protection of the coffee sector during the Depression amounted to a Keynesian type of anticyclical policy which made it possible for Brazil to begin its recovery in 1933, while the United States began its recovery only in 1934.<sup>15</sup>

Albert Fishlow, however, argues that the coffee-export taxes did not represent a mere transfer operation within the coffee sector, but that they also fell on the foreign buyer. He notes that the largest part of the tax was borne by the foreign buyer due to the inelasticity of demand and to the dominant position of Brazil in the world market. He therefore concludes that although coffee policies were probably not as of crucial importance in the country's recovery from the Great Depression as Celso Furtado contends, neither were they as insignificant as Carlos Peláez maintains.<sup>16</sup>

In February 1933 the Conselho Nacional do Café was substituted by the Departamento Nacional do Café (DNC). Whereas the Conselho had been under the sway of state delegates, this new agency was entirely under the control of the federal government. The directors of the Departamento were chosen by the finance minister. This change was in part due to the expectation of a record crop of 30 million bags of coffee in 1933-1934.

The Departamento introduced a quota system which was to be followed from the 1933-1934 crop on. This system was used with a few modifications during the years that followed. Part of the quota was comprised of low-quality coffee which was compulsorily sold to DNC at a price below costs. This coffee was to be destroyed. Another part of the quota was to be either directly sent to the ports for shipment abroad or stored in DNC warehouses.

In a report by the finance minister on the coffee situation, it was stated that during the period 1930-1934 stocks would have reached 54.5 million bags if the government had not withdrawn a massive amount of coffee from circulation. It was also stressed that this was achieved not through foreign loans or new currency issues,

<sup>15</sup> C. M. Furtado, *The Economic Growth of Brazil: A Survey from Colonial to Modern Times* (Berkeley: University of California Press, 1963), pp. 211-12.

<sup>16</sup> See A. Fishlow, "Origins and Consequences of Import Substitution in Brazil," in *International Economics and Development*, ed. E. L. Di Marco (New York: Academic Press, 1972), pp. 311-65.



but through the export tax. Even the president of the Republic extolled these achievements, adding that the government had withdrawn 50.1 million bags of coffee from circulation, of which 34.1 million had been destroyed.

The Banco do Brasil continued to give financial assistance to the coffee sector even after the creation of the Departamento Nacional do Café, as is shown in table 37. It extended a revolving credit to the Departamento, which was to be repaid through the collection of export taxes. The increase of the debt in 1934 was due to the huge crop of 1933-1934.

Table 37

*Departamento Nacional do Café: Debt Outstanding at the Banco do Brasil at Year End, 1933-1936*  
(1 000 Contos de Réis)

1933	551.8
1934	737.3
1935	599.8
1936	634.7

Sources: Banco do Brasil, *Relatórios*, cited by Peláez, "Economic Analysis," p. 148.

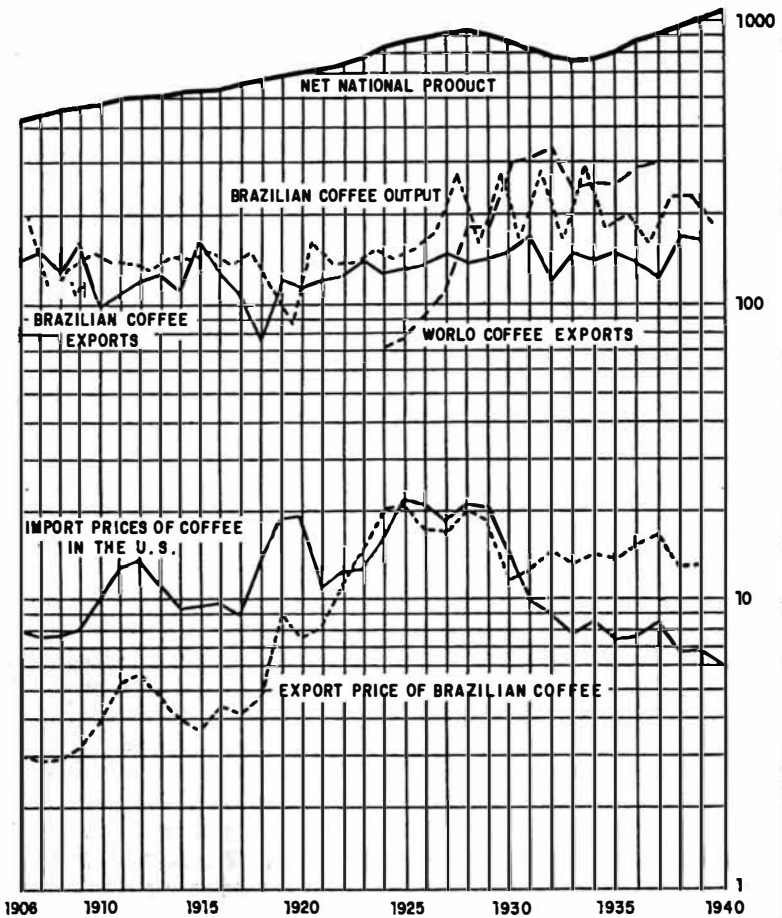
Graph 22 gives an idea of the growing importance of competition in the world coffee market. Especially noteworthy is the growth of African exports, which exceeded those of all other countries. While Asian and Brazilian coffee exports stagnated, those of the rest of Latin America and of Africa rose.

The Brazilian coffee-support policies, especially the high prices of the years 1925-1929, resulted in a huge increase in coffee planting throughout the world. An important factor in the worsening of Brazil's position in the international coffee market was the rising output of countries with cheap labor, where coffee was produced on small farms. This was especially the case of Colombia, Brazil's chief competitor, and was due to the optimal size of a coffee plantation having been substantially reduced over time. The better-quality coffee produced on smaller farms in other countries turned out to be Brazil's major competitor.

In response, there was soon a change in the optimal size of Brazilian coffee farms. Since the larger coffee plantations were not able to solve the technical problem of how to improve the coffee produced, many of them were either subdivided or simply disap-

Graph 22

**BRAZIL :**  
**VARIABLES IN THE COFFEE MARKET,**  
**1906 - 1940**



Source : C.M. Peleáz, "An Economic Analysis of the Brazilian Coffee Support Program, 1906 - 1946 : Theory, Policy and Measurement," in Essays on Coffee and Economic Development ( Rio de Janeiro : Instituto Brasileiro do Café, 1973 ), table M.

peared. During the thirties, the number of coffee farms in São Paulo increased, especially those with less than 10 thousand trees.

In November 1937, the government made what turned out to be the most radical changes in coffee policy since the Taubaté agreement of 1906. Brazil would try to reduce world coffee prices by letting its own output respond to the market without export taxes. At the same time, attempts would be made to negotiate an international coffee agreement among all the coffee-producing countries. The idea was to sell coffee at a price determined by the forces of demand and supply.

The following measures were taken to implement the new policy and to gradually abolish the coffee-support program. (a) Only low-quality coffee, for which there was no market, would be withdrawn from the market and destroyed. The remaining output could be freely exported. (b) The unit tax on coffee exports was reduced from 45 to 12 *mil-réis* per bag. In addition, a special account of 300 thousand *contos de réis* was created at the Banco do Brasil for the Departamento Nacional do Café. The balance of the latter's debits would be credited to this account and the remaining balance would be used for its operations. Of the 12 *mil-réis* tax, four *mil-réis* were to be used to pay for the credit in this special account. As soon as this credit was paid up, the tax would be reduced to eight *mil-réis*. (c) Since DNC would not derive enough funds from the export tax to pay for the revolving credit at the Banco do Brasil, the national treasury borrowed 500 thousand *contos de réis* from the Carteira de Redescontos of the Banco do Brasil which were credited to DNC. However, the latter became the debtor to the Carteira de Redescontos rather than to the Banco. (d) DNC was exempted from the repayment of the 300-thousand-*conto* credit advanced by the national treasury. (e) Of the eight *mil-réis* to which the export tax would be reduced after payment for the credit from the Banco do Brasil, six *mil-réis* would be used to pay for the coffee-realization loan. (f) There would be an immediate termination of the confiscation of foreign exchange, and coffee planters would once again be free to receive the value of their sales in foreign currency.

What were the results of this policy, which represented a return to the market mechanism? Unfortunately, 1938 was the only year during which one can observe the "normal" functioning of the new policies, since World War II began the following year. In spite of this, one can try to evaluate the results of these policies according to their principal objectives: (a) to raise exports — in 1938 exports amounted to 17.2 million bags, i. e. five million more than in 1937 and less only than in 1931. Even in 1939, exports were

greater than in all the thirties, except 1931 and 1938, totaling 16.5 million bags; (b) to increase Brazil's share in the world market — in 1938 and 1939, the country's share rose to 57.2 and 57.4%, respectively, after having reached a trough of 48% in 1937; (c) to force a drop in world prices in order to eliminate other producing countries from the market — this objective was also attained, but at the cost of a decline in foreign-exchange receipts from coffee exports, which fell from £ 17.9 million in 1937 to £ 16.2 million in 1938 and £ 14.9 million in 1939. In terms of the domestic income, these declines were partially offset by the exchange devaluation which occurred after controls were abandoned in 1937. It was hoped that the decline of unit prices in foreign exchange would be compensated for by proportionately larger increases in the volume of exports, which would be difficult to achieve if the world demand for coffee were inelastic.

Although this complete liberalization of coffee production after a long period of control lasted only two years, it is likely that positive results could have been obtained had the onset of World War II not necessitated renewed control. For example, the production of low-grade coffee might have ended, there might have been a more intensive drive to diversify agriculture in the state of São Paulo, etc.

### 6.3.3 — Other support policies for agriculture: the economic readjustment

The economic readjustment (*reajustamento econômico*) was created to help coffee growers whose debts had risen due to the official exchange-rate policy, i. e. the (to them) unfavorable exchange rate at which they had to turn over their export earnings. The agricultural adjustment act passed by the U. S. Congress in 1933 served as example for the Brazilian legislature.

The economic readjustment was closely linked to the usury law, which fixed a maximum rate of 8% per year on loans for which agricultural property served as collateral and 6% per year on loans to finance agricultural activities or equipment purchases. Also, creditors were forbidden to demand the repayment of debts in yearly installments higher than 10% of the total debt.

Through the economic readjustment program, farm debts existing on 1 December 1933 (and incurred before 30 June 1933) were cut in half. To finance the readjustment, the treasury issued 30-year bonds with a rate of interest of 5% per year. These were given to creditors, mainly banks, and were for the amount by which the debt had been reduced.

Farmers whose property given as collateral was valued at less than half of the loan they received had to provide a "debt receipt" (*recibo de dívida*). Debtors who had no real collateral could only receive discounts if they were insolvent. In accordance with the usury law, the 50% discount on farmers' debts was legally considered as prior payment of the first five annual installments of 10%. Thus, during the first five years after the economic readjustment, creditors could only claim interest payments.

Ceilings on the issue of treasury notes for the economic readjustment were increased a number of times during the thirties and early forties. In the period 1934-1945, the Câmara de Reajustamento approved 18.7 thousand applications and indemnifications totaling 920 thousand *contos de réis*. Of this total, 54% went to the state of São Paulo and 55% to the coffee sector.

In global terms, the impact of the economic readjustment on the agricultural sector, and on the Brazilian economy as a whole, seems to have been of little importance considering that in 1939 the net product of agriculture<sup>17</sup> was estimated at 10.2 million *contos de réis* and the gross internal product at 45.6 million *contos*, and that in the period 1934-1945 total indemnifications at current prices amounted to only 920 thousand *contos*.

#### 6.3.4 — The expansion of cotton plantations in São Paulo

Since coffee production was, for such a long time, a highly profitable undertaking in comparison to other crops (due especially to the various coffee-support programs), there had been little stimulus to diversify the agricultural output of the state of São Paulo. It was only during crises in the coffee sector that other crops prospered. Thus, after the frost of 1918, the interplanting (between coffee trees) of other crops became common. However, as soon as the coffee trees recovered their productive capacity, these crops were again abandoned.

During the twenties, one can still note that fluctuations in the value of agricultural output are explained by the oscillations in the share of coffee in total agricultural output. One can observe, however, the growing importance of other crops, such as sugar cane. In the thirties, there occurred a substantial advance of poli-culture. This was due to the coffee crisis which led to the division

<sup>17</sup> See the section on estimates of physical product in the Methodological Appendix.

of large properties into smaller farms more suited for the production of other crops. Nonetheless, though both the state of São Paulo and the federal government favored the growth of policulture, no state or federal plan was ever developed towards this end.

From 1934 on, when the production of cotton for export became profitable, there was a notable change in the structure of São Paulo's agricultural output. This profitability was due to research, dating back to 1923, of the Instituto Agronômico de Campinas, which made it possible to produce longer and better-quality fibers. (Whereas cotton output in 1923 consisted mainly of fibers 22-26 millimeters in length, from 1933 on most fibers were over 28 millimeters.) It was also related to use of the higher-quality and more productive seeds distributed in large quantities by the Secretaria de Agricultura of the state of São Paulo as of 1931. Until that time, cotton production in São Paulo had not been very productive because of the primitive methods of cultivation and distribution which had prevailed. The average number of selected seeds used increased from 1.5 thousand per year in the twenties to seven thousand in 1934.

It has been estimated that the 1934 crop would have amounted to 81 thousand tons had 1923 seeds been used. This contrasts with the 90 thousand tons which were actually produced with selected seeds. The value of this difference in terms of agricultural income was estimated at 27 thousand *contos de réis*. With the first high-quality crop, Brazilian cotton was quoted in Liverpool at the same price as North-American cotton.

It is possible that the relationship between the government of the state of São Paulo and the farmers might not have been successful without the link with international markets and domestic consumers which had been furnished by the São Paulo commodity exchange since 1919. The exchange provided the following services: classification of cotton; registry of brands and provision of packing machines, which made it easier to separate out defective cotton; contracting of Brazilian and foreign technicians for its cotton section; sending of Brazilian technicians for further training in the U. S. (to establish contacts with foreign markets, and to bring back new production techniques); use of the Brazilian consular system to distribute Brazilian cotton samples in order to stimulate demand by European countries. Thus, while the Instituto Agronômico de Campinas developed new types of cotton fibers, the commodity exchange undertook the task of marketing them.

Before 1933 Brazil exported little cotton and the output of São Paulo did not surpass 10 thousand tons. The increases after 1933

can be explained by the behavior of the relative export prices of cotton and coffee. These are more relevant than international prices since they give a better measure of the relative internal profitability of the two products. Graph 23 presents a summary of important data concerning the cotton sector in Brazil and São Paulo.

Between 1929 and 1940, the share of Brazil in the total world area producing cotton rose from 2 to 8.7%. In the years 1925-1929, coffee accounted for 71.7% and cotton for only 2.1% of the value of Brazil's exports. In the years 1935-1939, the share of coffee fell to 47.1% and that of cotton rose to 18.6%.<sup>18</sup> The share of cotton might have been even greater had it not been for World War II. The substantial increase in cotton production proves that São Paulo's farmers were sensitive to variations in prices and profits. As will be seen, most of the farmers who shifted into cotton production came from the coffee sector.

The North American cotton-support program was of great help to the development of the São Paulo cotton sector because of its impact on international cotton prices. Although the domestic market was of some importance, most of the demand for Brazilian cotton was for exports.

In studying the expansion of cotton growing during the thirties, it would be of interest to examine an alternative to the usual hypothesis, which assumes a net transfer of resources from the coffee to the urban sector (thus explaining the industrialization of these years). This alternative — based on the premise of greater rigidity in the transfer of real resources from agriculture to industry than within agriculture — is an intrasectoral resource shift from coffee to cotton.

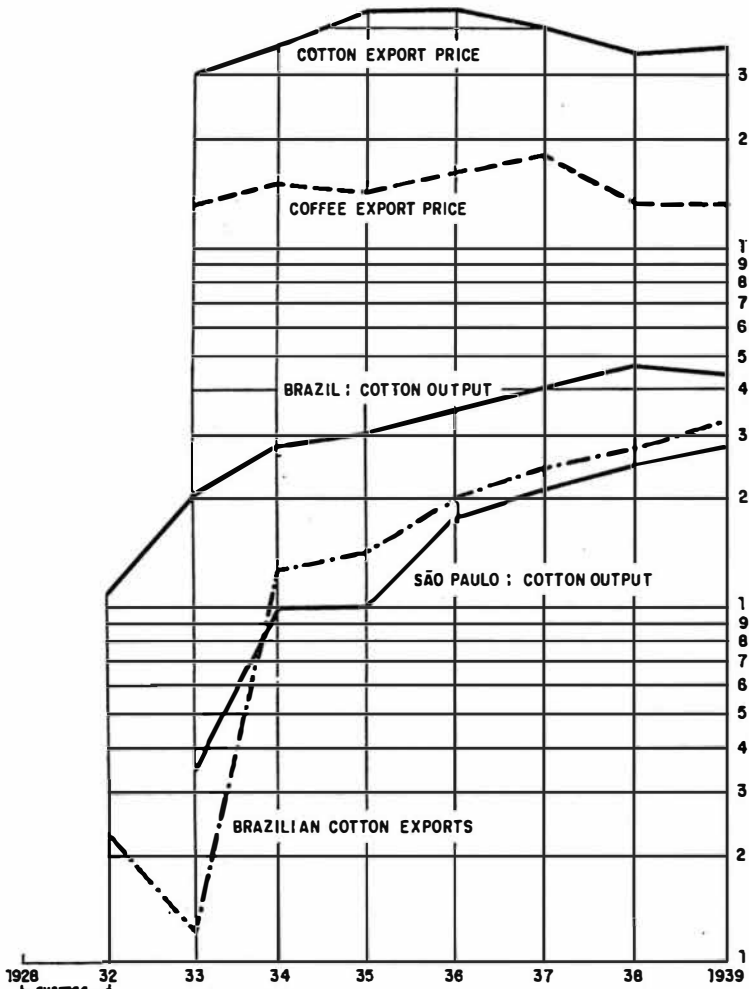
This hypothesis can be tested in a number of ways. First, given the difficulty of transferring land, labor, transport facilities, entrepreneurial talent, etc., coffee and cotton growing should have coincided geographically. To verify this, it would be necessary to obtain significantly high correlations between coffee and cotton production in the agricultural regions of São Paulo. Second, if there really was a transfer, it is likely to have been commented on by contemporaries. Third, it is important to estimate investments in cotton in order to obtain the disposable income of coffee growers net of such investments. The balance for investments in industrial and other agricultural activities would have to be very small.

With respect to the first test, Peláez found a high rank correlation between coffee and cotton production in 10 agricultural re-

<sup>18</sup> Peláez, "A Balança Comercial," p. 47.

Graph 23

**COTTON : EXPORT PRICES, OUTPUT OF BRAZIL AND SÃO PAULO, AND BRAZILIAN EXPORTS, 1928 / 1932 - 1939.**



Source : C. M. Páez, "The State, the Great Depression and the Industrialization of Brazil" ( Ph. D. dissertation, Columbia University, 1968 ), table 3 - III .



gions in the state of São Paulo (agricultural census of 1940). This suggests that cotton production expanded in the *municípios* which also produced coffee.<sup>10</sup>

There is documentary evidence of disinvestment in real resources in the coffee sector during the thirties. There are four ways in which resources might have been transferred from coffee to cotton growing. (1) Cotton may have been planted between rows of coffee trees. There is evidence that this did occur, though no precise data exist. (2) Many coffee plantations were abandoned in the years 1930-1945, and it is probable that a good part of these lands were used for growing cotton and other crops. Again, while no precise data are available, there is evidence that coffee plantations were destroyed in order to use the lands for different crops. Furthermore, the coffee-producing area became the best and largest cotton-producing region; and there was a significant shift in cotton growing from the worst lands in the state to some of the best, where coffee had previously been produced. Between 1930 and 1939, the area in coffee in São Paulo declined by 415 thousand hectares, while that in cotton increased by 1.1 million hectares. The direct transfer of lands from one crop to another may have been as high as one-third. (3) Labor, it is logical to assume, must have played an important part in the resource shift because it is the easiest factor of production to move. (4) Capital, especially machinery and transport equipment formerly used on coffee plantations, could have been transferred to the cotton sector (though it should be noted that cotton-processing equipment was imported). Financial resources could also have been transferred, e.g. funds for buying and improving seeds or for clearing land. Finally, there is evidence that the railroads serving coffee plantations were also used by cotton producers.

A test of the transfer of resources from coffee to the urban-industrial sector would be to measure the existence of funds left over once coffee planters had made their investments in cotton growing. Although he is aware of the tentative nature of his estimates, Peláez believes that the funds estimated for investment in the cotton sector were understated (they were historical cost data). This leads him to doubt that funds remained for coffee planters to invest in industry after having transferred resources to the cotton sector and other agricultural activities.<sup>20</sup>

<sup>10</sup> Peláez, "Economic Analysis," pp. 263-65.

<sup>20</sup> *Ibid.*, pp. 268-71.

## 6.4 — Foreign trade

Foreign trade was the sector which suffered most during the Great Depression because of the structure of Brazil's exports. As already mentioned, in 1931 the price of coffee fell to one-third the 1925-1929 average. During the period, the terms of trade declined by 50%. The volume exported remained near constant, but export receipts, in pounds sterling, fell two-thirds. On the other hand, the volume imported decreased by more than a third. The resulting surplus in the trade balance seems to have contributed to lessening the negative impact of the fall in export receipts on the national income. However, since import taxes comprised the main source of federal revenue, the decline in import receipts resulted in large budgetary deficits, which worsened in 1932 because of the São Paulo revolt (this deficit contributed, nonetheless, to the early recovery of the economy).

The great decline in imports, especially of capital and consumer goods, was in large part due to the exchange-control system instituted in 1931.<sup>21</sup> Already in 1930, as a result of the free market exchange rate falling below the stabilization rate, the Caixa de Estabilização and the Banco do Brasil lost their £ 30 million in reserves.<sup>22</sup> On 20 October 1930, the government granted the Banco do Brasil a monopoly on exchange-rate operations. This monopoly lasted until November, when the revolution occurred and the Caixa de Estabilização was extinguished.<sup>23</sup>

By 1931, Brazil could not count on the inflow of new capital (which had ceased),<sup>24</sup> and it needed foreign exchange not only to service the public foreign debt (which totaled more than £ 20 million), but also to cover private profit remittances and interest payments on private loans abroad. Consequently, the foreign-exchange situation worsened. The outcome was the adoption of a system of exchange controls administered by the Banco do Brasil<sup>25</sup> and of a new foreign-debt-consolidation agreement (also called the third funding).<sup>26</sup> Even so, the difficulties continued in 1932. A black market developed. Although it was tolerated for a while by the Banco do Brasil, in 1933 the latter instituted an intermediate

<sup>21</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

<sup>22</sup> Banco do Brasil, *Relatório*, 1930, p. 6.

<sup>23</sup> *Ibid.*, pp. 28-33.

<sup>24</sup> Banco do Brasil, *Relatório*, 1935, p. 14.

<sup>25</sup> Besides a system of import priorities, quantitative import restrictions were established. See app. C.

<sup>26</sup> See app. D, "The Evolution of the External Debt."

rate to combat it. Only by 1934 were exchange controls partially lifted, as a large proportion of transactions were once again allowed to go through the free market.

Although there was a recovery in the volume of both imports and exports in the period 1933 to 1937, these were the years when foreign trade suffered its most pronounced crisis. The continued decline in coffee prices<sup>27</sup> led to a worsening of the terms of trade, which in 1939 and 1940 reached levels far below those observed in the midst of the Depression. The trade surplus fell to a yearly average of just over £ 8 million in 1934-1936, a time at which the servicing of the foreign debt alone, according to the new arrangements (called the Oswaldo Aranha scheme),<sup>28</sup> required a yearly sum of £ 7.5 million. When the trade surplus declined to less than £ 2 million in 1937 due to a great increase in imports, exchange controls were reinstated, with the monopoly of exchange operations once again going to the Banco do Brasil. In addition, payments on the foreign debt were suspended for two years (1938 and 1939).

On the one hand, the continued worsening of the terms of trade had an adverse effect on the economy. It reduced the income of the export sector and the purchasing power of exports, i.e. the capacity to import, and led to the need for continued devaluations and exchange controls. On the other hand, the measures taken encouraged the industrialization process since they constituted a system of protection. In this manner, it was possible to mitigate the effects of the decline in the growth of agricultural production.

## 6.5 – Industrial production

The Depression had a considerably less severe impact on industrial production than on agricultural output. Nonetheless, an examination of the industrial-production indices (table 126, Statistical Appendix) reveals stagnation in the period 1929-1932. There was even a decline if the 2% annual growth rate of the population is taken into account.

<sup>27</sup> From 1935 on, the effects of the decline of coffee prices on the terms of trade were offset, in part, by the growth of cotton as the second most important export product.

<sup>28</sup> This was approved by Decree 23 829 of 5 February 1934. In contrast to the previous fundings, the Oswaldo Aranha scheme implied a reduction in the real debt-service payments. Thus, in the four years of this scheme, Brazil paid only £ 33.6 million, when it should have paid £ 90.7 million. *Ministério da Fazenda, Secretaria do Conselho Técnico de Economia e Finanças, Finanças do Brasil*, 20 vols. (Rio de Janeiro: Tipografia do Jornal do Comércio, Rodrigues & Cia., 1955), vol. 19: *Dívida Externa, 1824-1945*, by V. F. Bouças.

Table 38 shows that the industrial sectors most affected by the Depression were those producing consumer goods with high income elasticities of demand, such as clothing, shoes, beverages and tobacco. Food products were affected less because of their lower income elasticity. Unlike most other sectors, the textile industry expanded substantially during these years. There were two reasons for this: (1) prior to the Depression the industry had operated below capacity, and (2) the import and exchange controls resulting from the country's balance-of-payments crisis diverted demand from imported to domestic textiles. It will also be noted that the production of nonmetallic minerals grew rapidly. This is explained by the substitution of domestic for imported cement.

Table 38

*Brazil: Yearly Growth Rates of Industrial Output by Sector, 1929-1932*  
(1929 = 100)

Sector	1929-1932
Mining	- 6.3
Manufacturing	1.3
Nonmetallic Minerals	13.3
Metallurgy	- 3.4
Paper and Cardboard	.7
Leather Products	2.5
Chemicals and Pharmaceuticals	- 9.8
Perfumes, Soap and Candles	- 1.5
Textiles	8.4
Clothing and Footwear	-12.4
Food Products	- .2
Beverages	- 8.6
Tobacco	- 5.1
Total	1.1

Source: Statistical Appendix, table 126.

The special situation of industry is in large part explained by the foreign-trade situation during the Depression.

The changes introduced in exchange-rate policies from 1932 on led to continued devaluations. These not only benefited the export sector, but also, by raising the price of imported goods, acted as a protective shield for industry. This protection complemented that already existing due to exchange-rate restrictions (which had been established solely to protect the balance of payments).

In sum, the reduced negative impact of the Great Depression on Brazilian industry in the years 1930-1932 seems to have been due to a combination of factors which maintained the level of aggregate demand. Thus, instead of a violent fall in industrial production, as in industrialized countries, Brazil merely experienced a stagnation of industrial output. From 1933 on there occurred not only a recovery, but an actual industrial surge. The basic causes for these developments were: (1) the positive effect of trade surpluses on the national income,<sup>20</sup> and (2) the positive effect of the large budget deficits (which, as was shown earlier, were not planned) resulting from the decline in import receipts and the rise in expenditures associated with the São Paulo revolt and the Northeastern drought. These increased expenditures resulted not only in a growth of the money supply, but also, from 1933 on, in a rise of the price level.

On the supply side, exchange controls stimulated an acceleration of the process of import substitution. By 1931-1933, the quantum of imports had fallen to about 50% of the 1928 level.

The pace of industrial development was quite intense from the Great Depression on. Thus, of the total of 49.4 thousand industrial establishments existing at the time of the industrial census of 1940, no fewer than 34.7 thousand had been founded since 1930. Even though 56.4% of the establishments listed in the census employed less than five persons, the high rate of industrial growth in the period 1933-1939 cannot be denied.

This expansion is corroborated by the rates of growth of industrial production presented in table 39. The bench marks of total physical production<sup>30</sup> indicate that the share of industry climbed from 21% in 1919 to 43% in 1939.<sup>31</sup> The fact that in 1929-1939 industrial production rose at average annual rates of 8.4%, while agricultural output grew at only 2.2%, suggests that industrial activity substituted in great part for agricultural activity in these years. It is interesting to note that the rate of growth of the index of industrial production averaged only 1.0% per year during the Depression, but 11.2% in the period 1933-1939.

<sup>20</sup> Peláez, "A Balança Comercial," pp. 15-47.

<sup>30</sup> See Methodological Appendix.

<sup>31</sup> It is clear that comparisons in current prices introduce distortions if prices in the two sectors did not grow at the same rate. Nevertheless, even granting a wide margin of error, a 21 to 43% increase in the share of industry in total physical output suggests considerable growth of industrial activity. This is confirmed by the indices of industrial production, which rose at an average annual rate of 11.2% in the period 1933-1939. As explained in the Methodological Appendix, these indices were calculated independent of the bench marks of physical product.

Table 39

*Brazil: Yearly Growth Rates of Industrial Output by Sector, 1933-1939*  
(1929 = 100)

. (%)

Sector	1933-1939
Mining	8.1
Manufacturing	11.3
Nonmetallic Minerals	19.9
Metallurgy	20.4
Paper and Cardboard	22.0
Leather Products	2.7
Chemicals and Pharmaceuticals	10.6
Perfumes, Soap and Candles	15.7
Textiles	11.1
Clothing and Footwear	9.8
Food Products	1.9
Beverages	8.4
Tobacco	5.2
Total	11.2

Source: Same as table 38.

It should be stressed that this industrial growth occurred in spite of limitations on the importation of machinery.<sup>32</sup> From 1931 to 1937, importation of machinery was permitted only in exceptional cases. This prohibition was in response to the pressures of industrialists who complained of overproduction in certain sectors.<sup>33</sup> What was happening, in fact, was not that given industries were overproducing, but that demand was declining due to the Depression. It is absurd that the prohibition was kept until 1937, especially considering that domestic production of machinery was still insignificant in relation to the needs of the industrial sector. Even so, the industrial surge was not held back by these import

<sup>32</sup> "Super-produção Industrial?" *Observador Econômico e Financeiro*, Ano 2, n.º 14 (March 1937): 91.

<sup>33</sup> *Ibid.*, pp. 133-42.

restrictions.<sup>84</sup> It occurred in a number of sectors through improvements in the utilization of machinery and also at the cost of the overutilization of installed capacity.

The textile industry is a case in point. Operating at two and three shifts per day,<sup>85</sup> it managed to produce 914.5 million meters of cotton cloth in 1936. This was a rise of 54% over 1927, and it was achieved using the same number of looms and spindles,<sup>86</sup> and the same technically outdated and often obsolete equipment.

(According to the 1940 industrial census, half of the machines producing textile threads in São Paulo, which accounted for 51.2% of the country's output, were more than 10 years old. In the cotton-weaving industry, only four thousand of a total 130 thousand machines were less than 10 years old. In the field of wool-weaving, 6.1 thousand out of seven thousand were either more than 10 years old or of unknown age.)<sup>87</sup> Nonetheless, despite the fact that the domestic industry produced only a small number of traditional semi-automatic looms,<sup>88</sup> the importation of modern automatic looms was forbidden.

It is clear that under such conditions the Brazilian textile industry was in no position to compete against foreign products since its costs and prices were quite high. Only the world shortages of textiles during World War II made it possible to continue expanding production and even export some high-priced textiles.<sup>89</sup>

Among the traditional industries, textile production experienced the highest rate of growth (11.2% per year) in the period 1933-1939 and food products (whose rate of growth did not exceed demo-

<sup>84</sup> These restrictions were limited to traditional industrial sectors and did not apply to heavy industries. The latter developed with the help of foreign capital, which knew how to take advantage of various government incentives, especially in the cement and metallurgical industries. See Peláez, "The State, the Great Depression, and the Industrialization of Brazil" (Ph. D. dissertation, Columbia University, 1968), chaps. 4, 5 and 6.

<sup>85</sup> "Super-produção Industrial," p. 91.

<sup>86</sup> *Jornal do Comércio, Retrospecto Comercial*, 1929, pp. 85-86, and 1937, p. 57; Instituto Brasileiro de Geografia e Estatística, *Anuário Estatístico do Brasil*, 1939-1940, p. 1 329.

<sup>87</sup> Secretaria de Agricultura, Indústria e Comércio de São Paulo, Diretoria de Estatística, Indústria e Comércio, *Estatística Industrial do Estado de São Paulo*, 1939-1940, p. 253; H. Ferreira Lima, "A Indústria Têxtil no Brasil," *Observador Econômico e Financeiro*, Ano 11, n.º 122 (March 1946): 64.

<sup>88</sup> At times, there were even pressures to prohibit the installation of domestically-produced looms because of the existing overproduction. The latter probably resulted from the excessive number of hours worked in many plants rather than from the installation of new factories. See "Super-produção Industrial," p. 91.

<sup>89</sup> Ferreira Lima, pp. 59-61.

graphic growth) the lowest. In general, the traditional industries grew at lower rates than industry as a whole.

Table 40 compares the rates of growth of industrial production and of imports, thereby giving an idea of the amount of import substitution that had taken place. Import substitution was strongest in the traditional industries that had weighed most heavily in total imports — textiles, clothing and food products. At the same time, there was a large increase in the importation of capital goods for the machinery and transport industries and a more moderate increase in the importation of intermediate goods such as metal and paper products. Nonmetallic minerals, mainly cement, experienced high domestic growth rates (which had already started in 1925) and a decrease in imports.

Table 40

*Brazil: Yearly Growth Rates of Industrial Output and of  
Quantum of Industrial Imports, 1933-1939  
(%)*

Sector	Industrial Output	Imports (Quantum)
Mining	8.1	3.8
Manufacturing	11.3	...
Nonmetallic Minerals	19.9	-4.3
Metallurgy	20.4	3.6
Machinery	...	10.5
Electrical Equipment	...	3.7
Transport Equipment	...	9.1
Paper and Cardboard	22.0	4.1
Chemicals	...	3.1
Pharmaceuticals, Perfumes and Plastics	...	-1.1
Textiles	11.1	-6.6
Clothing and Footwear	9.8	-4.9
Food Products	1.9	-4.7
Beverages	8.4	1.8
Printing and Publishing	...	-3.8
Others	...	-7.0

Sources: Industrial output: Statistical Appendix, table 131; Quantum of industrial imports: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Contas Nacionais, "Estrutura do Comércio Exterior do Brasil, 1920-1964" (Rio de Janeiro, 1969) (Mimeographed), vol. 2.

Code: ... = not available.



The increase in the quantum of imports of basic industrial products reflects the linkages introduced by the industrialization process over the period 1933-1939. Moreover, this took place despite the prohibition on the importation of machinery destined for certain industries in the years 1931-1937.

It is also important to remember that the industrialization of the thirties occurred in spite of the adverse foreign-trade conditions, especially the low terms of trade and the diminished capital inflows, which severely limited the capacity to import. Since the Brazilian capital-goods industry was in its infant stage, the capacity to import was crucial to ongoing development.

During the twenties the levels of investment in industry had been fairly high, as is clear in table 41. At that time the inflow of foreign capital permitted the creation of a few basic industries (e.g. steel and cement) and the expansion of the railroad network and of the installed capacity for producing and distributing electric energy. The importation of capital goods for industry attained levels which would be surpassed only in the postwar years (1947-1952). The paralysis of foreign capital inflows from 1931 on and the generally adverse foreign-trade conditions resulted in a drastic decline in investments during the Depression. Then, in 1933, investment activity began to recover.

Table 41

*Brazil: Indicators of Investment in Industry, 1920-1939*

	1920-1929	1930-1932	1933-1939
Cement Consumption (Annual Average, 1 000 Tons)	361	354	554
Steel Consumption (Annual Average, 1 000 Tons) <sup>a</sup>	230	150	297
Capital-Goods Imports for Industry (Average 1929-1939 = 100)	100	39	75

Sources: MA/SEP, FGV/IBRE, and Ministério da Fazenda, Serviço de Estatística Econômica e Financeira (MF/SEEF).

- <sup>a</sup> Excludes rails, accessories, etc.

Due to the industrial capacity created by the investments of the twenties, it was possible for industrial production to expand throughout the thirties. The average annual levels of cement and

steel consumption in the period 1933-1939 were above those of the years 1920-1929. In 1933-1939 there was also a recovery of capital-goods imports, but these never attained the levels reached in the previous decade. It is important to note the large imports of textile machinery in 1921-1928 (such imports were limited by specific legislation in the period 1931-1937).

In the years 1933-1939, domestic industry produced 99% of the pig iron consumed in the country. This led to the production of steel ingots amounting to 92.4% of internal consumption. The latter, in turn, made possible the production of rolled-steel products amounting to 19% of domestic consumption. In the same period, domestic cement production came to account for 85% of national consumption.

In sum, in spite of import restrictions, the thirties witnessed the first real industrialization thrust in Brazil. This was possible not only due to the protection extended by the exchange-rate policies, but also because a number of the basic industries created in the twenties (e.g. steel and cement) came to operate at full capacity and/or were expanded in the years 1933-1939. In addition, the government became increasingly interested in the problems of industry. This led to the establishment of CREAL, which financed (up to 10 years) the expansion of existing firms or the creation of new ones. Such financing, however, became important only after 1941.<sup>40</sup>

The industrial census of September 1940 makes it possible to evaluate the changes that occurred in the structure of industrial production between 1919 and 1939. To do this, the value added of the principal industrial groups was compared for these two years. The ideal would have been a comparison with the years right after the Depression since, as was shown, industrialization in the strict sense began only in 1933-1939. Up to 1930, industry was characterized mainly as a transformer of agricultural products for the domestic market. As such, its linkages were with agriculture, and there existed little interrelation between sectors, i.e. industry had very little self-dynamism (see table 128 in the Statistical Appendix).

By 1939 a number of changes had taken place. The basic industries (metallurgy, machinery, electrical equipment and transport equipment), with the exception of cement (which is included in nonmetallic minerals), practically doubled their share in industrial value added. On the other hand, the traditional industries (mainly textiles, clothing and footwear, food products, beverages, tobacco and furniture), though they still accounted for 60% of

<sup>40</sup> See app. E, "The Protection of Industry."

value added, had lost ground since 1919, when their share stood at 72%. The growth of the chemical and pharmaceutical industries (including perfumes, soap and candles) was extraordinary, since they practically tripled their share between 1919 and 1939.

As far as the size of establishments is concerned, the 1940 census shows that the industrial sector was still very much atomized, though a number of large enterprises already existed. Thus, 85 industrial establishments, i.e. .2% of the total, employed 159.6 thousand persons, which amounted to 16.6% of total employment. However, a majority of 56.4% of the establishments employed only 7.9% of the industrial labor force, which comes to an average of 2.8 persons per establishment.

Another interesting characteristic shown by the 1940 census is the measurement of installed horsepower of electrical equipment. Taking into account only those industrial establishments with installed capacity of more than one thousand horsepower, 192, or .8%, accounted for almost half of total installed power capacity. On the other hand, 8.7 thousand establishments (32.7%) accounted for only 1.8% of the total. Almost half of the establishments interviewed either did not have or did not declare any installed power capacity.



## 7

# The growth of real income during World War II, 1940-1945

### 7.1 – Introduction

As might be expected, the growth rate of the Brazilian economy fell during World War II in comparison to the level attained from 1933 to 1939. Whereas the average annual growth rate of GNP had been 5% in the earlier period, it was only 3.6% from 1940 to 1945. The principal cause of this deceleration was a slowdown in the rate of industrial growth: during the war industrial production grew at half the rate observed in the period 1933-1939. This decline, in turn, was a result of the country's inability to import certain industrial inputs during the war.

During the war, the value of exports increased considerably, in part due to the exportation of items not previously sold abroad on a large scale, such as textiles and strategic minerals. This, together with the near doubling of coffee prices over the six-year span, improved the terms of trade. However, on the import side, goods frequently failed to reach Brazil due to transportation shortages and supply difficulties in the industrial nations. Surpluses consequently appeared in the balance of trade. Since the government used deficit financing to purchase export receipts, these surpluses were among the principal factors responsible for generating rapid rapid inflation during the war.

Once more, as had been the case in 1914-1918, wartime proved a propitious period for tax changes. Just as taxes on internal transactions had temporarily replaced import duties as a source of income during World War I, the income tax definitely replaced such duties during World War II. This was made possible by the structural changes introduced by ongoing import-substitution industrialization.

Finally, though the rate of growth of GDP decelerated during the war, the improvement in the terms of trade made it possible for national income per capita to rise 10%. This might indicate better

living conditions during these years, contrary to what had happened in 1933-1939. In the earlier period, the deterioration in the terms of trade had caused national income per capita to stagnate relative to the pre-Depression level, despite the 5.1% annual growth rate of GDP.

## 7.2 — Monetary and fiscal policies

The dilemma faced by the government during the war was how to finance Brazilian participation in the war, and at same time hold down inflation. To handle this problem, a war-finance plan presented in 1942<sup>1</sup> recommended that three steps be taken: (1) Compulsory war bonds were to be issued to those who paid income taxes, to public employees, and to pensioners. These bonds would carry 6% interest. Taxpayers were to buy bonds in amounts equal to their tax liabilities, and public employees were to have 3% deducted from their salaries for bond purchases.<sup>2</sup> A total of three million *contos de réis* was to be raised through these bonds. (2) Treasury bills up to one million *contos de réis* were to be sold to commercial banks. These bills would have a maximum term of 180 days and could be discounted at the Carteira de Redescontos of the Banco do Brasil.<sup>3</sup> The sale of treasury bills was designed to make funds available immediately. The bills would later be paid off with receipts from the sale of war bonds. (3) Issues of paper money were to be tied to the national reserves by limiting total issues to 25% of the reserves.<sup>4</sup>

The war had highly inflationary effects in Brazil, as in most other countries. After 1942, the main element contributing to inflation was the issuing of paper money to buy export receipts and to finance federal budget deficits. From 1942 to 1945, the Carteira de Redescontos placed more than 11 million *contos* in circulation.<sup>5</sup> This explains the 110% increase in the price index from 1939 to 1945, and the 45% increase from 1942 to 1945.

This situation continued because Brazil lacked a central banking system to control banking credit. Toward the end of the war, the Superintendência da Moeda e do Crédito (SUMOC) was created to control the money market and to lay the groundwork for the

<sup>1</sup> This plan was prepared by an economic study and research commission of the Ministério da Fazenda, which was then headed by Octávio Gouvêa de Bulhões.

<sup>2</sup> Decree-Law 4 789 of 5 October 1942.

<sup>3</sup> *Ibid.*

<sup>4</sup> *Ibid.*

<sup>5</sup> Banco do Brasil, *Relatório*, 1945, p. 38.

establishment of a central bank.<sup>6</sup> In justifying the creation of the Superintendência, the minister of the treasury provided the following brief analysis of the inflationary situation in Brazil:

The slowness with which war bonds absorbed excess money supply led to increases in the means of payment. These resources continued to circulate and led to an expansion of bank credit. Since funds did not flow to the government fast enough, the Banco do Brasil found it did not have sufficient resources to purchase all the foreign exchange available, and was forced to rediscount its assets at the Carteira de Redescontos. At first, the Banco used up its commercial bonds; then it sold its treasury bills. The Carteira in turn issued money, and this stimulated a further expansion of bank credit as well as speculation and new business investment, all of which diminished the public interest in subscribing to war bonds.<sup>7</sup>

It is worth noting that in January 1944 the government created "equipment certificates", issued by the Banco do Brasil, to deal with wartime overutilization of industrial equipment and with excess profits. These certificates carried an annual interest rate of 3%, were nominative, and were to be redeemable in foreign exchange when suitable equipment became available for purchase by the bondholder.<sup>8</sup> Simultaneously, an excess-profits tax was created; as an alternative to paying this tax, the firm was allowed to purchase "equipment bonds" for double the amount of its tax liability.<sup>9</sup> Obviously this measure served to sterilize some of the inflationary impact of trade surpluses, as well as constituting a reserve fund for equipment replacement.

As regards tax structure, it was in this period that the income tax replaced import duties, becoming second only to taxes on internal transactions as a source of federal revenues. A similar but temporary change had occurred during World War I, when taxes on internal transactions increased in importance relative to import duties. This transition was the natural result of a drastic reduction in imports and a broadening tax base, in the form of the money incomes of a burgeoning urban population and growing industrial labor force. Table 42 illustrates the magnitudes involved.

<sup>6</sup> *Ibid.*

<sup>7</sup> *Ibid.*, pp. 40-41.

<sup>8</sup> Decree-Law 6 225 of 24 January 1944.

<sup>9</sup> Decree-Law 6 224 of 24 January 1944.

Table 42

*Brazil: Principal Federal Taxes, 1939-1945*  
(% of Total Federal Tax Receipts)

Year	Import Duties	Tax on Internal Transactions	Income Tax	Total
1939	32.4	32.4	9.4	74.2
1940	29.3	31.6	11.5	72.4
1941	28.0	31.4	13.2	72.6
1942	16.6	30.8	22.8	80.2
1943	11.6	30.3	27.4	69.3
1944	13.5	29.2	29.0	71.7
1945	12.4	34.3	27.1	73.8

Source: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBRE/CEF).

Government expenditures for fixed capital investment grew rapidly during World War II, accounting for an average 19% of total expenditures, compared to an average of 6% in the 1930s. Part of this increase was due to defense measures, such as outlays for barracks, railroad branch lines, and highways with military importance. Table 116 in the Statistical Appendix presents a breakdown of these expenditures.

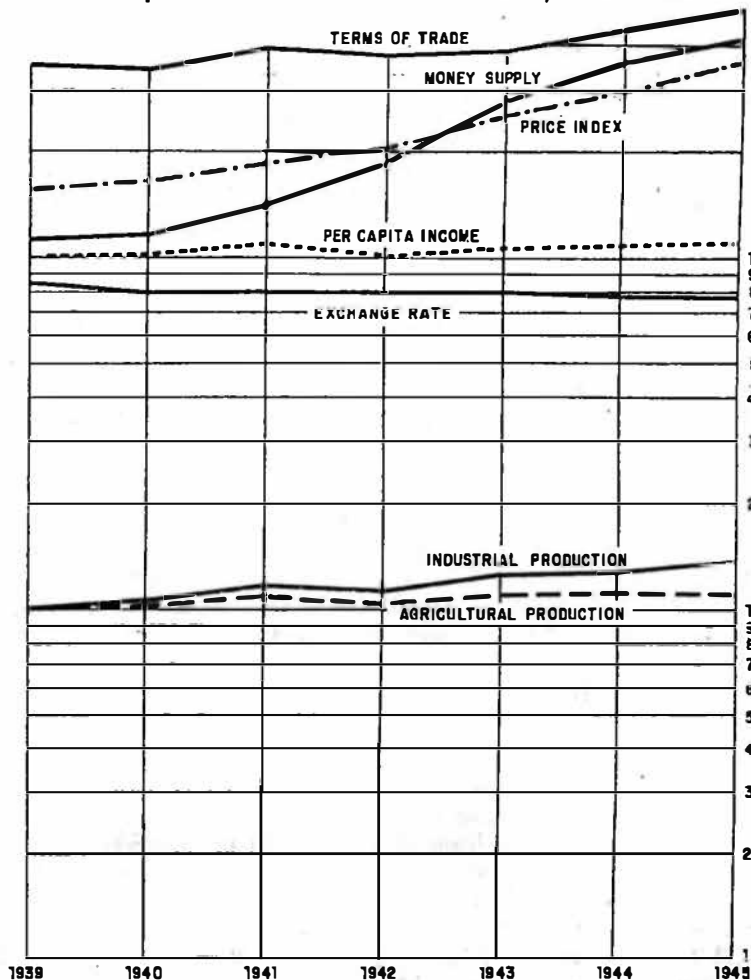
As noted earlier, a special public-works and national-defense plan was set in motion in January 1939. On 1 January 1944, this plan was replaced by another, which was also to run for five years. While the first plan had emphasized defense projects, the second gave priority to infrastructure and the creation of basic industries.<sup>10</sup> The government continued to try to offset the inflationary impact of expenditures by energetically withdrawing funds from circulation and tying the money supply to gold reserves. The goal of minimizing budget deficits was not achieved, however, even though small surpluses were projected for 1944 and 1945. While actual receipts always exceeded estimates, actual expenditures far outran budgeted expenditures, as table 43 illustrates.

<sup>10</sup> N. Mello e Souza, "O Planejamento Econômico no Brasil: Considerações e Críticas," *Revista de Administração Pública* 2 (July-December 1968): 56-115.



Graph 24

**BRAZIL:**  
INDICATORS OF MONETARY, FISCAL AND EXCHANGE-RATE  
POLICIES, OF PRODUCTION AND OF INCOME, 1939-1945.



Source: Statistical Appendix, tables 114, 120, 121, 126, 132, and 140.

Table 43

*Brazil: Federal Finances, 1940-1945*  
(1 000 Contos de Réis)

Year	Budgeted			Actual		
	Receipts	Expenditures	Surplus or Deficit	Receipts	Expenditures	Surplus or Deficit
1940	4 209	4 422	-213	4 640	5 189	- 649
1941	4 125	4 881	-756	4 603	5 438	- 835
1942	4 380	5 026	-637	4 841	6 343	-1 502
1943	4 778	5 270	-492	5 095	6 612	- 517
1944	6 430	6 404	26	8 311	8 399	- 88
1945	8 232	8 205	27	9 645	10 830	-1 194

Source: Same as table 42.

Graph 24 and table 43 summarize the relationships between monetary, fiscal, and exchange policy and the growth of income and production. The extremely rapid growth of the money supply was due, in large part, to currency issues. These issues redeemed the foreign-exchange surpluses produced by unplanned trade surpluses. The continuous growth of the money supply led to a 110% increase in the price index between 1940 and 1945. Real per capita income, which had stagnated in the thirties, rose by around 10% from 1939 to 1945. This was not a cumulative process, however. Per capita income rose until 1941, fell in 1942, and recovered from 1943 on. These fluctuations were the result of similar changes in the terms of trade, as the curves in graph 24 make clear.

### 7.3 — Agricultural production

The trading problems caused by the war reinforced the changes in the structure of agricultural production which had taken place in the thirties. Coffee production declined even further (table 117, Statistical Appendix), resulting in a reduction of land planted with coffee trees. In 1943, only 17% of all cultivated land in Brazil was in coffee (table 44). Cotton had become more important than coffee, both in value of production and as a percent of total farmland.

While coffee was declining in importance, its price on the world market was rising, going from US\$ .075 a pound in 1939 to US\$ .134 in 1945.<sup>11</sup> This inelasticity of long-run supply is indicated by the

<sup>11</sup> Ministério da Fazenda, Serviço de Estatística Econômica e Financeira.

Table 44

*Brazil: Area Cultivated by Crop, 1939 and 1943*  
(% of Total)

Crop	1939	1943
Cotton	16.4	17.4
Rice	7.8	8.6
Cocoa	1.5	1.7
Coffee	21.9	17.0
Sugar Cane	3.6	4.2
Beans	7.3	7.7
Tobacco	.7	.7
Manioc	3.9	4.8
Corn	31.6	31.5
Wheat	1.5	2.1
Others	3.8	4.3
Total	100.0	100.0

Source: Basic data from the Ministério da Agricultura, Serviço de Estatística da Produção.

data in table 45. Note that although prices for export crops more than doubled, production diminished rather than increasing. This decline in output was due to government policy, which caused a reduction in the output of low-grade coffee, and to the droughts and freezes of 1940, 1942, and 1943, which sharply reduced harvests. In addition, the prices of domestically-consumed crops rose even faster than the prices of export crops, which may explain the average 3.1% increase in the annual output of the former.

Coffee stocks burgeoned during the war. The 1940-1941 harvest was forecast at approximately 20.9 million bags, of which 15.9 million could not be sold. The Departamento Nacional do Café eventually gave in to the coffee growers and wholesalers, who felt that production was excessive only because European markets were temporarily closed, and that a valorization scheme should be used until normality returned. In response to such criticism of its policies, the DNC purchased 10.9 million bags for market-support purposes.<sup>12</sup>

<sup>12</sup> C. M. Peláez, "An Economic Analysis of the Brazilian Coffee Support Program, 1906-1945: Theory, Policy and Measurement," in *Essays on Coffee and Economic Development* (Rio de Janeiro: Instituto Brasileiro do Café, 1973), p. 184.

Table 45

*Brazil: Price and Quantity Indices for the Agricultural Sector,  
1939-1945*  
(1939 = 100)

	1945	
	Price	Quantity
Crops	231.0	104.0
For Domestic Consumption	238.0	120.0
For Export	222.0	79.0
Raw Materials for Industry	234.0	126.0
Livestock	235.0	105.0
Extractive Activities	199.0	235.0
Total Agricultural Sector	220.0	110.0

Source: Statistical Appendix, table 121.

Once again, the DNC used a tax in kind and acquired different kinds of coffee at different prices.<sup>13</sup> Taken together, the drought of 1940 and the freeze of 1942 destroyed the equivalent of 4.7 million bags of coffee, lowered average productivity from 48 to 33 *arrobas* per thousand trees, and lowered the quality of the coffee produced.<sup>14</sup> As a result of this freeze, the DNC lowered the "sacrifice quota" from 35% to 10% in São Paulo and Paraná.

Then, in 1943, the states of São Paulo and Paraná experienced a drought followed by a freeze. The effects on coffee production were so severe as to lower production to the point where demand threatened to outrun supply. Given the possibility of underproduction, in October 1943 the DNC abolished the tax in kind on a retroactive basis, thus allowing producers to recoup part of the taxes collected on previous harvests. Shipping regulations for the 1943-1944 harvest were also simplified.<sup>15</sup> Half of production could be shipped directly to the ports, while the other half was to be sold to the DNC, which would gradually release it to the ports.

<sup>13</sup> For details, see Peláez, pp. 184-86.

<sup>14</sup> *Ibid.*, p. 188.

<sup>15</sup> *Ibid.*, p. 190.

Despite the effects of natural disasters on coffee production, it is interesting that Brazil still had to destroy almost 13.5 million bags of coffee from 1939 to 1944 to maintain prices. This amounted to 17% of all the coffee destroyed (78.2 million bags) from 1931 to 1944.<sup>16</sup>

## 7.4 — Foreign trade and industrial production

Brazilian trade with the rest of the world grew during World War II. Rising coffee prices and export diversification (mainly manufactures, such as textiles and strategic raw materials) led to an improvement in the terms of trade. The value of exports increased, while the quantities exported remained virtually stable.

On the other hand, difficulties of supply during wartime meant that the Brazilian demand for imports could not be fully satisfied. The volume of imports, especially consumer goods and fuels, fell until 1943. The foreign exchange which was accumulated as a result of these two trends permitted repayment of the foreign debt under better conditions.<sup>7</sup> While a free market for foreign exchange was maintained throughout the war, under the institutional framework established in 1939,<sup>18</sup> the exchange rate showed little fluctuation.

As discussed above, unforeseen surpluses in the balance of trade forced the government to make massive issues of new money; this led to rapid inflation. Graph 25 illustrates trends in foreign trade during the war.

The development of industry during World War II was intimately related to trade conditions. While shortages of foreign exchange in the thirties had led to modifications in the exchange policy which favored industry, World War II was a period of exchange surpluses. Industrial firms made profits and accumulated reserves.

Decree-Law 1201 of 4 April 1939 governed exchange operations throughout the war. Exchange for 70% of all exports and 100% of imports was sold in a free market. The exchange rate was stable, and wartime conditions functioned as a system of controls on goods, limiting the volume of imports. While import shortages helped local industries by creating an unsatisfied demand, they hindered industry by limiting the availability of machines and raw materials formerly obtained abroad. Manufacturers were forced to use local substitutes and increase utilization of existing plants.

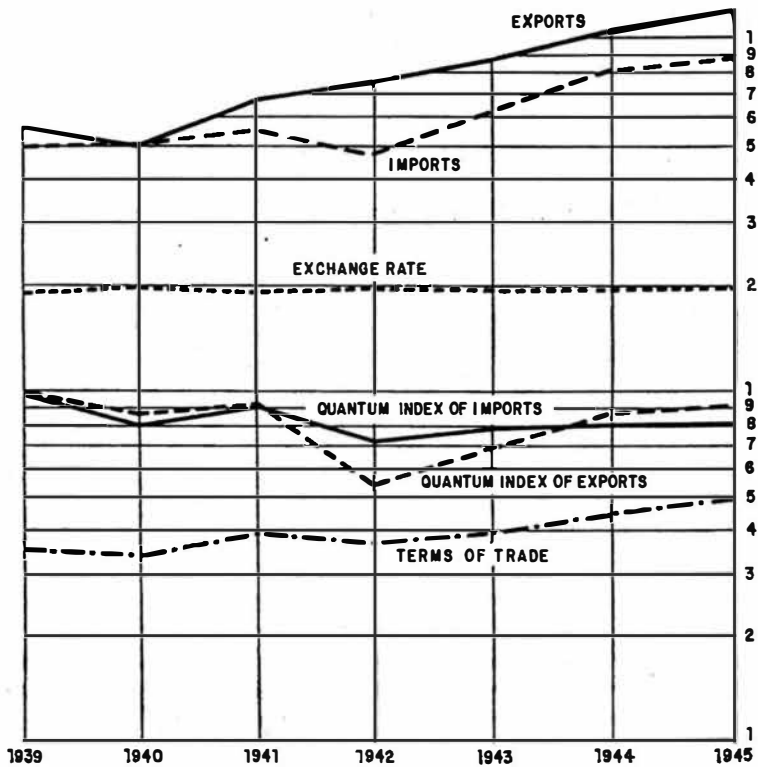
<sup>16</sup> *Ibid.*, p. 195.

<sup>17</sup> See app. D, "The Evolution of the External Debt."

<sup>18</sup> See app. C, "Foreign Trade and Foreign-Exchange Policy."

Graph 25

**BRAZIL :**  
**FOREIGN TRADE DURING WORLD WAR II,**  
**1939 - 1945.**



Source: Statistical Appendix, tables 120 and 132.

Table 46 shows the development of industry in the war period. The industries which experienced the most rapid growth were the basic industries, particularly cement and metallurgy.

Table 46

*Brazil: Yearly Growth Rates of Industrial Output by Sector, 1939-1945*  
(%)

Sector	1939-1945
Mining	3.7
Manufacturing	6.2
Nonmetallic Minerals	14.1
Metallurgy	9.1
Transport Equipment	-11.0
Paper	4.1
Rubber	30.0
Leather Products	-2.5
Vegetable Oils	6.7
Textiles	6.2
Footwear	7.8
Food Products	.9
Beverages and Tobacco	7.6
Printing and Publishing	2.3
Construction	4.8
Electrical Power	7.4
Total	5.4

Source: G. F. Loeb, "Números Índices do Desenvolvimento Físico da Produção Industrial no Brasil, 1939-1949," *Revista Brasileira de Economia* 7 (March 1953) : 31-66.

One of the most important decisions for the process of Brazilian industrialization was made during the war, namely the decision to establish the first integrated steel mill in Latin America — the Companhia Siderúrgica Nacional at Volta Redonda. Financing for this plant came from the U. S. Export-Import Bank (which provided credit for equipment imports), from the national treasury, and from sales of stock to insurance institutes and private individuals.<sup>19</sup> The mill did not go into operation until after the termination of hostilities.

<sup>19</sup> Decree-Law 3 002 of 30 January 1941. Also see Conselho Federal de Comércio Exterior, *Dez Anos de Atividades, 1934-1944* (Rio de Janeiro: Imprensa Nacional, 1944), pp. 50-51.

The effects of the war on imports are detailed in table 132 in the Statistical Appendix. The quantum index for all imports fell by about 20% from 1940 to 1945, but certain types of imports declined by much more — machinery and electrical and transport equipment, for example. Imports of machinery, including most of the equipment needed in industry, fell by half from 1939 to 1945, though the bulk of the machinery for the national steel company was imported in 1943 and 1944.

It is easy to imagine the effects that such a limitation of formerly imported inputs had on the evolution of industrial production. Increases in output were obtained by using plants to capacity. As a result, by the end of the war, the equipment in many branches of industry was worn out or obsolete.<sup>20</sup>

The case of the textile industry is especially worthy of note, due to the predominant position it held in Brazilian exports throughout the war. At one point, textile exports accounted for almost 20% of the value of all exports. This export surge ended, however, once wartime shortages were alleviated. High costs, owing to obsolete equipment, and serious problems in quality control, often due to fraudulent practices, prevented Brazilian manufacturers from matching the postwar competition of the traditional suppliers.

While the index of the terms of trade improved by 42% during the war, providing the exchange necessary for industrialization, wartime shortages of necessary imports led to deceleration in the rate of growth of industrial production. Thus, during the war years, industrial output grew at an average of only 5.4% per year. In the thirties, the corresponding rate had been 8.4%, and from 1933 to 1939, it was 11.2%.

<sup>20</sup> In the textile industry, 80% of all equipment was either worn out or obsolete and in need of immediate replacement. H. Ferreira Lima, "A Indústria Têxtil no Brasil," *Observador Econômico e Financeiro*, Ano 11, n.º 122 (March 1946): 64.



# 8

## Conclusion

The preceding chapters attempt to outline the main policies of the Brazilian government from 1889 to 1945 and to evaluate the possible repercussions of these policies on the level of economic activity. It is now time to summarize the most important conclusions. In particular, two questions may now be answered: (1) Did government policy promote or discourage economic growth in various sectors? and (2) Did real per capita income grow up to 1945?

### 8.1 — Deflationary characteristics of government policy

Any critique on government policies — fiscal, monetary, exchange, or trade — should take into account the economic doctrines that prevailed at the time. Nevertheless, the effects of these policies should be assessed in the light of modern economic theory. Therefore, it must be recognized that the rigid deflationary policies and the coffee-support programs did not encourage the growth and diversification of the Brazilian economy up to 1945. On the contrary, these policies probably restricted the long-run growth of the economy.

Consider, for example, the policy of monetary stability. Although it reflected the economic theory of the era, overpreoccupation with avoiding an “excess of money” must have been, in part, a residue of the experience of the *Encilhamento*. Adhering to this policy depressed the economy in the years 1898-1905 and 1913-1914 and during the Great Depression. However, the greatest hindrance to development was the inadequate institutional structure of the Brazilian monetary system. There was no lender of last resort, nor were there institutions designed to finance economic development. Only in the thirties did the government increase its participation in the

economy and attempt to provide institutions to carry out some of the functions of a central bank. Under this heading come the creation of CAMOB within the Banco do Brasil in 1932, and the increased power given to the rediscount window of the Banco in 1935. By the end of 1937, CREA, the first Brazilian institution designed to provide long-term credit for expanding productive capacity, had been established. While a true development bank would not be set up until the 1950s, CREA played an important role toward the end of the period under consideration in financing certain sectors of industry.

However, it was not always possible to achieve monetary stability. Moreover, federal deficits were generally followed by large currency issues.

This leads to a discussion of budget policy. Throughout the period 1889-1945, the government, in line with accepted theory, strove to balance the budget. To this end, drastic cuts were sometimes made in expenditures, often in public-investment projects. This approach was characteristic of the years 1897-1902, 1923-1925, 1927-1931, and 1934-1938. Significantly large deficits only appeared when foreign-trade crises produced sharp reductions in government receipts (e.g., 1914-1918 and 1930-1932), or when extraordinary outlays had to be made to offset droughts, to cover military campaigns, or to finance special public-works projects.

In turn, the desire to balance the budget determined tariff and foreign-debt policy. In an effort to avoid having to issue more money, the government often turned to credit from abroad for the funds necessary for financing budget deficits and making new public investments (as in 1903-1913). And the heavy dependence of the federal government on tariff receipts meant that tariff policy was guided by fiscal rather than protectionist consideration. Although tariffs were extremely high at times, protection was indiscriminately granted to consumer goods, capital goods, and raw materials. Thus, the tariff policy of the period cannot be defined as "protectionist" in the strict sense of the term.

It may be wrong to add exchange policy to the list of policies that impeded Brazilian development from 1889 to 1945. Indeed the gradual decline in the exchange rate up to the end of the twenties and the control of foreign exchange from 1931 on seem to have favored industrialization. The goals of exchange policy were firstly to maintain the income of the coffee sector, and secondly to provide the government with the foreign currency it needed to service the foreign debt. But the exchange policy pursued proved beneficial to industrial interests as well. Periods of rapid exchange depreciation coincided with periods of rapid growth in industrial output and simultaneous declines in the rate of capital formation in industry

(e.g., the 1890s, 1914-1918, and the thirties). Conversely, when the rate of exchange stabilized or appreciated, the rate of industrial capital formation rose and output stagnated, due to the attendant cheapening of competitive imports. The serious imbalances between installed capacity and effective output that periodically arose led to complaints from industrialists, who demanded more tariff protection (as at the close of the twenties) and, paradoxically, a prohibition on the importation of new equipment (as in the thirties).

Throughout the period under consideration, there was never a deliberate industrialization policy. The measures adopted at various times in favor of industry were either promptly discarded or offset by other measures. For instance, exemptions from the tax on imported capital goods weakened the tax as a source of revenue. While it would be hard to prove, the lack of an institution specifically designed to finance industrial ventures was probably the major obstacle to industrial growth. Perhaps the failure of Mauá with investments banks and the chaos of the *Encilhamento* created a psychological aversion in the minds of Brazilian policymakers to the idea of financing industry.

Lastly, the coffee valorization and support policies must be placed in perspective. A good part of the capital and entrepreneurial talent invested in industry during this period came from the coffee sector and the extraordinary profits generated there through government policies. On the other hand, the excess capacity created in the coffee sector by such policies was a waste of productive factors and a poor allocation of resources. The principal effect of the coffee defense programs was to delay agricultural diversification.

## 8.2 — Government policy and economic growth

It has been shown that the restrictive policies and the coffee-support programs followed up to 1945 failed to promote economic development. In fact, they impeded development during certain periods, being most detrimental in the years 1898-1902, 1925-1926, and in the thirties. Some of the results, in terms of growth and diversification, deserve emphasis.

In the first place, the overdependence of the domestic economy on foreign trade was prolonged. This was more serious on the export side than on the import side. Although imports still accounted for 20% of the total consumption of manufactures in 1945, the import structure had been significantly modified. As the importance of consumer goods had declined, that of raw materials and capital goods had risen, reflecting the level of industrial diversification attained.

Most importantly, the share of imports in total supply had been substantially reduced.<sup>1</sup> In contrast, the export structure continued practically unchanged. Diversification was sporadic, generally occurring during disruptions in foreign trade. What changes did take place in export structure usually consisted in the supplanting of one major primary product by another. In other words, there was import substitution, but not export diversification. Throughout the period, fluctuations in coffee dictated economic behavior throughout the foreign trade sector and the rest of the economy. As long as the coffee-support programs were successful, they enabled Brazil to achieve high levels of imports, capital-formation, and real income. But when coffee entered a period of prolonged crisis in the thirties, the entire economy suffered.

In the second place, agricultural diversification was delayed. Due to the coffee monoculture, the expansion of real agricultural output was almost entirely a function of the growth of the production of export crops. Only in the thirties, when coffee faced an extended crisis, did the structure of agricultural output undergo significant modifications. There was a more rapid increase in the production of crops destined for domestic consumption than in the production of export crops. Among the export crops, cotton — as the result of improved technology — became more important and regained some of the foreign exchange lost due to the decline in coffee prices.

In the third place, industrial development proceeded in surges rather than occurring as a continuous process. These surges depended on exchange policy and on the world market, especially for coffee. In periods of rapid depreciation, there were substantial increases in industrial output. Examples of this relationship are found in the 1890s, during World War I, from 1920 to 1921, and in 1931. But depreciation was a two-edged sword, encouraging industries that processed domestic raw materials to raise output while discouraging the importation of equipment (which was made more expensive) and thereby slowing the rate of industrial capital formation. On the other hand, there was extensive capital formation in industry when the exchange rate stabilized or appreciated. Taking capital formation as indicative of industrial surges leads to identification of such periods just before the World War I (to some extent in the 1890s, but most noticeably from 1903 to 1913), in the twenties, and in the thirties.<sup>2</sup> Despite generally accepted opinion to the contrary, the

<sup>1</sup> From around 25% of total supply of agricultural and industrial goods in 1907 to 14.7% in 1939 (see chap. 2, table 3).

<sup>2</sup> During the thirties, both industrial output and investment grew at a rapid rate. This was a result of the introduction of more selective exchange policies, which established a scale of priorities for different imports.

two wars of the period did not stimulate industrialization. Rather, the reduction in investments during wartime served to halt ongoing spurts of industrialization.

Only during the thirties did real industrialization take place, in the sense of a modification in economic structure. By 1939, industrial production<sup>3</sup> accounted for 43% of overall output, compared to only 21% in 1907 and 1919. This was the result of the high rate of growth of industrial output in the thirties — about 11.2% per year on the average. However, it is important to recall that in 1945 there was still no national market in Brazil, only an archipelago of precariously linked regional economies.<sup>4</sup> Industrial investment was therefore limited by restricted markets, even in the largest region, comprised of the states of São Paulo, Guanabara, Rio de Janeiro and Minas Gerais.

In the fourth place, real per capita income stagnated during the thirties. Up to the end of the twenties, growth in real national output had been basically a result of growth of agricultural production. Successful coffee-valorization schemes had led to favorable terms of trade and a considerable capacity to import, and real income had risen more rapidly than real product.

However, these trends were reversed when coffee overproduction became apparent in 1929 and the Great Depression affected Brazil. Agricultural output stagnated, and the growth of real output came to depend on the expansion of industrial production. In the thirties, therefore, the high growth rates observed in the overall national product were thanks to the industrial sector overcoming stagnation in agriculture. Nonetheless, due to the coffee crisis, a good part of the growth in real output was offset by continual deterioration in the terms of trade, and throughout the thirties real income grew at a rate one-half that of real product. Thus, real per capita income remained at a near standstill from 1928-1929 to 1939-1940. This was the most serious result of the government coffee policy.

It was the continuation of the crisis in the coffee sector that delayed until the forties the full recovery of the Brazilian economy from the effects of the Depression. The federal coffee-support program of the thirties seems to have had a minimal influence on the level of economic activity, since the destruction of excess stocks was financed through taxation of the coffee sector itself. What did initiate recovery from the Depression was the increase in the federal budget deficit in 1932. The causes of this budget deficit were redu-

<sup>3</sup> See Methodological Appendix.

<sup>4</sup> See app. H, "Transport."

ced tax receipts, due to lower levels of economic activity, and unforeseen expenditures related to the drought in the Northeast and the revolt in São Paulo.

In the fifth and final place, regional concentration and the national allocation of manpower worsened. Due to the factors of production and social overhead capital being more readily available in the states in which agricultural production, especially coffee, was centered, there was a tendency for new industry to locate in these same states. São Paulo became the foremost industrial state, just as it had been the most important agricultural producer. One of the most important factors in the replication of regional inequalities was the manpower policy of the government. Foreign immigration was subsidized and directed to the South. However, no corresponding attention was directed to internal migration, which occurred spontaneously, with migrants flowing to areas where the economy was booming and away from drought areas. This neglect of internal migration by the government probably led to a mere transferral of subsistence workers and poor allocation of the country's most abundant factor of production: manpower.

# A

## Methodological appendix

### A.1 – Estimate of physical output

Table 47

*Estimate of Physical Output<sup>a</sup> in Selected Years, 1907, 1919 and 1939*  
(1 000 Contos de Réis at Current Prices)

	1907	%	1919	%	1939	%
Agriculture	1 053	79.0	4 153	79.0	10 188	56.9
Industry	279	21.0	1 105	21.0	7 735	43.1
Total	1 332	100.0	5 258	100.0	17 913	100.0

<sup>a</sup> Net value of output.

#### A.1.1 – Agriculture

The estimates cover crops, livestock, and extractive activities. For the year 1939, data from the Fundação Getúlio Vargas (FGV) were used. These, in turn, were derived from the agricultural census of 1940.

For 1919, the estimates for crop and extractive output are based on figures for 1920-1922, i. e., on agricultural exports and their share in total farm production in these years. The export data for 1919 were used to obtain 1919 total output, based on the assumption that in 1919 the export/output ratio was about the same as that

observed in 1920-1922. Since the wholesale prices of agricultural products changed only slightly between 1919 and 1920, the method seems quite reasonable.

The output figure so obtained was reduced by 10%, or about half the margin allowed for on-farm consumption in 1939 (as given in the 1940 agricultural census), since in 1919 agriculture was assumed to have been technologically much more backward.

To this figure was added 510 thousand *contos de réis* referring to the value of livestock and livestock products in 1920. Note that this value was reduced twice: first by the 1.75% that real output was calculated to have risen between 1919 and 1920, and then by the 3.6% that prices were estimated to have increased in the same interval. These adjustments were based on the average annual increases in the growth rate and prices of livestock production in the period 1920-1929.

For 1907, primary data are available only on the output of agricultural export products. Even these data are underestimated, mainly due to the lack of information on sugar-cane production. From this estimate, 10% was deducted in order to account for on-farm consumption and thus obtain the value of net product. Eighty-seven thousand *contos* were then added for livestock production (also net of the 10% margin for on-farm consumption). This was estimated by lowering the ratio livestock production/total agricultural production from the 15% observed in 1919 to 10% for 1907. This procedure is justified by the fact that meat refrigeration was introduced only shortly before World War I, and that meat imports were therefore still very high at the beginning of the century.

### A.1.2 — Industry

These estimates cover only the manufacturing sector. Mining, construction and public utilities were excluded because of the lack of data for 1907.

Net value added for industry in 1919 was estimated by sector, using the 1920 industrial census (which was reclassified according to the criteria of the 1960 census). For 1907, the values of industrial production presented in the industrial survey of 1907, also reclassified by sector in accordance with the 1960 census, were employed. Since the HP/worker ratio changed little between 1907 and 1919, the value added by each sector in 1907 was calculated by applying the 1919 value added/value of production ratios to the 1907 values of production. Finally, for 1939, data from the 1940 industrial census, as presented by FGV, were used.



## A.2 — Estimates of real output and real income

There exists a conceptual difference between real output and real income. The latter reflects not only the evolution of domestic production, but also the evolution of the economy's international terms of trade. Therefore, the greater the dependence of the economy on foreign trade, the more relevant the measurement of real national income. Until 1945, a heavy dependence on foreign trade was one of the major characteristics of the Brazilian economy.

Measured in constant prices, real output may be higher or lower than real income. This is due to the difference between valuing export production at local prices when figuring real output, and at world prices when figuring real income. Real income therefore indicates a greater (or lesser) availability of goods and services in relation to the base year.

The purpose of this section is to summarize the methodology used in estimating real output and real income. It should be noted that the foreign-trade indices (especially the terms of trade and the capacity to import) were obtained employing basically the same methodology found in the FGV study "Estrutura do Comércio Exterior do Brasil, 1920-1964".<sup>1</sup> An attempt was made, however, to adjust the quantum indices for imports and exports to the method employed in calculating the real-output indices. A Laspeyres index with a moving base period was adopted, and the resulting price indices (i. e., implicit indices), also with a moving base period, are according to the Paasche criterion.<sup>2</sup> These indices (annual percentage changes) were "chained", or successively linked from the base year on. The quantum and price indices for imports and exports thus obtained were used to calculate the other foreign-trade indices: (1) a series of import and export values at constant prices; (2) an index for the terms of trade (index of price of exports/index of price of imports); (3) an index of the capacity to import at constant prices (that is, exports at constant prices corrected by the terms-of-trade index). It is clear that this concept of the capacity to import is quite simple. In fact, it represents merely the buying power of exports, which is of interest in national-income accounting for converting real output into real income.

<sup>1</sup> Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Contas Nacionais (FGV/IBRE/CCN), "Estrutura do Comércio Exterior do Brasil, 1920-1964," 2 vols. (Rio de Janeiro, 1969) (Mimeographed).

<sup>2</sup> This is the obvious result of dividing a value index (of imports or exports) by a Laspeyres quantum index (of imports or exports).

### A.2.1 — Estimate of real output, 1920-1945

The estimate of the evolution of real output which was used to obtain real income is, in fact, an index of the evolution of physical output, since it is restricted to agricultural and industrial output. This procedure implies the nontested, but not unreasonable, hypothesis that the growth of the real output of the service sector has a unit income elasticity relative to the growth of the real output of the agricultural and industrial sectors. Accepting this hypothesis seems less risky than attempting to construct an index for the evolution of the real output of the Brazilian tertiary sector prior to 1945.<sup>3</sup> The main limitation is, without a doubt, the inexistence of primary statistical information.<sup>4</sup>

In preparing the agricultural and industrial series, an attempt was made to make them comparable, whenever possible, to the FGV post-World-War-II series. The estimates of real agricultural product are based on a highly representative sample covering crops for export and for the domestic market, extractive activities, and livestock production. The information for these estimates was provided by the Serviço de Estatística da Produção of the Ministério da Agricultura. Since annual quantum and average-price data were available, a quantity index (Laspeyres) with a moving base period was developed.

For the industrial sector, the data used represent 73.3% and 61.3% of the value added of manufacturing and mining in 1919 and 1939, respectively.<sup>5</sup> There is no information, however, on the value of production (and thus on average prices), by product, in intercensal years. For this reason, use was made of simple quantum indices

<sup>3</sup> There are two partial indices of the real output of the service sector in the period 1920-1945: a commerce index and a transport index (see FGV, "Estrutura do Comércio Exterior," vol. 2). The commerce index is based on an aggregation of the real-output indices for agriculture and industry and the quantum index for imports. The transport index is of questionable representativity. For these reasons, these indices were excluded from the present estimate of real product.

<sup>4</sup> The weakness of the Brazilian statistical system in the period was most pronounced for production data. There are practically no data for the service sector, and for agricultural output there are substantial differences between the two official sources: the data provided by the Serviço de Estatística da Produção of the Ministério da Agricultura, and those presented in the economic censuses of the Instituto Brasileiro de Geografia e Estatística.

<sup>5</sup> The concept of industrial value added used in the industrial censuses differs from the one used in the national accounts. The latter could not be used at the product level because of the impossibility of determining from the census information the value added by each product.

with a fixed base year. In the base year, each product was weighted by its average share in total industrial value added in 1919 (industrial census of 1920) and 1939 (industrial census of 1940).

The index for total real product (annual percentage changes in physical output) was obtained by summing the real-output indices (annual percentage changes) for agriculture and industry. Weighting was according to the following criteria. For the period 1920-1929, the 1919 weights were maintained (see part 1 of this appendix). For the years 1930-1939, a moving weight was used in order to take into account the changes in the structure of production observed from the thirties on. This weight was obtained through linear interpolation of the weights for 1930 (same as 1919) and 1939.<sup>6</sup> A moving weight was also used for 1940-1945, this time derived via linear interpolation of the sectoral weights in the 1939 and 1949 censuses.

The chain index for real product was obtained by interlinking the annual variations. This index should be corrected for changes in the international terms of trade.<sup>7</sup> In other words, at this point, it is necessary to pass from the concept of real output to that of real income.

### A.2.2 — From real product to real income

The real-product index, as constructed, does not indicate the effects of changes in the terms of trade. Fluctuations in previous years are reflected in the current period in the form of higher or lower imports, depending on whether the capacity to import increased or diminished. It should be noted that the latter is a function of the terms of trade, and will influence the rate of growth of domestic production. What is most important, however, is the impact of fluctuations in the terms of trade on real product in the current period. The method employed to adjust the real product may be summarized as follows:<sup>8</sup>

For a given year  $t$ :

$Y_t$  — real product (GNP in constant prices)

<sup>6</sup> It is acknowledged that 1939 was not a "normal" year for agricultural production. Coffee prices were at their lowest since the beginning of the crisis at the end of 1929. This led to underestimation of the relative weight of the agricultural sector in total value added. However, outside the census years, value added cannot be estimated with the same degree of confidence.

<sup>7</sup> Another type of correction should also be made, i.e. that referring to the part of the output which was destroyed (coffee) from 1931 on.

<sup>8</sup> An estimate of the real income for the period 1939-1951 appears in Comissão Mista Brasil—Estados Unidos para o Desenvolvimento, *Relatório Geral* (Rio de Janeiro, 1954), 2: *anexos*.

$X_t$  — exports of goods and services (constant prices)

$T_t$  — index of terms of trade

$R_t$  — real income (adjusted real product)

Only that part of the real product which is exported should be adjusted for relative foreign-trade prices. Thus, the change in real product between the previous and the current period should be multiplied by the share of exports in GNP. That is,

$$\frac{Y_t}{Y_{t-1}} \cdot \frac{X_t}{Y_t}$$

which reduces to  $\frac{X_t}{Y_{t-1}}$ . The correction factor, i. e. the change in the index for the terms of trade, is given by  $\frac{T_t}{T_{t-1}}$  and the proper correction is given by the expression:

$$\frac{X_t}{Y_{t-1}} \cdot \frac{T_t}{T_{t-1}} - \frac{X_t}{Y_{t-1}}$$

or

$$\frac{1}{Y_{t-1}} \left[ \left( X_t \cdot \frac{T_t}{T_{t-1}} \right) - X_t \right]$$

The result, negative or positive, will indicate the difference in the changes in real product and real income, a difference which is due to changes in the terms of trade.

Finally, the expression that will indicate the change in the index for real income in the current period relative to the previous period is:

$$R_t = \frac{Y_t}{Y_{t-1}} + \frac{1}{Y_{t-1}} \left[ \left( X_t \cdot \frac{T_t}{T_{t-1}} \right) - X_t \right]$$

or

$$R_t = \frac{1}{Y_{t-1}} \left[ Y_t + \left( X_t \cdot \frac{T_t}{T_{t-1}} \right) - X_t \right]$$

These results, which represent yearly changes, can be linked to produce a chained series for the evolution of real income.

Obviously, if a series at constant prices is used instead of annual changes in aggregate indices, the real income for each year is given by the simple accounting relationship

$$R = Y - X + X_m$$

where  $X_m$  is the capacity to import (i.e. the purchasing power of exports) and all aggregates are measured at constant prices. The measure of real income obtained in this manner was the most important aggregate employed in this analysis of the growth of the Brazilian economy in the period 1920-1945.



# B

## Demographic trends\*

### B.1 – Overall population growth

While demographic growth and economic factors seem to be closely allied in certain parts of Brazil, it is difficult to identify cause-and-effect relationships for the country as a whole.<sup>1</sup> During the period 1872-1940, in some states the inflow or outflow of migrants was mainly determined by economic variables. But in Brazil as a whole, the growth of the population, though rapid and continuous, had no clear connection to fluctuations in economic activity.<sup>2</sup>

During these years, there were two 30-year intervals in which the national population almost doubled: 1872 to 1900, when it increased from 10.1 to 18.2 million, and 1890 to 1920, when it rose from 14.3 to 27.5 million.<sup>3</sup>

In order to explain regional differences, it is necessary to study both natural increase and internal migration. Since rates of natural increase seem to have differed only slightly from region to region, disparities in gross population growth rates must have been due to the movement of population groups toward poles of attraction. It should be noted, however, that the lack of suitable registries of births and deaths and the scattered information published by IBGE preclude accurate estimation of regional rates of natural increase.

\* By Maria José Santos.

<sup>1</sup> P. Deane and W. A. Cole discuss this problem for 18th and early 19th century England in *British Economic Growth, 1688-1959* (Cambridge: Cambridge University Press, 1967), pp. 98-135.

<sup>2</sup> See J. F. Camargo, *Crescimento da População no Estado de São Paulo* (São Paulo: Universidade de São Paulo, 1952), 1:261-71.

<sup>3</sup> The figures for 1900 and 1920 are adjusted totals.

Census data for the years 1872, 1890, 1900, 1920, and 1940 are presented in table 48.<sup>4</sup> In all years, the population was distributed very unevenly among regions. In 1872, the Center-West had the lowest share of total population at 2.2%, while the Northeast had the highest share at 46.6%. In 1940, these two regions were still the smallest and largest in terms of population, but the corresponding percentages were 3.0% and 35.0%. Thus, in 1940 more than a third of the national population still lived in the economically depressed, densely populated, predominantly rural Northeast. The greatest change took place in the state of São Paulo, whose share climbed from 8.2% in 1872 to 17.4% in 1940. Hence, by 1940 the state of São Paulo alone accounted for more than one-sixth of the population of Brazil. The East and South also experienced significant fluctuations, with the percentage share of the East decreasing relative to the rest of the country, and that of the South increasing.

These changes in regional shares were mainly due to migration within Brazil and immigration from abroad. In certain cases, there were clear links between economic and demographic variables. For instance, as São Paulo achieved economic ascendancy, migrants were attracted. On the other hand, the decline of the economies of the North and Center-West and the periodic droughts of the Northeast fostered out-migration from these regions. Foreign immigration contributed to population growth principally in the South and in the state of São Paulo, especially up to 1920.

It is necessary to take into account, however, the limitations placed on migration studies by the defects in the census data available. With the exception of the 1940 census, all the censuses

<sup>4</sup> Though based on the general censuses (*recenseamentos gerais*), these totals also include the following information provided by the Instituto Brasileiro de Geografia e Estatística (IBGE) in other publications. (1) In 1872, the population of the parishes (*paróquias*) that were not surveyed was estimated to have been 161.6 thousand persons. (2) For 1900, the figures recorded for the Distrito Federal were taken not from the general census, but from a special census conducted in 1906. The total entered for the Distrito was 811.4 thousand inhabitants (according to some sources, the invalidated total from 1900 was 691.5 thousand). (3) In 1940, 16.6 thousand persons who were counted in the annual totals were omitted from the tables on population characteristics. Of these, 7.4 thousand were surveyed in the state of Amazonas and 9.2 thousand in the state of São Paulo.

All the tables in this appendix use these totals as a base. See IBGE, *A População do Brasil: Dados Censitários, 1872-1950* (Rio de Janeiro, 1958).



Table 48

*Brazil: Population by Region, Census Data, 1872-1940*  
(National Population = 100)

Region	%	1872	%	1890	%	1900	%	1920	%	1940
North	3.3	332 847	3.3	476 370	4.0	695 112	4.7	1 430 052	3.6	1 469 872
Northeast	46.6	4 708 160	41.9	6 002 047	38.7	6 749 507	36.7	11 245 921	35.0	14 434 080
East	32.4	3 279 402	32.9	4 719 631	31.8	5 541 732	29.6	9 062 746	27.1	11 105 515
São Paulo	8.3	837 354	9.7	1 384 753	13.1	2 282 279	15.0	4 592 188	17.4	7 189 493
South	7.2	733 486	10.0	1 430 715	10.3	1 796 405	11.5	3 537 167	13.9	5 735 305
Center-West	2.2	220 812	2.2	320 399	2.1	373 309	2.5	758 531	3.0	1 258 679
Brazil	100	10 112 061	100	14 333 915	100	17 438 434	100	30 635 605	100	41 252 944

Sources: The original data, by state, are from the Instituto Brasileiro de Geografia e Estatística (IBGE), *Recenseamento Geral do Brasil*, 1872, 1890, 1900, 1920, and 1940. Summaries are presented in IBGE, *Anuário Estatístico do Brasil*, 1939-1940 and 1941-1945.

The data for 1900 and 1920 are not adjusted.

for the period under study contain flaws.<sup>5</sup> Classifications change, data obtained in areas more easily surveyed are generalized for other areas, details on population characteristics are scanty in the early censuses, and totals are inaccurate. These flaws pose formidable problems for a study of population growth.

In a study on population growth in Brazil from 1872 to 1940,<sup>6</sup> Mortara attempts to identify the errors in past censuses and correct the data insofar as possible in order to obtain a more realistic picture of past populations. His most important conclusions are the following:

(a) The 1872 and 1940 censuses are reliable.

(b) While the 1890 census is not flawless, it does present a reasonable approximation of the population surveyed.

(c) Serious errors in the censuses of 1900 and 1920 are indicated by birth and death rates.

(d) The census of 1900 errors in undercounting, while that of 1920 errors in greatly overcounting the population.

(e) Assuming that the 1890 and 1940 totals are correct and that the population increased steadily between the censuses, the

<sup>5</sup> Descriptions of the census of 1872 do not specify any omissions. However, calculations made to determine rates of survival for different age brackets indicate that the data on age distribution contain serious errors.

In the census of 1890, the total of 351.3 thousand foreign residents appears untrustworthy, since 383.3 thousand were counted in 1872, and it scarcely seems likely that their number would have declined, especially as these were years of intense immigration. From 1884 to 1890, 449.9 thousand foreigners immigrated to Brazil. If the net rate of in-migration was 80%, and if the mortality estimates for immigrants are accurate, the total for 1890 should be much higher than the census figure.

Many sources point to flaws in the census of 1900. As mentioned in fn. 1 above, the data for the Distrito Federal were rejected. The most glaring errors are probably those in the data on age distribution. Calculations made by Mortara indicate that these data were obtained by interpolation from incomplete returns. See "O Aumento da População do Brasil entre 1872 e 1940," in *Contribuições para o Estudo da Demografia do Brasil*, Estudos de Estatística Teórica e Aplicada (Rio de Janeiro: IBGE, 1961), pp. 9-21.

The census of 1920 appears to contain some overcounts, as Mortara explains in "Um Enigma Resolvido: A População do Brasil," in *Pesquisas sobre Populações Americanas*, Estudos Brasileiros de Demografia, monograph 3 (Rio de Janeiro: Fundação Getúlio Vargas — FGV, 1947), 1:71-78.

<sup>6</sup> Mortara, "O Aumento da População do Brasil."

average growth rate for the period was 2.2%. Calculations using this growth rate yield the following adjusted totals:

Table 49

*Brazil: Total Population, Adjusted Census Data, 1890-1940*

Year	Total Population	Intercensal Increase	Average Annual Increase
1890	14 333 915	—	—
1900	18 200 000	3 866 085	386 609
1920	27 500 000	9 300 000	472 881
1940	41 252 944	13 752 944	687 647

Source: G. Mortara, "O Aumento da População do Brasil entre 1872 e 1940," in *Contribuições para o Estudo da Demografia do Brasil*, Estudos de Estatística Teórica e Aplicada (Rio de Janeiro: IBGE, 1961), pp. 9-21.

Additional calculations based on the 1872 total of 10.1 million inhabitants indicate that the population increased by approximately 235 thousand persons per year from 1872 to 1890.

Since Mortara's adjusted data are preferable to the figures in the censuses and the statistical yearbooks, it is unfortunate that lack of reliable material and changes due to extensive internal migration preclude similar adjustments for regional populations. Nonetheless, if the regional totals from the 1890 and 1940 censuses are accepted as essentially correct, calculations resembling those performed for table 49 can be made. These produce the following estimates:

Table 50

*Population Growth Rates by Region, 1890-1940*  
(1890 Population = 100)

Region	Intercensal Change	Average Annual Growth Rate (Compound)
North	208.6	2.28
Northeast	140.5	1.77
East	136.6	1.74
São Paulo	419.2	3.35
South	300.9	2.82
Center-West	292.6	2.77

Source: IBGE, *Anuário Estatístico do Brasil*, 1941-1945, p. 24.

The marked disparities in regional growth rates were clearly due to extensive internal migration and foreign immigration. These movements had cumulative effects as migrants settled in destination regions and raised new families.

In table 50, São Paulo stands out, with its high population growth rate paralleling its agricultural and industrial development. The Northeast, despite being one of the most densely populated regions, was characterized by a relatively low rate of increase and as a source of manpower for other regions — namely, Amazônia (North), São Paulo, and, in the last 20 years of the period, the South. The East presented the lowest rate of increase. Even so, it was an important destination region and a center of intense intraregional migration. The major areas of in-migration were the Distrito Federal and, to a lesser extent, Espírito Santo; the principal areas of out-migration were Minas Gerais and the state of Rio de Janeiro. It is likely that some of the out-migrants moved to São Paulo.

## B.2 — Age composition

Age composition furnishes a means of deriving estimates of birth and death rates, and sheds light on other population characteristics such as distribution by occupation and education.

In the period under study, children and young persons accounted for a high proportion of the population throughout Brazil. This is readily noticeable in table 51,<sup>7</sup> which also reveals consistently high birth rates, high overall and infant mortality rates, and short average life expectancies. For example, compare the figures for the 20-39 age group to those for the 40-59 group, and note the sharp decline thereafter:

	(%)			
Age Group	1872	1890	1920	1940
Less than 20 Years	46.2	51.4	57.7	53.3
20 — 39 Years	32.3	30.2	26.7	29.3
40 — 59 Years	15.0	13.7	11.6	13.3
60 Years and Over	6.5	4.7	4.6	4.1

In all census years, there were more than twice as many in the 0-20 interval as in the 40-59 interval. In turn, there were roughly

<sup>7</sup> Data from the 1900 census were excluded from this and subsequent tables on age composition for the reasons discussed in fn. 5 above.

Table 51

*Age Composition, 1872-1940*  
(Total Population = 100)

Age Group	1872	1890	1920	1940
Less than 1 Year	3.5	2.6	2.7	3.3
1 Year	1.5	2.8	2.5	2.9
2 — 4 Years	5.4	9.5	9.7	9.4
5 — 9 Years	13.9	14.4	14.9	14.0
10 — 14 Years	10.4	11.9	12.8	12.9
15 — 19 Years	10.4	9.8	13.8	10.8
20 — 29 Years	20.9	17.7	15.1	17.4
30 — 39 Years	11.4	12.6	11.6	11.9
40 — 49 Years	8.3	8.6	7.8	8.3
50 — 59 Years	5.7	5.1	4.7	5.0
60 — 69 Years	3.5	3.0	2.6	2.6
70 — 79 Years	1.8	1.1	1.0	1.0
80 Years and Over	1.6	.6	.4	.4
Not Reported	1.9	.4	.2	.1

Source: IBGE, *Recenseamentos Gerais do Brasil*, as summarized in *A População do Brasil: Dados Censitários, 1872-1960* (Rio de Janeiro: Conselho Nacional de Estatística, 1958).

three times as many in the latter as in the 60-and-over interval. These figures clearly indicate the low life expectancy of Brazilians during the period 1890-1940. Estimates for the years 1920-1940 place mean life expectancy at around 36 or 37 years, and estimates for the years 1900-1920 are even lower.<sup>8</sup>

Infants (i.e. 0-9 years of age) accounted for the following percentages of total population at the various census dates:

Age Group	1872	1890	1920	1940
0 — 9 Years	24.2	29.2	30.0	29.8

<sup>8</sup> G. Mortara, "Análise Comparativa dos Resultados dos Censos Brasileiros de 1900, 1920 e 1940, e Determinação da Mortalidade nos Períodos Intercensitários," in *Pesquisas sobre Populações Americanas*, 1:101-114.

Above all, these data reflect a decline in the death rate which benefited the young to a much greater extent than the old (see table 7, which shows a 20% drop in the death rate between 1890 and 1940).

Infant mortality was still high in 1940, though regional differences were pronounced. The lowest mortality rate in the period 1939-1941 was in the *município* of São Paulo, and the highest in the *município* of Recife. Infant mortality rates for a few large cities are presented in table 52.

Table 52

*Infant Mortality Rates in Selected Cities, 1939-1941*  
(Deaths of Infants Less than One Year of Age per 1 000 Live Births)

City	Region	Mortality Rate
Belém	North	159.5
Fortaleza	Northeast	236.2
Salvador	Northeast	206.3
Recife	Northeast	272.3
Distrito Federal	East	159.3
Belo Horizonte	East	161.0
São Paulo	São Paulo	137.8
Porto Alegre	South	180.2

Sources: G. Mortara, "Ligeiras Considerações sobre a Mortalidade Infantil no Brasil" and "Cálculos Complementares sobre a Mortalidade Infantil no Brasil," in *Contribuições para o Estudo da Demografia do Brasil*, Estudos de Estatística Teórica e Aplicada (Rio de Janeiro: IBGE, 1961), pp. 113-16 and p. 117.

Unfortunately, data are not available for cities in the Center-West and for rural areas. However, infant mortality rates were probably even higher in rural than in urban areas. With respect to the country as a whole, Mortara has suggested that the average rate of infant mortality was 218 per thousand in 1940-1950.<sup>9</sup> Despite these rates, the percentage of infants in the total population remained

<sup>9</sup> G. Mortara, "Ligeiras Considerações sobre a Mortalidade Infantil no Brasil" and "Cálculos Complementares sobre a Mortalidade Infantil no Brasil," in *Contribuições para o Estudo da Demografia do Brasil*, pp. 113-16 and p. 117; *idem*, "Conjeturas sobre os Níveis da Natalidade e da Mortalidade no Brasil no Período 1870-1920," *Revista Brasileira de Estatística* 1 (April-June 1940): 229-42.

high due to the birth rate (4.35% from 1920 to 1940) having surpassed the overall mortality rate (2.48% from 1920 to 1940).

The age distribution of the population was scarcely affected by immigration, which had a minor influence on birth rates. While immigration did lower general mortality rates,<sup>10</sup> the figures do not show a substantial increase in the percentage of adults in the regions that received most of the foreigners (the South and São Paulo). There was a noteworthy difference between the populations of working age in São Paulo and the Northeast (55.4% and 52.4% respectively), but this was affected by internal migration as well as by immigration.

To determine the influence of internal migration on age composition, it would be necessary to make a thorough study of the differences between the urban and rural populations. Generally speaking, there were higher percentages of adults in urban than in rural areas. This is partly explained by the fact that birth and mortality rates were higher in rural areas,<sup>11</sup> where medical and health facilities were less accessible. While in some countries today urban mortality rates exceed rural mortality rates,<sup>12</sup> this was not the case in Brazil in the period under study.

However, data for regions as a whole do not provide quantitative evidence on this point, since studies of internal migration have not succeeded in distinguishing urban and rural movements. Up to 1940, there were no regions that could be considered truly urban or rural. This explains why table 53 shows no wide variations. Just as the population structure was similar in different regions, so were birth rates. Birth control was practically nonexistent at the time, and most women bore children at an early age.<sup>13</sup>

In economic terms, a high dependency ratio characterized the Brazilian population. In 1940, 46.6% of the total population could be classified as dependent (0-14 years, 60 years and over), while only 53.4% (15-59 years) could be classified as economically active. However, most of this dependent population was young and therefore potentially employable, and those 60 years of age or over accounted for only 4.1% of the total population. On the other

<sup>10</sup> G. Mortara, "Contribuição para o Estudo da Influência da Imigração sobre a Taxa de Mortalidade," in *Pesquisas sobre Populações Americanas*, 1:51-68.

<sup>11</sup> E. Alves, "A Composição por Idades da População do Brasil e de Suas Diferentes Partes," *Revista Brasileira de Estatística* 15 (July-September 1954): 155-64.

<sup>12</sup> G. Stolnitz, "The Changing Profile of Our Urban Human Resources," in *Issues in Urban Economics*, ed. H. S. Perloff and L. Wingo, Jr. (Baltimore: Johns Hopkins Press, 1968), pp. 187-227.

<sup>13</sup> Mortara, "Conjeturas sobre os Níveis de Natalidade e da Mortalidade."

Table 53

*Age Composition by Region, 1890-1940*  
(Total Population = 100)

Age Group	North		Northeast		East		São Paulo		South		Center-West	
	1890	1940	1890	1940	1890	1940	1890	1940	1890	1940	1890	1940
	(%)											
Less than 1 Year	2.5	3.4	2.4	3.4	2.6	3.1	2.7	3.2	3.0	3.6	2.2	3.4
1 Year	2.8	3.1	2.7	2.9	2.8	2.9	3.0	2.8	3.1	3.2	2.5	3.2
2 — 4 Years	9.5	9.2	10.0	9.9	8.7	9.1	9.0	8.5	10.3	9.4	8.6	9.9
5 — 9 Years	15.1	13.8	15.1	14.0	13.4	14.0	13.7	13.2	15.6	14.5	14.2	14.9
10 — 14 Years	11.4	12.7	11.5	13.1	12.2	12.9	12.1	12.7	12.7	13.0	12.6	12.7
15 — 19 Years	9.6	10.2	9.7	10.9	9.8	10.7	9.3	10.8	9.8	10.8	10.0	10.6
20 — 29 Years	20.1	18.0	17.9	17.0	17.8	17.5	16.8	17.9	16.5	17.1	17.9	18.2
30 — 39 Years	12.9	12.3	12.2	11.3	13.0	12.1	13.4	12.9	11.8	11.5	13.3	11.9
40 — 49 Years	7.7	8.3	8.3	8.2	9.1	8.5	9.4	8.7	7.7	8.0	8.8	7.8
50 — 59 Years	3.8	5.1	5.0	5.0	5.4	5.0	5.6	5.0	4.9	4.9	5.1	4.3
60 — 69 Years	2.3	2.3	2.8	2.7	3.7	2.6	3.3	2.7	2.8	2.6	2.7	2.1
70 — 79 Years	.9	.8	1.1	1.2	1.2	1.0	1.0	1.1	1.1	1.0	1.0	.7
80 Years and Over	.6	.3	.6	.5	.6	.4	.5	.3	.5	.4	.6	.3
Not Reported	.9	.7	.6	.1	.3	.1	.2	.2	.1	.1	.6	.1

Source: IBGE, *Recenseamentos Gerais do Brasil*, as summarized in *A População do Brasil*.



hand, the large numbers of young people comprised an element of the population that consumed without producing. Moreover, educational expenditures on the school-age population (those 5-14 years old, or 26.9% of total population in 1940) were an additional drain on national resources.

Statistics on active and dependent population based on age alone represent a crude approximation to reality. As is shown below, many persons less than 14 or over 60 were economically active, despite the fact that by 1940 there were labor laws restricting the employment of such individuals.

Table 54  
*Dependent and Active Population, 1890 and 1940*  
(Total Population = 100)

Region	(%)					
	1890			1940		
	0 - 14	15 - 59	60 +	0 - 14	15 - 59	60 +
North	40.6	54.6	3.8	42.4	54.2	3.4
Northeast	43.6	51.7	4.7	43.3	52.4	4.3
East	43.2	52.0	4.8	42.1	54.0	3.9
São Paulo	40.6	54.5	4.8	40.5	55.4	4.1
South	44.8	50.8	4.4	43.8	52.2	4.0
Center-West	40.3	55.4	4.3	44.0	52.9	3.1
Brazil	41.3	54.0	4.7	42.6	53.9	4.0

Sources: Data for calculations from IBGE, *Anuário Estatístico do Brasil*, 1939-1940, "Apêndice Retrospectivo" (for 1890), and 1941-1945 (for 1940).

Note: Persons whose age was not reported were excluded from the calculations. While there were many such persons in some regions, they accounted for only .41 % of total population in 1890 and .12% in 1940.

### B. 3 — Immigration

Immigration from abroad greatly affected the population mix in Brazil, but by increasing the economically active population more than by raising the overall population growth rate. Despite the long period of steady migration to Brazil, the foreign contribution to population increase was relatively small, compared to the impact it had in other Latin American countries and compared to the

Table 55

## Brazil: Total and Foreign-Born Population, 1872-1940

Year	Total Population (1 000)		Foreign-Born Population (1 000)*		%	
	Census (A)	Adjusted (B)	Census (C)	Adjusted (D)	(C/B)	(D/B)
1872	10 112	10 112	383	383 <sup>b</sup>	3.79	3.79
1890	14 334	14 334	351	714	2.45	7.14
1900	17 438	18 200	1 279 <sup>c</sup>	1 296	7.03	7.12
1920	30 636	27 500	1 590	1 651	5.78	6.00
1940	41 253	41 253	1 414	1 799	3.43	4.36

Sources and methodology by column: (A) IBGE, *Recenseamento Geral*, 1872, 1890, 1900, 1920, and 1940. (B) Mortara, "O Aumento da População do Brasil." (C) IBGE, *Brasil: Séries Estatísticas Retrospectivas* (Rio de Janeiro, 1970), p. 23. (D)  $P_t^f$  stands for the foreign population in year  $t$ ;  $I_t$  for net foreign immigration in year  $t$ ;  $M_t$  for the mortality of the foreign population in year  $t$ ;  $m$  for the mortality rate of foreign population; and  $N_t$  for the naturalizations in year  $t$ . Thus,  $P_t^f = P_{t-1}^f + I_t - M_t$  (1).  $M_t = m \cdot P_{t-1}^f$  (2), and substituting (2) in (1) yields  $P_t^f = (1 - m)P_{t-1}^f + I_t - N_t$  (3). Using the 1872 census figure as a basis, this equation provides estimates of the foreign-born population. The sources and methods used to obtain the series to which equation (3) was applied are as follows:

(1) *Net Immigration (I<sub>t</sub>)*: (a) Data on foreign immigration, 1824-1883: Diretoria Geral de Estatística, *Boletim Comemorativo da Exposição Nacional de 1908* (Rio de Janeiro: Tipografia de Estatística, 1908), pp. 82-85; 1884-1940: IBGE, *Anuário Estatístico do Brasil*, 1956, pp. 480-81. (b) Estimates of net rates of immigration: 1822-1890, 70%; 1900-1910, 40.2%; 1911-1920, 68.9%; 1921-1930, 70.2%; 1931-1940, 50.8%. These percentages take emigration into account in São Paulo only, and assume a 100% rate of retention in the rest of Brazil (Sources: Departamento Estadual de Estatística, *Anuário Estatístico do Estado de São Paulo*, 1900, 1915, 1918, 1920, 1940, and 1942; A. C. Silva, "Formação do Povo Paulistano e o Seu Desenvolvimento Demográfico," *Boletim do Departamento Estadual de Estatística de São Paulo*, September-October 1940, pp. 33-40; Serviço de Imigração e Colonização de São Paulo, *Boletim*, October 1940). Mortara assumes the following rates of retention: 1872-1900, 80%; 1900-1920, 65%; 1920-1940, 78% (p. 367). However, these estimates lead to untenable results. For example, in 1903-1910, the rate of retention in São Paulo was only about 4.5%. Since this state absorbed 53.2% of all the immigrants in the period, the rest of the country would have to have experienced a 134% rate of retention in order for Mortara's 65% overall estimate to hold. Mortara justifies his estimates on the grounds that he wanted to err on the high side "so as not to underestimate the contribution made by immigration to population growth in Brazil" (p. 307, fn.).

(2) *Mortality Rate (m)*: Up to 1890, 20/1 000; 1891-1900, 18.4/1 000; 1901-1920, 17.5/1 000; 1921-1940, 18.4/1 000. The figure for the period up to 1890 is from the Comissão Central de Estatística, *Relatório Apresentado ao Presidente da Província de São Paulo* (São Paulo: Tipografia King, 1888), p. 240. The rates for later periods were estimated on the hypothesis that  $m$  declined from the pre-1890 figure in the same proportion as the overall mortality rates given by Mortara, p. 374.

(3) *Naturalizations (N<sub>t</sub>)*: IBGE, *Anuário Estatístico do Brasil*, 1939-1940, "Apêndice Estatístico," p. 1310.

There is little question that table 55 overestimates the actual foreign-born population, since it contains figures that are slightly higher than two others that are recognized to be inflated — i.e., the 1900 census figure, which includes the population in the Distrito Federal in 1906, and the 1920 census figure, which Mortara considers an overestimate.

\* Includes naturalized Brazilians and persons of unknown nationality.

<sup>b</sup> Foreign-born population as given in the census.

<sup>c</sup> The data on the foreign-born population in the former Distrito Federal (The state of Guanabara) are from the census taken in the Distrito on 20 September 1906 in recognition of the unreliability of the figures from 1900.

rapid growth of the native-born population. One reason for this was that, despite policies designed to promote immigration, periodic restrictions checked population inflow.<sup>14</sup>

Since available estimates of foreign-born population were unsatisfactory, new figures were prepared using the methodology outlined in the notes to table 55. These figures reveal that the percentage of foreign-born population in the overall population reached a maximum in 1890-1900 and fell thereafter, though the number of foreigners in Brazil continued to increase (see table 55).

Immigration and internal migration are the demographic variables most directly linked to economic development. Most of the immigrants, of whom the majority were adults drawn to agricultural areas, settled in the Eastern and Southern regions and in São Paulo. This is clearly demonstrated in table 56.

Table 56

*Foreign-Born Population by Region, 1872-1940*  
(National Total = 100)

Region	1872	1900	1920	1940
North	2.2	.6	2.7	1.4
Northeast	13.3	5.2	2.1	1.4
East	60.6	34.6	25.3	23.1
São Paulo	7.6	41.4	52.4	57.8
South	15.8	17.1	15.7	14.5
Center-West	.5	1.1	1.8	1.8

Sources: IBGE, *Anuário Estatístico do Brasil*, 1908-1912, 1939-1940, and 1941-1945. The data in the *Anuários* are by state and have been aggregated to regional totals. Unfortunately, it was impossible to adjust the data at the state and regional levels as done at the national level in table 55.

<sup>14</sup> A. H. Neiva, "Getulio Vargas e o Problema da Imigração e Colonização," paper presented to the Instituto Nacional de Ciência Política, Rio de Janeiro, 1942.

The high concentration of foreigners in the East, as indicated by the census figures for 1872, was due not only to the existence of rural colonies in the states of Rio de Janeiro and Espírito Santo, but also to the pull of the city of Rio de Janeiro. In 1872, 30.7% of the population of the Distrito Federal (then called the *município neutro*) was foreign. As the years passed, São Paulo replaced the East as the region with the highest percentage of foreigners, partly owing to the inducement of state subsidies.

Table 57

*São Paulo: Subsidized Immigration, 1888-1915*

Period	Total Number of Immigrants	% of Immigrants Subsidized
1888-1890	158 240	63.4
1891-1900	719 595	79.9
1901-1910	420 447	40.1
1911-1915	356 045	36.0

Sources: Data provided by the Departamento Estadual de Estatística de São Paulo and the Serviço de Imigração e Colonização de São Paulo.

The South was another region that received large contingents of immigrants. They were attracted by the more temperate climate, and by the predominance of small holdings. Wherever land was distributed in small plots, immigrants tended to remain. Examples of this are the German settlements in Santa Catarina and the prosperous German and Swiss colonies in the state of Rio de Janeiro. Up to around 1886, the majority of immigrants were Europeans who moved to Brazil without government assistance, and they refused to work alongside slaves on the estates and in the sugar mills of the Northeast. Moreover, the planters of the Northeast did not tolerate the establishment of small, independent farmers in their domain, so the region was, on the whole, *unattractive* to foreigners.

Government-financed colonization efforts had political goals and favored different areas as the political climate changed. In the South, the federal government sponsored immigrant colonies with the aim of populating the nation's frontiers. The first such colonies were established in the 1820s. Until the 1850s, the Germans who settled in Rio Grande do Sul made up the bulk of the colonists. In the East, Swiss colonies were set up in the state of Rio de Janeiro. On the other hand, the government took little interest in settling Santa Catarina, and official colonies failed despite the success of private companies.

Subsidies came not only from the federal government, but from provincial governments and private immigration companies as well. The initiative of local governments was especially important when the national government suspended subsidies, which first happened as early as 1830.<sup>15</sup> Prospective farmer-colonists were offered a series of benefits, among which figured free plots of around 77 hectares (160 thousand square *braças*) and exemption from taxes for 10 years. However, these promises were often broken. Settlers' disappointment with conditions in Brazil led to a few temporary prohibitions by European governments on migration to Brazil.<sup>16</sup>

Among the southern states, Paraná attracted relatively few immigrants at first, due to its more difficult environment. However, once the government established colonies along railroads (which were built after 1900), many Slavic immigrants, as well as Brazilian migrants, were drawn to Paraná. Towards the end of the 1920s, the Paraná Plantation Company (today the Companhia de Terras do Norte do Paraná) purchased some 13 thousand square kilometers of state forest in Paraná and eventually resold 50% of this land to settlers.<sup>17</sup>

From 1870 on, numerous Italians emigrated to Brazil and founded successful colonies in the South and in Espírito Santo. Thus began the major population inflow, as immigrants from northern Italy sought work in southern Brazil. Soon after, central and southern Italians were favored by the São Paulo coffee growers.

<sup>15</sup> L. Waibel, "Princípios da Colonização Européia no Sul do Brasil," *Revista Brasileira de Geografia* 11 (April-June 1949): 168.

<sup>16</sup> L. Câmara, "Estrangeiros em Santa Catarina," *Revista Brasileira de Geografia* 10 (April-June 1948): 211-53.

<sup>17</sup> Waibel, pp. 176-77.

Table 58

*Brazil: Italian Immigration, 1886-1940*  
(Total Immigration = 100)

Period	%
1886-1900	59.9
1901-1920	23.8
1921-1940	10.6
Total: 1886-1940	33.5

Source: IBGE, *Anuário Estatístico do Brasil*, 1956, "Apêndice Retrospectivo."

When immigrants moved onto coffee plantations, they exhibited a marked preference for new areas in the uplands of São Paulo; there they could grow cereals and hope to acquire some land of their own. As noted above, foreign manpower was obtained for work on coffee plantations only through subsidies to immigrants who were employed as wage workers (the so-called *regime de colonato*). Private colonization schemes had been tried in São Paulo prior to the abolition of slavery, but they had failed due to the political machinations of the big landowners, who feared their slaves would be attracted to such projects.<sup>18</sup>

It may be noted in passing that the changeover from slave to wage labor — and abolition itself — was necessitated by sweeping changes which had taken place in labor and economic relations prior to 1889.<sup>19</sup> The relationship between the emancipation of the slaves and the intensification of immigration to Brazil should be understood as reflecting the national and international events of the time.

<sup>18</sup> See D. Menezes, "A Imigração e a Transformação do Regime de Trabalho no Brasil," in *Aspectos da Formação e Evolução do Brasil* (Rio de Janeiro: Jornal do Comércio, 1953).

<sup>19</sup> "Depreciation in the exchange rate, new forms of business organization, the credit provided to large landowners, the creation of the Caixa de Compensação, loans at 4% from the national government, and the contract with the Banco Nacional do Brasil to redeem some of the paper money in circulation within six years were all events which served to change the economic situation in Brazil and make wage labor seem more natural." Menezes, p. 121.

The labor system adopted on the plantations made use of large numbers of workers, both foreign and national, from underprivileged environments. Evidence of this is the fact that the majority who went to São Paulo around the turn of the century were southern Italians, seconded by Spaniards and Portuguese; immigrants from richer countries chose to settle in other states. In other words, only these Europeans, and later Japanese, who were used to similar living conditions were drawn to the *fazendas*. Germans and Swiss, finding it difficult to adapt to the *fazendas*, did not go in great numbers. On the other hand, of all the Italians who migrated to Brazil from 1888 to 1920, 73.5% went to São Paulo. For Spaniards, the corresponding percentage was 70.6%, and for Portuguese 34.9% (this low figure may be attributed to the greater ability of the Portuguese to establish themselves anywhere in Brazil since they spoke the language and probably had relatives in the country). For all other nationalities, the percentage was 58.6%.

Table 59

*São Paulo: Immigration by Nationality, 1888-1920*

Period	Total Number of Immigrants	Nationality as % of Total			
		Italian	Portuguese	Spanish	Other
1888-1890	157 781	76.5	10.5	5.8	7.2
1891-1900	733 335	66.3	9.9	12.8	11.0
1901-1920	857 149	32.1	22.3	27.7	17.9

Sources: Data provided by the Departamento Estadual de Estatística de São Paulo and the Serviço de Imigração e Colonização de São Paulo.

The *colono's* contract guaranteed him work for one year and certain other benefits.<sup>20</sup> Unfortunately, conditions on the coffee plantations were so bad that the Italian government, after sending

<sup>20</sup> O. Valverde, "A Velha Imigração Italiana e Sua Influência na Agricultura e na Economia do Brasil," *Boletim Geográfico* 19, n.º 160 (January-February 1961): 145-67.

officials to Brazil to investigate, prohibited subsidized emigration in 1902.<sup>21</sup>

This prohibition cut the flow of Italians to Brazil dramatically. From 1891 to 1900, an average of 48.6 thousand Italians emigrated to São Paulo per year. In 1901, 56.3 thousand Italians came. For subsequent years the figures are as follows: 1902, 28.9 thousand, 1903, 9.4 thousand, and 1904, 9.5 thousand.

Italian immigration continued at a low level until 1920, with the annual average for the period 1911-1920 being only 9.8 thousand.

Similarly, the poor treatment received by German colonists in São Paulo led Prussia to prohibit recruitment of Germans for emigration to Brazil in 1859. This prohibition was not rescinded until 1896, and even then recruitment was permitted only for the three states in the Brazilian South.<sup>22</sup>

While the restrictions imposed by European states diminished the flow of colonists from Europe, fluctuations in the prosperity of coffee growing also exerted a powerful influence on immigration. Manpower shortages in the coffee sector became acute after 1888, and this affected the type and the nationality of immigrants, as well as diverting the main stream away from the coastal cities and the South and East to São Paulo.

Table 60

*Brazil and São Paulo: Total Immigration, 1884-1920*

Period	Brazil	São Paulo	São Paulo as % of Total
1884-1887	145 880	53 023	36.3
1888-1890	304 054	157 781	51.9
1891-1900	1 129 315	733 335	64.9
1901-1920	1 469 095	857 149	58.3

Sources: Data obtained from IBGE and the Departamento Estadual de Estatística de São Paulo.

In 1888, immigration shot up, with more than 132 thousand persons arriving in Brazil. This figure may be compared to the total of 122.3 thousand for the preceding three-year period (1885-1887).

<sup>21</sup> *Ibid.*; Camargo, 1:117.

<sup>22</sup> Waibel, p. 170.



The level remained high throughout the 1890s. At the beginning of the decade, the optimism generated during the *Encilhamento* infected foreigners. Immigration was facilitated by subsidies to new workers by both state and federal governments. In 1895, the state of São Paulo spent about 14.5% of its budget on subsidized immigration, and the federal government contributed an even larger sum.<sup>23</sup>

However, by 1897 the state of the economy was so bad that the federal government was forced to virtually eliminate all expenditures on immigration. The effect was a sharp reduction in the flow of immigrants. From 1898 to 1900, only 106.5 thousand immigrants arrived in Brazil, compared to more than 345 thousand in the period 1895-1897. The state of São Paulo maintained its incentive program, but the lack of federal funds was sorely felt. Moreover, the exchange rate was depreciating, and the impending coffee overproduction was foreseen.

As the Brazilian economy failed to regain the vigor of the 1890s, immigrants began to leave both the plantations and the country itself. Most of those who left Brazil either went to Argentina or returned to Italy. By 1903, the departing immigrants outnumbered the new arrivals (see table 61).

Table 61

*São Paulo: Entry and Exit of Immigrants, 1903-1910*

Year	Number of Immigrants Who		Net Immigration
	Entered	Exited	
1903	16 553	36 410	-19 857
1904	23 761	32 679	- 8 918
1905	45 839	34 819	+11 020
1906	56 214	41 349	+14 865
1907-1910	143 972	132 292	+11 680

Sources: Data provided by the Departamento Estadual de Estatística de São Paulo and the Serviço de Imigração e Colonização de São Paulo.

<sup>23</sup> Camargo.

By 1901 the prosperity of the early years of the Republic had yielded to an atmosphere of crisis. Too much coffee was being produced; credit was tight. The flood of immigrants had contributed directly to the problems of the coffee sector. In expectation of manpower shortages following abolition, the coffee growers had encouraged what, in retrospect, was probably excessive immigration to the plantations of São Paulo. The slave work force of São Paulo, which numbered about 107 thousand in 1888 (before abolition),<sup>24</sup> was swollen by at least part of the 891 thousand immigrants who came to the state from 1888 to 1900. These immigrants were not only important numerically; they were also good workers and set about opening new lands with a will. When the planting of new areas with coffee was temporarily prohibited in an effort to deal with overproduction, many of the newly-arrived workers moved to the cities, where they became part of the industrial labor force.

As the *colonos* moved off the plantations, coffee growers once again grew apprehensive about manpower. The government was evidently sensitive to their fears, since in 1905 it moved to expand official colonization schemes, which had heretofore been of minor importance compared to private programs. In response to renewed federal subsidies, immigration mounted, reaching a peak in 1911-1913 and then declining with the outbreak of World War I. Whereas there were 116.6 thousand immigrants in 1913, only 10.8 thousand were recorded in 1918.

Throughout this period and up to 1927, the state of São Paulo continued to subsidize immigration.

After 1920 there was a new coffee boom, and immigrants responded by coming in increasing numbers. By 1926 the annual total again exceeded 100 thousand. The government programs of the decade succeeded in bringing large numbers of Japanese and Polish<sup>25</sup> and smaller numbers of Portuguese and Spaniards to work the farm areas of Brazil. While Japanese immigrants were still outnumbered by Portuguese immigrants in 1928,<sup>26</sup> they comprised the largest group entering the agricultural sector. By 1933, the Japanese outnumbered all other nationalities combined, accounting for 24.5 thousand of the 46.1 thousand immigrants who arrived in this year.

<sup>24</sup> *Ibid.*, p. 225.

<sup>25</sup> According to Câmara, p. 230, Polish immigrants were usually poorly educated and employed primitive agricultural methods.

<sup>26</sup> H. Hauser claims that around 30% of the Portuguese who came to Brazil in 1928 became farmers, while the corresponding percentages for other nationalities were: Japanese, 99%; Polish, 75%; Spanish, 25%; Italians, 12.3%. Total immigration in this year was 78.1 thousand. See "Japanese Immigration in Brazil," reprinted from the *New Mexico Quarterly Review*, February 1942.

Table 62

*Brazil: Japanese Immigration, 1908-1934*

Period	Total
1908-1912	4 746
1913-1917	14 926
1918-1922	11 099
1923-1927	27 389
1928-1932	59 203
1933-1934	46 424

Source: IBGE, *Anuário Estatístico do Brasil*, 1956, "Apêndice Retrospectivo," p. 480.

Unlike the Japanese, who generally engaged in farming activities, other immigrants increasingly chose to settle in urban areas as industrialization accelerated. *Colonos* also began to leave the coffee plantations for the cities, where factories and stores required large numbers of disciplined workers. Factory jobs were attractive because they paid more, were comparatively regular, and provided more guarantees and better working conditions. In addition, restrictions on crops grown between coffee trees, introduced in an effort to preserve the fertility of the soils, reduced the income of the *colonos*. Previously, many of them had derived extra revenues from such interplanting, often using the money to buy small farms of their own.

A general idea of this movement to the cities is given by the data on the occupational structure of the foreign manpower in Brazil (table 63).

The world crisis that began in 1929 brought about an abrupt decline in immigration to Brazil. This contraction was further accentuated by the quota restrictions imposed in 1934. By 1941-1945, the annual inflow was nearly insignificant (see table 64).

The above mentioned restrictions consisted of a quota system<sup>27</sup> which limited the annual number of immigrants from a given country to 2% of the total who had come to Brazil from that country over the preceding 50 years (i.e., 1 January 1881 to 31 December 1933). This system was similar to the one adopted in the United States in an attempt to restrict the entry of so-called undesirable aliens from countries with very low or markedly different standards of living.

<sup>27</sup> Hauser, p. 8.

Table 63  
*Foreign Manpower in Brazil, 1872, 1900 and 1920*  
 (Total = 100)

	1872	1900	1920
Total Employed	209 455	762 669	867 067
Percentage of Foreign-Born			
Labor Force Engaged in:			
Agriculture	55.2	43.9	44.9
Industry	10.1	8.0	24.2
Services	34.7	48.1	30.9
Labor Force Participation			
Rate of Foreign-Born Population 14			
Years of Age and Over	53.9	59.6	54.5

Source: Calculated from IBGE, *Recenseamento Geral do Brasil, 1920*. The data for 1872 and 1900 are summarized in the introduction, pp. viii-xiii.

Table 64  
*Brazil: Immigration, 1888-1945*

Period	Total	Annual Average
1888-1890	304 054	101 351
1891-1900	1 129 315	112 932
1901-1910	671 351	67 135
1911-1920	797 744	79 774
1921-1930	840 215	84 022
1931-1935	180 652	18 065
1936-1940	107 955	10 795
1941-1945	18 432	1 843

Source: IBGE, *Anuário Estatístico do Brasil, 1956*, "Apêndice Retrospectivo," pp. 480-81.

In Brazil, only the Japanese were affected. The Portuguese were exempted from the decree, and those of other nationalities were not seeking entrance to Brazil in numbers that exceeded the 2% quota.

As a matter of fact, the Japanese, like the Germans, refused to abandon their former way of life and their feeling of allegiance to their land of birth. It was their way of life, rather than the size

of the population flow they represented, that was felt to be causing problems. For example, they continued to rely heavily on assistance from Japanese agricultural concerns.<sup>28</sup>

Adding to the natural tendencies of the Japanese was the myopic Brazilian naturalization code. An endless list of barriers and payments, including a 10-year residence requirement, confronted the foreigner who might seek to become a Brazilian citizen. This helps explain why relatively few persons were naturalized in this period (see table 65).

Table 65

*Brazil: Naturalizations, 1889-1949*

Period	Number of Naturalizations
1889-1899	1 619
1900-1909	2 882
1910-1919	1 754
1920-1929	6 604
1930-1939	11 411
1940-1949	20 863

Source: Same as table 64.

In 1938 a new decree<sup>29</sup> was issued, allowing the unused quota for any nationality to be used to supplement the quotas for nationalities that had exhausted their prescribed 2%. The stated goal of this decree was "to attract agricultural laborers to the country". In 1941, the immigration laws were further relaxed by a decree<sup>30</sup> which guaranteed certain benefits to industrial workers and to "capitalists who brought with them specified amounts of capital". In 1945, an additional law removed quotas on subsidized and directed immigration.<sup>31</sup> This was only a partial easing of restrictions, however, since the government controlled the number of immigrants subsidized in a given year.

<sup>28</sup> H. W. Spiegel, *The Brazilian Economy: Chronic Inflation and Sporadic Industrialization* (Philadelphia: The Blakiston Company, 1949), chap. 5.

<sup>29</sup> Decree-Law 406 of 4 May 1938.

<sup>30</sup> Decree 3 175 of 1941. See Conselho de Imigração e Colonização, *Modern Brazil* (Rio de Janeiro, 1949).

<sup>31</sup> Spiegel.

Foreigners helped create many of the industries which appeared in the South of Brazil during this period. In Santa Catarina, approximately 50% of the factories are presently located in *municípios* settled by German colonists. Originally, these industries were not concentrated in the largest cities, but were widely dispersed in small, rural towns. Many Germans established cottage industries to process agricultural goods and thereby add to their farm income. From such small undertakings came many large factories. Italians also laid the foundations for industry through the small plants they set up in the countryside. "The industries the Italians established had a different character about them. By the 1870s, Northern Italy had received the impact of the Industrial Revolution. This was not true of Germany in the 1830s, whence came the German stock of modern São Leopoldo and Novo Hamburgo."<sup>32</sup>

Beginning in the 1920s, some entrepreneurs appeared among those who came to Brazil or who moved from the country to the city. Italy furnished the largest proportion of the immigrant entrepreneurs.<sup>33</sup> In 1920, foreign-born individuals held 64.2% of the sole-ownership industrial establishments in São Paulo; for the country as a whole, the corresponding figure was 42%. Of such firms held by foreigners in São Paulo, 75.9% were owned by Italians.<sup>34</sup>

In conclusion, throughout this period immigration benefited Brazil by enabling the labor supply to fluctuate in harmony with the needs of the coffee sector, by leading to the establishment of many small farms and the settlement of new lands, and by providing industry with skilled manpower and entrepreneurs. Nonetheless, the number of foreigners who came to Brazil was partly limited by government restrictions on immigration and by failure to encourage the foreign-born to adapt to Brazilian conditions.

#### B.4 — Internal migration

Internal migration, like foreign immigration, was closely related to socio-economic changes in Brazil. In fact, in every intercensal period, events occurred which influenced the direction and/or magnitude of intra- and interregional migration. At this point, it is necessary to describe migration on the state rather than the regional level, since there was extensive intraregional migration and patterns frequently differed among states in the same region.

<sup>32</sup> Valverde, p. 149.

<sup>33</sup> Camargo, 1:258-60.

<sup>34</sup> *Ibid.*, 1:260.

Exact quantification of internal migratory movements is precluded by errors and omissions in the census data. The task is made easier, however, by the availability of an interesting study carried out by specialists from the economic research institute (Instituto de Pesquisas Econômicas — IPE) of the University of São Paulo.<sup>85</sup> Their approach was to use the Forward Census Survival Rate (FCSR) to calculate survival rates for different age brackets. The FCSR method permits internal migratory flows to be estimated indirectly as differences between actual and predicted populations. It assumes: (1) insignificant out-migration (i.e., a “closed” population), (2) the same mortality rate in any given age bracket for all states, and (3) homoscedasticity of errors over all states in any given census.

Nonetheless, given various qualifications, the estimates so obtained must be considered mere approximations to reality. For example, the assumption that mortality rates were homogeneous seems shaky in view of the significant interregional differences in infant mortality rates detailed in section B.2 (ranging from 137.8 per thousand live births in the *município* of São Paulo to 272.3 in Recife).

Furthermore, the FCSR method is of limited usefulness for the first two censuses, which do not include data by age group and appear to contain gross errors in declarations of age. Accordingly, the IPE experts made additional estimates, using gross survival rates (see tables 66 and 67). Even so, these estimates are considered inferior to those obtained using the FCSR method for later censuses (tables 68 and 69).<sup>86</sup>

The major shortcoming of the FCSR method is that it excludes those born in the intercensal periods (i.e., the 0-9 age bracket in the period 1890-1900<sup>37</sup> and the 0-19 bracket in 1872-1890,<sup>38</sup> 1900-1920, and 1920-1940). Since this young segment of the population made up a large fraction of the economically active population, disregarding it limits the confidence that can be placed in the IPE estimates.

<sup>85</sup> D. H. Graham and S. B. Hollanda Filho, *Migration, Regional and Urban Growth and Development in Brazil: A Selective Analysis of the Historical Record, 1872-1970* (São Paulo: Universidade de São Paulo, Instituto de Pesquisas Econômicas, 1973).

<sup>86</sup> Hereinafter, all references to the tables will be to tables 66 and 67 for 1872-1890 and 1890-1900, and to tables 68 and 69 for later periods.

<sup>37</sup> And in the periods 1940-1950 and 1950-1960.

<sup>38</sup> 0-17 in 1872-1890.

Table 66

**Brazil: Net Internal Migration of Native-Born Brazilians by State,  
Intercensal Periods 1872-1970**

(Estimated Using Gross Survival Rates)

State	1872-1890	1890-1900	1900-1920	1920-1940	1940-1950	1950-1960	1960-1970
Acre	—	—	—	18 763	6 344	2 758	3 687
Amazonas	35 536	57 679	17 874	—	23 862	1 261	17 983
Pará	— 31 791	55 701	91 948	—	31 255	8 638	89 410
Maranhão	— 36 705	3 598	26 346	42 135	5 100	212 231	220 542
Piauí	— 24 259	15 795	— 2 877	—	25 120	157 655	18 858
Ceará	— 135 725	— 72 140	— 71 204	89 474	36 843	330 739	82 859
Rio Grande do Norte	— 32 651	— 23 325	33 310	23 728	—	133 723	26 171
Paraíba	— 44 706	— 29 099	44 594	45 789	81 174	256 418	204 418
Pernambuco	— 74 274	133	68 885	74 649	14 322	372 565	203 231
Alagoas	11 510	51 893	— 71 567	—	98 070	—	92 917
Sergipe	— 2 240	22 702	— 52 058	39 453	40 163	99 123	88 313
Bahia	— 7 157	40 552	— 153 815	233 130	—	506 165	366 763
Minas Gerais	98 769	— 93 185	— 230 097	608 455	601 788	593 386	— 1 273 746
Espírito Santo	8 271	3 231	41 615	55 750	46 230	44 612	227 833
Itio de Janeiro	— 64 270	— 97 347	3 283	112 274	19 122	195 842	201 315
Guanabara	63 469	81 631	47 432	268 936	345 352	372 816	372 181
São Paulo	72 649	70 997	18 924	432 862	362 270	712 706	993 428
Paraná	24 896	— 18 215	35 417	121 793	342 263	912 855	790 169
Santa Catarina	31 045	— 33 717	40 604	88 807	4 089	63 441	— 49 237
Rio Grande do Sul	100 083	— 45 157	69 993	181 573	13 515	162 532	— 339 909
Goias	1 670	4 925	25 250	50 366	91 831	259 310	449 076
Mato Grosso	5 896	3 445	15 864	47 002	2 251	131 859	268 517
Brazil	+453 794	+412 282	+581 339	+1 448 215	+1 170 764	+2 861 130	+3 190 267
	—453 778	—412 185	—581 618	—1 448 077	—1 171 760	—2 861 151	—3 190 296

Source: D. H. Graham and S. B. Hollanda Filho, *Migration, Regional and Urban Growth and Development in Brazil: A Selective Analysis of the Historical Record, 1872-1970* (São Paulo: Universidade de São Paulo, Instituto de Pesquisas Econômicas, 1973), p. 98.



Finally, variations in the lengths of the intercensal periods create difficulties in comparing migration over time, since estimation errors are greater for the longer periods.<sup>30</sup>

Prior to 1920, internal migration was most intense in 1872-1890. Two factors accounted for the large population movements, especially in the Northeast and the North, during this period. First, severe droughts occurred in the Northeast in 1878-1880 and 1888-1889. More than 350 thousand persons 10 years of age or older emigrated from the Northeast between 1872 and 1890<sup>40</sup> (table 66). While out-migration fell off thereafter, intraregional migration probably continued.

Second, the North received large numbers of migrants, mainly Northeasterners, as a result of the rubber boom and the demand for labor it created.<sup>41</sup> In the decade 1890-1900, over 110 thousand migrants 10 years of age or older — equal to 40.0% of the resident population in this age bracket in Amazonas and 17.4% in Pará in 1900 — moved to the North. For Amazonas, the high percentage of in-migrants given in table 66 reflects the low population of the state in 1872 (only 57.6 thousand inhabitants).<sup>42</sup> After 1912 and the end of the rubber boom, the migratory inflow diminished. The region still registered a net population gain in 1900-1920, but after 1920 the trend reversed. Of the three states in the North, Pará seems to have lost the most population in absolute terms, while Acre, due to its small number of inhabitants, appears to have lost the most percentagewise (see table 68).

It should be mentioned that census errors distort the estimates for the Northern region. Moreover, poor health conditions probably

<sup>30</sup> This is because a larger segment of the population is omitted from the calculations.

<sup>40</sup> This calculation is based on estimates made using gross survival rates. Errors in the census probably bias this estimate downwards.

<sup>41</sup> The Amazon region was the main source of the world supply of natural rubber until 1910, when the rubber plantations of the Far East supplanted Brazilian production. The rubber output of the Amazon reached record heights in 1909 and 1912 (about 42 thousand tons per year), but production and prices dropped steadily thereafter. Rubber production absorbed almost all the available manpower in the region. The resulting shortages of basic food products, coupled with the poverty in which most of the rubber workers lived, appear to have raised mortality rates considerably. See, among others, "Situação Econômica," in *Relatório do Interventor do Estado do Pará ao Presidente da República* (Rio de Janeiro, 1944); Centro Industrial do Brasil, *O Brasil: Suas Riquezas Naturais, Suas Indústrias*, vol. 1 (Rio de Janeiro, 1907).

<sup>42</sup> In table 67, Pará is shown to have experienced net out-migration. This is not very plausible, since it was also a rubber state and received migrants from the Northeast. The state governments of both Pará and Amazonas had extensive programs designed to attract workers.

Table 67

*Brazil: Net Internal Migration of Native-Born Brazilians by State,  
Expressed as Percent of State Population in Census Years, 1872-1970*  
(Estimated Using Gross Survival Rates)

(%)

State	1872-1890	1890-1900	1900-1920	1920-1940	1940-1950	1950-1960	1960-1970
Acre	—	—	—	-21.16	8.08	-2.41	-2.30
Amazonas	65.67	39.99	7.60	-8.50	-5.55	.24	-2.40
Pará	-11.84	17.35	21.70	-15.64	-3.35	.74	5.52
Maranhão	-10.33	.84	5.67	4.84	.41	13.40	-8.85
Piauí	-11.49	5.93	-.90	3.30	3.07	-15.08	-1.49
Ceará	-18.87	-8.96	-8.74	6.80	-1.76	-12.27	-2.48
Rio Grande do Norte	-14.07	-8.73	12.68	4.43	-2.09	-13.82	2.26
Paraíba	-11.93	-6.37	9.49	4.77	-5.71	-14.97	-10.13
Pernambuco	-8.98	.01	6.18	-3.49	.53	-10.97	-4.91
Alagoas	3.35	10.30	-11.52	-17.32	-10.32	-16.71	-7.31
Sergipe	-.97	7.52	-15.30	-8.28	-7.41	-15.38	-11.62
Bahia	-.53	2.15	-7.56	-7.03	3.47	-10.47	-6.12
Minas Gerais	4.81	-2.98	-6.99	-10.50	-8.96	-7.62	-12.79
Espírito Santo	10.63	2.44	25.23	12.78	-5.94	4.66	-16.06
Rio de Janeiro	-8.93	-11.35	.40	-7.47	-1.06	8.53	5.92
Guanabara	33.45	22.34	9.81	20.45	22.60	15.68	11.25
São Paulo	9.01	5.43	1.13	11.54	5.70	7.80	7.66
Paraná	20.24	-7.47	13.43	19.58	29.28	43.59	18.39
Santa Catarina	21.63	-12.15	15.06	13.96	.36	-4.07	-2.29
Rio Grande do Sul	24.78	-5.24	7.43	8.97	.42	-3.90	-6.24
Goiás	1.04	2.17	10.33	9.92	11.15	21.34	21.42
Mato Grosso	10.06	3.81	15.60	21.30	-.55	23.59	27.38
Brazil	4.67	2.97	3.79	4.99	2.94	5.51	4.49

Source: Graham and Hollanda Filho, p. 102.

resulted in much higher rates of mortality than those used in drawing up the estimates presented in the tables; consequently, out-migration may be overstated.

In the Northeast and the North, the ultimate outcome of migration was a population loss which can be explained in terms of the economic decline of these regions. Nonetheless, many migrants returned to their state of birth, and from 1920 on, certain states in the Northeast experienced net in-migration — even Ceará, which in all previous periods had lost population. Maranhão had received large numbers of migrants from other states in the region since 1900. Its humid climate and fertile soil would make it the goal of many migrants in 1958, when drought again struck the Northeast. On the other hand, the states of Piauí, Pernambuco, Alagoas, Sergipe and Bahia continued to lose population in the period 1920-1940. Throughout the years 1872-1940, not only the Northeast and the North, but also the states of Minas Gerais and Rio de Janeiro, were areas of net out-migration. While most of the migrants who left the East moved to the Distrito Federal, it is likely that some headed for the coffee plantations of São Paulo. Estimates indicate that, in the decade 1890-1900, approximately 95 thousand persons 10 years of age or over emigrated from each of these states — equal to about 2.98% of the population in this age group in Minas Gerais and 11.35% in Rio de Janeiro in 1890 (table 66).

By 1900-1920, another trend had begun, as migration from Minas Gerais and Bahia to the still sparsely populated Center-West accelerated. Migration to the Center-West further increased after 1920. According to table 68, the rate of in-migration for Mato Grosso was surpassed only by that for the Distrito Federal.

Beginning in 1888, international immigration outweighed national migration. Internal migration continued, but up to 1920 the number of such migrants was small compared to the total of foreigners entering and/or leaving the country. Immigrants concentrated in São Paulo and, to a lesser extent, in the South and East, while internal migrants played a more important role in the North and Northeast and, to a certain degree, in the East. When slavery was abolished, many of the newly emancipated used their freedom to move about.

Initially, immigrants from abroad comprised a more important source of manpower in São Paulo and the South than did national migrants. Among the reasons for this may be noted the conditions in Europe, propitious to emigration, and the colonization schemes of the Brazilian government. Furthermore, the near absence of highways connecting regions made internal migration a difficult process.

Table 68

*Brazil: Net Internal Migration of Native-Born Brazilians by State,  
Intercensal Periods, 1872-1960*

(Estimated Using Forward Census Survival Rates)

State	1872-1890	1890-1900	1900-1920	1920-1940	1940-1950	1950-1960
Acro	—	—	—	18 071	6 583	— 5 447
Amazonas	37 467	55 939	18 110	22 636	25 694	— 11 219
Pará	— 56 468	53 385	93 382	146 141	28 999	— 6 521
Maranhão	— 56 037	3 870	31 419	53 325	10 671	188 672
Piauí	— 19 323	12 412	— 4 334	20 975	26 949	—149 005
Ceará	—198 219	— 83 098	— 76 170	98 386	35 910	—
Paraíba	— 79 304	— 31 490	43 293	51 868	74 470	—
Rio Grande do Norte	— 33 907	— 24 541	34 176	30 416	9 606	—
Pernambuco	—104 306	— 1 967	71 935	55 488	1 476	—
Alagoas	— 20 529	53 587	— 72 059	160 837	91 774	—
Sergipe	36 504	26 821	— 45 115	29 836	33 326	—
Bahia	— 48 723	54 627	—119 010	197 659	106 354	—
Minas Gerais	287 421	— 88 494	—221 456	630 320	624 578	—
Espirito Santo	6 768	2 448	37 688	35 429	78 400	— 34 328
Rio de Janeiro	— 19 882	— 84 280	6 251	103 086	14 507	—
Guanabara	57 469	85 547	55 322	277 356	362 014	297 732
São Paulo	45 847	70 292	— 19 933	355 588	300 866	—
Paraná	19 446	— 21 244	29 100	109 168	333 531	—
Santa Catarina	16 764	— 34 762	38 220	83 251	3 409	— 53 174
Rio Grande do Sul	132 399	— 58 484	53 854	165 904	10 779	—
Goiás	— 7 603	5 156	28 549	51 647	88 598	—
Mato Grosso	4 210	4 279	16 771	46 799	4 255	—
Espirito Santo + Serra dos Aimorés	—	—	—	61 288	— 34 703	—
Brazil	+644 296	+428 362	+588 070	+1 385 049	+1 114 518	—
	—644 301	—428 380	—558 077	—1 385 056	—1 114 534	—

Table 69

*Brazil: Net Internal Migration of Native-Born Brazilians by State,  
Expressed as Percent of State Population in Census Years, 1872-1960  
(Estimated Using Forward Census Survival Rates)*

State	1872-1890	1890-1900	1900-1920	1920-1940	1940-1950	1950-1960
Acre	—	—	—	-20.38	8.39	-4.79
Amazonas	69.24	38.78	7.70	-6.55	-5.98	-2.13
Pará	-21.03	16.63	22.03	-15.23	-3.11	—
Maranhão	-15.87	.91	6.76	6.12	.87	11.93
Piauí	-9.61	4.66	-1.36	-3.45	-3.30	-14.25
Ceará	-27.56	-10.32	-9.35	7.48	-1.72	—
Rio Grande do Norte	-14.56	-9.18	13.01	5.68	-1.25	—
Paraná	-21.16	-6.89	9.21	5.40	-5.24	—
Pernambuco	-12.61	.19	6.45	-2.59	.06	—
Alagoas	-5.97	10.63	-11.60	-16.50	-9.65	—
Sergipe	21.00	8.88	-13.26	-6.26	-6.15	—
Bahia	-3.59	2.90	-5.85	-5.96	-2.72	—
Minas Gerais	14.43	-2.83	-6.72	-10.88	-9.34	—
Espírito Santo	8.70	1.85	22.85	8.12	-10.61	-4.02
Rio de Janeiro	-2.89	-9.82	.76	-6.86	—	—
Guanabara	30.28	23.41	11.44	30.37	23.68	13.74
São Paulo	5.69	5.38	-1.19	9.48	4.73	—
Paraná	15.81	-8.71	11.03	17.55	28.53	—
Santa Catarina	11.68	-12.53	14.17	13.09	—	—
Rio Grande do Sul	33.70	-6.79	5.72	8.20	.34	—
Goiás	-4.76	2.27	11.68	10.17	10.76	—
Mato Grosso	7.18	4.73	18.49	21.21	-1.04	—
Espírito Santo + Serra dos Aimorés	—	—	—	14.05	-4.31	—
Brazil	6.76	3.08	3.63	4.78	2.80	—

Source: Graham and Hollanda Filho, p. 105.

In this respect, railroad construction in the South from 1900 to 1920 stimulated national migration to the three states in this region. During this 20-year period, São Paulo continued to receive foreign immigrants, but apparently experienced a net outflow of Brazilians.<sup>43</sup>

After 1920 some interesting modifications took place in the pattern of internal migration. In the thirties, the migration of nationals to the state of São Paulo and to the South began to assume its present-day proportions. The problems of the coffee sector, together with the world crisis of 1929 and subsequent legislation designed to reduce unemployment among Brazilians, served to diminish immigration from abroad.

The migrants who arrived in São Paulo at this time came from neighboring states such as Rio de Janeiro and Minas Gerais, as well as from more distant areas like the Northeast. The surge of industrial growth from 1933 to 1939 described in chapter 6 created jobs and attracted workers. According to the figures for 1940, 27.4% of all the emigrants from Pernambuco, Alagoas, Sergipe and Bahia (all states in the Northeast) were living in São Paulo in the census year.<sup>44</sup>

During this period, the South also received large numbers of internal migrants, both in absolute terms and as a percentage of the locally-born population.

However, the state which received the greatest number of migrants during these years, expressed as a percentage of the 1920 population, was Guanabara (then the Distrito Federal). While the city of Rio de Janeiro had always been an important destination center (see table 68), it is significant that it managed to attract so many during this period as well, when São Paulo was drawing such large numbers. This demonstrates that a large part of this population movement was rural-urban in nature.

The process of urbanization intensified after 1940, depending to a considerable extent on migratory movements. Migrants moved from small towns to larger towns, as well as directly from the countryside to the cities, and all such movements helped swell the size of the urban relative to the rural population. Nonetheless, considerable rural-rural migration was still taking place as groups shifted to the Center-West and the South, especially to the state of Paraná. In the Northeast, there was a significant rural-rural component in the migration to Maranhão. In fact, throughout the period under

<sup>43</sup> This is open to doubt, for the data in table 68 are of questionable reliability.

<sup>44</sup> IBGE, *Recenseamento Geral do Brasil*, 1940, Série Nacional, 2:8-11.

study, intrastate migration was often from one rural zone to another. This was sometimes the result of national catastrophes. An early example is provided by the movements of population from drought areas to cocoa-producing zones within the state of Bahia prior to 1890.

Tables 68 and 69 supply interesting data on the acceleration of migration after 1940, but unfortunately they do not quantify its impact on urban growth. The factors that accounted for this stepped-up migration include the economic development of the Center-South, which acted as a growth pole, and the gradual improvement of transportation systems (especially roads) which accompanied this development.

## B.5 — Urbanization

The formation and growth of cities was a relatively slow-moving, fragile process during the period 1870-1940. Looked at in longer perspective, the great leap in urbanization took place from 1940 to 1960, not prior to 1940.

Due to inexact criteria in the classification schemes employed in the censuses, the available data on urban population are ambiguous. What population should be considered "urban"? IBGE classifies all seats of *municípios* and *distritos* as "cities", and at times distinguishes "urban" and "suburban" areas within them. This criterion seems too broad. Even today, a large number of seats of *municípios* in the interior of Brazil are mere rural places without the minimum of services or infrastructure associated with urban patterns of living. On the other hand, some towns that are not seats of *municípios* are large in both physical and human dimensions.<sup>45</sup> In any event, using this criterion, IBGE gives the urban population of Brazil in 1940 as 10.9 million persons, or 26.4% of the total population.

A further objection to the criterion employed by IBGE is that a *município* should not be classified as "urban" solely on the basis of total population. Many *municípios* that have large populations have small town populations. If agglomerations of 5 thousand persons or more are considered urban, then in 1940 the total urban population represented only 50.5% of the total population of the corresponding *municípios*. If 20 thousand is taken as the cut-off

<sup>45</sup> Such towns are found in the *município* of Nova Iguaçu in the state of Rio de Janeiro, for example.

point, the urban populations comprised only 48.0% and 46.0% of the total populations in the corresponding *municípios* in 1920 and 1940, respectively.

To give a more accurate idea of the distribution of population between urban and rural areas, the following two definitions have been used in this analysis.

(a) "Urban population" is defined as persons residing in places with five thousand inhabitants or more. This criterion, proposed by Mortara,<sup>46</sup> is applied to data from the 1940 census only. Calculations based on this criterion place the total urban population in 1940 at 8.8 million persons, or 21.5% of the total population.

Table 70 provides a regional breakdown for 1940. It is readily seen that most of the urban population was concentrated in a few cities in two regions. In fact, the former Distrito Federal and the state of São Paulo accounted for 47.6% of the overall urban population.

Table 70  
*Urban Population, 1940<sup>a</sup>*

Region	Number of Inhabitants	As % of Regional Population
North	253 177	17.2
Northeast	1 812 454	12.6
East	3 054 688	27.4
São Paulo	2 560 216	35.6
South	1 060 734	18.5
Center-West	107 933	8.6
Brazil	8 849 202	21.5

Source: G. Mortara, "Observações sobre a Discriminação da População Urbana no Censo de 1940," *Revista Brasileira dos Municípios*, Ano 3, n.º 9 (January-March 1950): 20-55.

<sup>a</sup> Urban population defined as those living in places with 5 000 or more inhabitants.

<sup>46</sup> G. Mortara, "Observações sobre a Discriminação da População Urbana no Censo de 1940," *Revista Brasileira dos Municípios*, Ano 3, n.º 9 (January-March 1950): 20-55.



Table 71 illustrates the importance of state capitals, in terms of percentage of regional urban population. In 1940, over half of the urban population was located in state capitals. Further calculations, not detailed here, reveal that 51.4% of the total urban population lived in cities of 50 thousand or more inhabitants.

Table 71  
*Population of State Capitals, 1940*

Region	% of Regional Urban* Population Living in State Capitals
North	97.0
Northeast	60.7
East	61.0
São Paulo	49.2
South	36.2
Center-West	31.3
Brazil	52.2

Source: Data from IBGE, *Recenseamento Geral do Brasil*, 1940.

- \* Urban population defined as those living in places with 5 000 or more inhabitants.

(b) "Cities" proper are defined as places with 20 thousand inhabitants or more. Obviously, no single population figure (or other measure, for that matter) can serve to determine what is or what is not a city. Even so, where there are concentrations of 20 thousand people or more, certain activities are conducted and certain services are available that are generally associated with urban life. Furthermore, this is the level normally adopted by international organizations for distinguishing urban from rural populations.<sup>47</sup>

One might ask: "Why not use population density as a criterion; surely by 'city' we mean a place where population is concentrated, or 'dense'." Density, however, is not a reliable index, since there are fundamental differences between overall population density and population density in urban places.<sup>48</sup>

<sup>47</sup> United Nations, *Population Census Methods*, Population Studies, n.º 4 (New York, 1949).

<sup>48</sup> For a more detailed discussion, see M. M. F. Silva, "Tentativa de Classificação das Cidades Brasileiras," *Revista Brasileira de Geografia* 8 (July-September 1946): 283-316.

Thus, in order to study the evolution of the urban population, the method adopted in this study was to list the places with 20 thousand or more inhabitants in 1960, and then treat the populations of these places as "urban" when working with the 1920 and 1940 censuses. Problems arise in computing the urban population under this criterion in 1920, since in many cases census figures are available only for the populations of the corresponding *municípios* or *distritos*. In such cases, the usual expedient was to consider the population of the *distrito* that was the seat of the *município* (as a rule, these *distritos* have the same names as the *municípios*). Occasionally, an attempt was made to estimate the percentage of the *distrito* population that lived in town. Many places having more than 20 thousand inhabitants in 1960 were mere points on the map or farmland in 1920. In the 1920 census, no attempt was made to disaggregate urban population into "urban" and "suburban", as in later censuses.

Table 72 provides estimates of urban population in Brazil in 1920 and 1940, as calculated under the second criterion (i.e., population concentrated in places having 20 thousand or more inhabitants in 1960, with no distinction being made between "urban" and "suburban" population).

Table 72

*Population of Cities with 20 000 or More Inhabitants, 1920 and 1940*

Year	Number of Cities	Total Population in Cities (A)	(A) as % of Total National Population	Increase in % of (A) in 1920
1920	74	4 552 069	16.6	
1940	55	6 208 699	15.1	36.6

Sources: Data from IBGE, *Recenseamento Geral do Brasil*, 1920, 4: part 1, "Population"; *idem*, *Anuário Estatístico do Brasil*, 1941-1945, 1947, and 1961.

A striking feature in table 72 is that the number of cities with 20 thousand or more inhabitants declined from 1920 to 1940.<sup>49</sup> However, not too much confidence should be placed in the 1920 census figures, which may overstate the actual populations of many

<sup>49</sup> At least one other study suggests that many cities lost population from 1920 to 1940. See Silva, cited in fn. 48 above.

cities. On the other hand, the total number living in cities with 20 thousand or more inhabitants increased considerably over the same period (by 36.62%).

Table 73 compares the IBGE estimate of urban population in 1940 with the two estimates made in this study. Note the appreciable discrepancies among the estimates: the population residing in cities with 20 thousand or more inhabitants amounted to only 57% of the urban population figure given by IBGE.

Table 73

*Brazil: Urban Population in 1940 as Given by  
Three Different Methods*

Method	Urban Population (Number of Inhabitants)	Urban Population as % of Total Population
IBGE	10 890 898	26.4
Population of Cities with 5 000 or More Inhabitants	8 849 202	21.5
Population of Cities with 20 000 or More Inhabitants	6 208 699	15.1

Sources: Data from IBGE, *Recenseamento Geral do Brasil*, 1920 and 1940.

Table 74 provides a breakdown of urban population growth by region. While such growth was most rapid in the East, it was marked in São Paulo as well. To a certain extent, this indicates the impact of interregional migration.

Table 75 permits comparison, at the regional level, of the rate of growth of urban population (defined as population living in cities of 20 thousand or more), and the rate of growth of overall population. It appears that no region (with the possible exception of the East) urbanized rapidly over this period, in the sense that there were no large increases in the percentage of regional population living in cities. Nonetheless, in judging the validity of these indices, it is well to bear in mind the probable errors in the 1920 census.

In commenting on the figures in table 75, it should be remembered that extensive migration took place during the period 1920-1940, not only from the countryside to small cities, but also from small to large cities. As revealed in section B.6, employment was not being created very rapidly in the activities and services

Table 74

*Growth of Cities with 20 000 or More Inhabitants  
by Region, 1920-1940*

Region	Number of Cities		Population (Number of Inhabitants)		Rate of Growth
	1920	1940	1920	1940	(%)
North	3	2	223 775	231 527	3.5
Northeast	20	15	1 138 105	1 268 019	11.4
East	18	11	1 313 624	2 127 430	62.0
São Paulo	20	16	1 339 587	1 915 876	43.0
South	12	10	515 618	642 793	24.7
Center-West	1	1	21 360	23 054	7.9

Sources: Data from IBGE, *Recenseamento Geral do Brasil*, 1920 and 1940.

Table 75

*Percentage of Population Living in Cities with 20 000 or  
More Inhabitants by Region, 1920 and 1940*

Region	Percentage of Population Living in Cities with 20 000 or More Inhabitants by Region, 1920 and 1940	
	1920	1940
North	15.6	15.8
Northeast	10.1	8.9
East	14.5	19.1
São Paulo	29.2	26.7
South	14.6	11.2
Center-West	2.8	1.8

Source: Same as table 74.

that could be carried out in small cities. If jobs were being created in large cities only, this may explain the paradoxical decline in the percentages of urban population in the Northeast, South and Center-West, at a time that cities in the East were growing rapidly. This explanation seems even more plausible in the light of the findings on internal migration during this period (see section B.4).

The data in table 76 substantiate the hypothesis that population was concentrated in a few large cities. By 1940, there were two cities in Brazil — the former Distrito Federal and São Paulo

— which had populations of over one million. These two cities alone accounted for 44.7% of the total population living in cities of 20 thousand or more inhabitants. In contrast, the number of cities with between 20 thousand and 50 thousand inhabitants declined by almost 50% from 1920 to 1940, while the number with population of more than 50 thousand increased, as did the number with more than 100 thousand.

Table 76

*Distribution of Urban Population by City Size, 1920 and 1940*

Size Class (1 000 Inhabitants)	Number of Cities in Size Class		Population in Size Class			
	1920	1940	1920		1940	
			Number of Inhabitants	As % of (A)	Number of Inhabitants	As % of (A)
1 000 and over	—	2	—	—	2 777 402	44.7
500 — 1 000	2	—	1 389 856	30.1	—	—
200 — 500	2	3	522 265	11.5	872 866	14.1
100 — 200	3	5	426 644	9.4	762 979	12.3
50 — 100	7	12	414 859	9.0	802 733	12.9
20 — 50	80	33	1 818 646	40.0	992 629	16.0
<b>Total (A)</b>	<b>74</b>	<b>55</b>	<b>4 552 069</b>	<b>100</b>	<b>6 208 699</b>	<b>100</b>

Sources: Same as table 74.

Note: The general census of 1920 gives the urban population of the former Distrito Federal as 790 823 and the total population as 1 167 873. Since the Distrito Federal was the present city of Rio de Janeiro, and since there were very few employed in rural activities, the total may be taken as the urban population figure. In this case, Rio de Janeiro would be entered above as a city with more than one million inhabitants in 1920.

Large cities may be defined as those with more than 500 thousand inhabitants, medium-size cities as those with between 100 thousand and 500 thousand, and small cities as those with between 20 thousand and 100 thousand. According to these definitions, the North and Northeast had large cities in neither 1920 nor 1940. However, the North had one medium-size city (Belém) in both census years, and by 1940 the Northeast had three (Recife, Salvador and Fortaleza, with populations of around 300 thousand, 200 thousand and 100 thousand, respectively). The Center-West had only small cities in both years. In the South, there was only one medium-size city in 1940 (Porto Alegre, with 750 thousand inhabitants).

By 1940, the state of São Paulo had more cities with at least 20 thousand inhabitants than any other region in the country. The population of the city of São Paulo alone was 1.2 million, and even more lived in the nearby communities of Santo André, São Bernardo do Campo, and São Caetano. Santos had a population of over 150 thousand.

Another point worthy of mention is that state capitals were invariably the largest cities. In 1940, residents of state capitals accounted for 78.7% of the total population of cities with 20 thousand or more inhabitants. Even so, there were two state capitals, those of Goiás and Mato Grosso, which had less than 20 thousand inhabitants in 1940. It should be noted that throughout this study the population figures given for cities refer to cities proper, and not to the *municípios* in which they are located. The importance of this lies in the fact that in some cases there are considerable differences between the population of the city and that of the corresponding *município*.

In order to place the process of urbanization in better perspective, population data referring to 1960 were analyzed according to the same procedure. As table 77 indicates, most of the cities with 20 thousand or more inhabitants in 1960 were founded or grew rapidly only after 1940. The number of cities of this size or over rose from 55 in 1940 to 196 in 1960.

Table 77

*Number of Cities with 20 000 or More Inhabitants  
by City Size, 1920, 1940 and 1960*

Size Class (1 000 Inhabitants)	Number of Cities in Size Class		
	1920	1940	1960
I 1 000 and over	—	2	2
II 500 — 1 000	2	—	4
III 200 — 500	2	3	7
IV 100 — 200	3	5	21
V 50 — 100	7	12	45
VI 20 000 — 50 000	60	33	117
<b>Total</b>	<b>74</b>	<b>55</b>	<b>196</b>

Sources: Data from IBGE, *Recenseamento Geral do Brasil*, 1920, 1940, and 1960.

Between 1940 and 1960, four new cities appeared in size class II, four in size class III, 16 in size class IV, 33 in size class V, and 84 in size class VI, for a total of 141 cities with 20 thousand or more inhabitants. Over this period, the number of persons living in cities of this magnitude increased nearly 239.4%, to reach a total of 21.1 million in 1960. If urban population is defined as all those living in cities of 20 thousand or more inhabitants, then 15.1% of the population was urban in 1940 and 29.8% was urban in 1960.

Of the 196 cities that had 20 thousand or more inhabitants in 1960, 141 fell below this limit in 1940. However, in 1960, these 141 cities accounted for only 17.3% of the population residing in cities of this magnitude. Furthermore, the population living in the places that were to hold 20 thousand or more inhabitants in 1960 totaled only 5.5 million in 1920 and 7.5 million in 1940.<sup>60</sup> What these figures indicate is that rural-urban migration increased quite rapidly from 1940 to 1960, and that the bulk of the migrants went to large rather than to small cities.

Table 78 shows the distribution of the urban population by region in the three census years. In the period 1920-1960, the urban population of the North and Northeast did not grow at the same pace as that in the rest of the country. From 1920 to 1940, the East experienced the most rapid urbanization; and after 1940, the rise in the share of the Center-West was due to the founding of Brasília.

Table 78

*Distribution of Urban Population<sup>a</sup> by Region, 1920, 1940 and 1960*  
(Regional Total Expressed as % of National Total)

Region	1920	1940	1960
North	4.9	3.7	3.1
Northeast	25.0	20.4	18.4
East	28.9	34.3	34.2
São Paulo	29.4	30.9	29.6
South	11.3	10.3	12.7
Center-West	.5	.4	2.0

Sources: Same as table 77.

- <sup>a</sup> Urban population defined as those living in cities with 20 000 or more inhabitants.

The main conclusion to be drawn from this analysis is that in 1940 urban population still represented a small fraction of total population, regardless of the criterion used to define "urban". While the absolute number of people in cities rose in the period under study, urban population growth rates were not significantly higher than overall population growth rates. And although the proportions of

<sup>60</sup> Data from IBGE, *Anuário Estatístico do Brasil*, 1947 and 1961.

urban population varied from region to region, as of 1940 there was no region in which the urban population comprised a majority of the regional population. Only after 1940 did urbanization accelerate. From 1940 to 1960, urban population grew faster than overall population, with urban growth being most pronounced in large cities.

## B.6 – Occupational structure

The task of analyzing the occupational structure of the economically active population during the period under study must contend with limitations in the available statistics. Before 1920, the criteria used to define occupations were imprecise. Although this creates problems in aggregating population by sector, such detail as is available can be used if certain facts concerning the level of development of the various sectors over time are recognized. For example, since industry was still quite primitive up to 1900, in the early censuses most of those listed as industrial workers were actually employed in arts and crafts or in small shops or cottage industries (e.g. cabinetmakers, smiths and mechanics).

The usefulness of the early censuses is further limited by other errors and omissions. The census of 1890, for example, contains no data on occupational composition. The weaknesses of the census of 1900 have already been discussed.

While the census of 1920 also presents many problems for the demographer, it does provide usable data on occupations. By this time, truly industrial employment represented a significant percent of total employment. It follows that comparisons between the 1920 and 1940 data are much more reliable than comparisons involving information for earlier periods.

Data for all census years were aggregated by sector in accordance with the following definitions:

a) The primary sector, denominated "agriculture" for convenience, includes those engaged in crop and livestock production, extractive activities (oilseeds, fibers, resins, rubber, forestry), and hunting and fishing.

b) The secondary sector, or "industry", includes manufacturing, mining, construction, and power generation.

c) The tertiary sector, or "services", includes commerce, transportation, the liberal professions, business administration, public administration, national defense, domestic services, religions, and social activities (only wage workers are counted).



The national totals obtained using this aggregation scheme are given in table 79.<sup>61</sup> Outstanding are the discrepancies between the figures for 1900 and those for the other years. These discrepancies are probably due to errors in the 1900 census. The relative share of agriculture in total employment is hardly likely to have fallen

Table 79

*Sectoral Composition of Economically Active Population, 1872, 1900 and 1920*

Sector	1872		1900		1920	
	Number Employed (1 000)	As % of Total	Number Employed (1 000)	As % of Total	Number Employed (1 000)	As % of Total
Agriculture	3 671	64.1	5 071	53.4	6 377	69.7
Industry	282	4.9	321	3.4	1 264	13.8
Services	1 773	31.0	4 111	43.2	1 509	16.5
Total	5 726	100.0	9 503	100.0	9 150	100.0

Sources: Data from IBGE, *Recenseamento Geral do Brasil, 1872, 1900 and 1920*.

to 53.4% in 1900 only to have risen to 69.9% in 1920, a figure which, for the reasons noted above, seems much more reliable than that for 1900. The figures for services are wholly untenable — in both absolute and percentage terms — even if it is taken into account that most of those employed in this sector were household servants, and that their numbers were probably overstated. The explanation for these differences lies in the data collected in the more accessible urban areas having been used to estimate occupational composition in other areas in 1900. This tended to overstate national employment in the service sector. The figure for industry is based on data from the special census taken in 1906 in the Distrito Federal (where most industrial employment was concentrated).<sup>62</sup>

The decline in the total employed in the tertiary sector was largely due to the reduction in the number of household servants

<sup>61</sup> The data used in table 79 and in the ensuing analysis are from the following sources: IBGE, *Recenseamento Geral do Brasil, 1872, 1900, 1920 (População: Censo Agrícola e Industrial)*, and 1940 (national and regional series for all states in the Federation; *Censo Agrícola e Industrial*); Diretoria Geral de Estatística, *Recenseamento do Distrito Federal, 1906*.

<sup>62</sup> See fns. 1 and 2 above.

following abolition. 1.5 million slaves were counted in the 1872 census.<sup>63</sup> Paid household servants represented the following percentages of total employment in the tertiary sector:

Table 80

*Number of Household Servants, 1872, 1900 and 1920*

Year	Number	As % of Employment in Tertiary Sector
1872	1 046	59.0
1900	2 507	61.0
1920	364	24.1

Sources: Same as table 79.

The employment structure revealed by the censuses of 1872 and 1900 can be summarized in a few words. Agriculture provided the most employment, probably even more than the census figures suggest. The industrial sector was unimportant as a source of jobs; the survey made by the Centro Industrial do Brasil in 1907, though only partial, indicated that 151.8 thousand workers, or 47.4% of the total of 321 thousand recorded in 1900, were employed in manufacturing. Finally, the tertiary sector was a major provider of employment, though the jobs were often marginal and low-paid, a fact that may seem incongruous given the predominantly rural character of the population at the time.

These high proportions of alleged employment in services help explain an otherwise puzzling statistic, namely, the ratio of employment to population of working age. For the years 1872, 1900 and 1920, this ratio was 95.5%, 105.5% and 56.3% respectively. It appears that in 1900 more people were working than were of age to work. Once again, the explanation is that the 1900 census data are quite inaccurate, and the best thing to do is simply omit them. This having been done, it should be taken into account that many young people went to work before the age of 16. If the population of working age is defined as all those over 10, the ratio of employment to population of working age becomes 74.7% for 1872 and 42.6% for 1920.

The decrease in the above ratio is impressively large. Over the period 1872-1920, employment appears to have grown more slowly

<sup>63</sup> Mortara, "Um Enigma Resolvido," pp. 72-73.

than population. The number employed rose from 5.7 million in 1872 to 9.2 million in 1920, for an increase of 59.8%. In contrast, the number in the economically active age bracket climbed from 6 million in 1872 to 16.3 million in 1920, for an increase of 171%.

By 1920, employment in the tertiary sector as a whole was lower for two reasons: the number of household servants had fallen considerably, and urban growth had not yet led to the creation of large numbers of low-productivity jobs.

For the period 1920-1940, it is possible to study the effects of growing urbanization on employment in more detail, and to make interregional comparisons. To this end, the data from the 1940 census were handled in the following manner.<sup>64</sup> In conformity with the practice adopted in most international studies, housewives were not counted as economically active.<sup>65</sup> This may be objected to by some, since it is misleading not to include many rural housewives in the work force. Another convention (also somewhat controversial) that was adopted was to exclude full-time students from the economically active population. Classification according to these criteria produces the results shown in table 81.

In Brazil as a whole, the proportion engaged in agriculture declined from 1920 to 1940, but only by 4.8%. While the table suggests that the proportion employed in industry also declined, this does not seem credible. Changes in the classification criteria make comparisons difficult. For example, self-employed dressmakers were counted as industrial employees in 1920, but as service employees in 1940.<sup>66</sup>

Employment in industry grew in absolute numbers, however, and employment in manufacturing, as reported in the economic censuses, increased from 275.5 thousand in 1920 to 781 thousand in 1940. These levels represent 21.8% and 51.5% of total industrial employment, as given by the demographic censuses of the same years.

The demographic and economic censuses have different totals due to different coverage and means of collecting data. Whereas the demographic censuses are based on household surveys, the economic censuses use information gathered from firms. Furthermore, not all

<sup>64</sup> The summary tables in the *Anuários Estatísticos* classify unpaid domestic workers and students as economically active. Employment in extractive industries and mining is aggregated.

<sup>65</sup> United Nations, *Population Census Methods*.

<sup>66</sup> See T. P. A. Borges and G. Loeb, "Desenvolvimento Econômico e Distribuição da População Ativa," in *Contribuições à Análise do Desenvolvimento Econômico*, prepared under the auspices of the Fundação Getúlio Vargas (Rio de Janeiro: Livraria Agir Editora, 1957), p. 38.

Table 81  
*Economically Active Population by Region, 1920 and 1940*  
 (Expressed in 1 000 and as % of Regional Total)

Region	1920			1940										
	Total	Agriculture	Industry	Services	Total	Agriculture	Industry	Services						
North	499	369	73.9	47	9.4	83	16.7	529	370	71.7	35	0.5	115	21.8
Northeast	3 207	2 403	75.6	418	12.7	386	11.7	5 109	3 883	76.0	375	7.4	851	16.7
East	2 715	1 740	64.4	303	14.5	573	21.1	3 853	2 203	68.8	439	11.4	1 151	29.9
São Paulo	1 371	566	40.9	246	18.0	259	18.9	2 702	1 540	56.0	434	15.7	782	28.3
South	1 041	729	70.1	131	12.5	181	17.4	1 980	1 353	68.1	100	9.6	443	22.3
Center-West	227	171	75.0	29	12.9	27	12.1	423	307	72.7	45	10.8	71	16.5
Brazil	9 150	6 377	69.7	1 264	13.8	1 503	16.5	14 602	9 732	66.4	1 517	10.3	3 412	23.3

Sources: Data from IBGE, *Recenseamento Geral do Brasil, 1920 and 1940*. For 1940, both the national and regional series were used.

industries are covered by the economic censuses.<sup>67</sup> Thus, the 20.1% rise in industrial employment from 1920 to 1940 shown in table 82 is probably too high. But even if employment in industry did grow this fast, the labor force grew faster, and more people had to take low-productivity jobs.

The service sector provided employment for many of those who were unable to find jobs in industry. The numbers employed in the tertiary sector increased by 41.2% over this 20-year span, an increase similar in magnitude to the growth in urban population (the population living in cities of 20 thousand or more inhabitants increased 36.6% between 1920 and 1940). The service sector may be disaggregated as follows:

Table 82

*Employment in the Tertiary Sector, 1920 and 1940*

Subsector	1920	1940
Transportation	16.8	13.9
Commerce	33.0	23.5
Liberal Professions	11.1	3.5
Administration	9.1	9.1
Others	30.0	50.0
Total	100.0	100.0

Sources: Data from IBGE, *Recenseamento Geral do Brasil*, 1920 and 1940.

The higher-productivity service subsectors grew less rapidly than the miscellaneous "other" activities, a hodgepodge that includes many strictly marginal jobs that appeared as the cities swelled. During this period, many people moved to urban areas. The main urban destination center was the Distrito Federal, where jobs became increasingly hard to find as the unskilled labor force mounted. Lack of training may also explain the considerable rural-rural migration

<sup>67</sup> In 1920, the industrial census counted workers in power generation and sugar mills, but excluded those engaged in the following activities: (1) made-to-order clothing; (2) small-scale construction; (3) retail outlets such as bakeries, furniture stores, drugstores, clock shops, etc.; (4) workshops in schools and other institutions; (5) distilleries, refineries and mills on farms; (6) household activities; (7) general industrial activities in which the employees in question were paid by the government; (8) retail printing, including newspapers; (9) independent repair shops. See IBGE, *Recenseamento Geral do Brasil*, 1920, 5: part 1, "Indústria," lxxix-lxxxii.

that took place at this time, for many people may have chosen to go to other rural areas rather than take unfamiliar jobs in the cities.

For 1920-1940, as for the earlier period, the ratios of employment to population of working age were compared using two sets of estimates for the latter (i.e., alternatively defining the working-age population as those between 15 and 59, and as those over 10<sup>68</sup>).

Table 83

*Economically Active Population, 1920 and 1940*  
(As % of Population of Working Age)

Region	1920 <sup>a</sup>		1940	
	A	B	A	B
North	61.7	48.4	66.8	51.0
Northeast	55.4	41.6	67.6	50.7
East	56.6	42.9	64.0	48.7
São Paulo	55.8	42.6	69.5	53.2
South	56.9	50.9	66.3	50.0
Center-West	56.2	49.9	63.6	48.9
Brazil	56.3	42.6	66.6	50.5

Sources: Data from IBGE, *Recenseamento Geral do Brasil*, 1920 and 1940; *idem*, *Anuário Estatístico*, 1939-1940 and 1941-1945.

Note: A = Population of working age defined as all those 15-59 years of age.

B = Population of working age defined as all those over 10 years of age.

<sup>a</sup> The figures for 1920 are estimates.

Table 83 reveals that a large percentage of the Brazilian population was economically inactive in both 1920 and 1940. This means there was also a fair amount of unemployment, though the percent of unemployment is not, of course, equal to the percent of inactive population. While more detailed breakdowns of the 1940 census indicate that a large percentage of the population was in school (6.8% of the working-age population, defined as all those over 10 years of age), it is likely that many students held part-time jobs. Another large proportion was engaged in performing unpaid household chores. Thus, the figures for 1940 probably understate labor force participation rates.

<sup>68</sup> The estimates for 1920 are weakened by the lack of data on economically active persons less than 15 years of age.

The census figures on employment of children are probably underestimated as well. For the industrial sector, the 1920 figures on employment of youths less than 14 years of age, expressed as a percent of total industrial employment, are as follows: Brazil, 8.4%; Northeast, 9.5%; East, 9.4%; São Paulo, 7.7%; South, 7.4%.<sup>59</sup> By 1940, laws had been passed prohibiting the employment of youths under 14, and regulating the employment of those 14 to 18. As a result, the census only provides figures on employment of those less than 18 years of age. In 1940, this age group accounted for 13.6% of the total industrial work force (excluding mining). The share of youths was considerably higher in the agricultural sector. The 1940 agricultural census indicates that persons under 15 years of age made up 25.9% of the national farm labor force, with regional figures being 26.7% for the Northeast, 25.8% for São Paulo, and 28.8% for the Center-West.<sup>60</sup>

To recapitulate, the findings on the economically active population are as follows. Errors and other aspects of the censuses of 1872, 1890 and 1900 obviate drawing any firm conclusions about occupational structure. The most that can be said is that the agricultural sector employed the greater part of the economically active population, and that the growth of the tertiary sector was mainly dependent on an increase in the number of paid household servants. The occupational structure revealed by the 1920 census differs from that depicted in earlier censuses in that the overall labor force participation rate was much lower, and that the secondary sector appeared as an important source of employment (though agriculture still accounted for more than two-thirds of total employment). The 1940 census showed agriculture accounting for a smaller share of total employment than in 1920, reasonable growth in employment in the secondary sector, and a large increase in the share of the service sector, due no doubt to rural-urban migration. As the service sector expanded, the number of low-productivity or marginal jobs increased.

In both 1920 and 1940, the dependency burden was heavy, with just over half of the working-age population (all those over 10 years of age) being counted among the economically active.

Regional differences were apparent in both 1920 and 1940. Industry accounted for a relatively larger share of employment in São Paulo than in other regions, while agriculture was most important in the Northeast and services most important in the East.

<sup>59</sup> IBGE, *Recenseamento Geral do Brasil*, 1920, 5: part 1, "Indústria."

<sup>60</sup> IBGE, *Recenseamento Geral do Brasil*, 1940, vol. 3: *Censos Econômicos*.





# C

## Foreign trade and foreign-exchange policy

### C.1 – Introduction

Although direct control of exchange operations did not begin until 1931, the foreign trade of the country was always influenced by exchange-policy measures adopted with the most diverse objectives. Behind these measures was a fundamental concern with alleviating the chronic disequilibrium in the balance of payments. The country had traditionally experienced a surplus in its trade balance; even so, financial obligations, principally interest and amortization of the external debt and remittances of foreign capital, frequently led to balance-of-payments deficits. Such deficits would appear whenever the inflow of new capital (official loans or private investments) was insufficient, or when cyclical movements adversely affected the balance of trade. Most foreign-exchange-policy measures (e.g. the establishment at the turn of the century of a “gold-quota” for the payment of customs duties, and the government monopoly of exchange operations exercised through the Banco do Brasil) were aimed at preventing balance-of-payment deficits by reducing the impact of the government’s own purchases in the exchange market. Such purchases were customary in order to attend to the payment of the external debt.

But there were also other goals underlying foreign-exchange policy. These included the following:

(a) to combat exchange speculation, principally in the pre-1917 period before the advent of state-regulated banking and exchange operations. Speculation was facilitated by complete exchange

freedom. As a result, both the official bank (the Banco do Brasil) and private banks participated in the market. Speculative operations were especially intense between coffee harvests, when export licenses became scarce, and prior to the expected dates of government purchases.

(b) to maintain the incomes in Brazilian currency of exporters, and particularly of coffee-growers, by devaluing the exchange rate to the extent that export prices deteriorated. Falling prices had an especially strong impact on coffee exports in 1889-1899, 1912-1917, and 1920-1923 — that is, in the periods preceding the coffee price-support plans adopted in 1906, 1917-1918, and 1922-1923.

(c) to protect domestic industry in two ways: indirectly, by making imported goods more expensive than similar domestic products by means of exchange devaluation; directly, beginning in the 1930s, by making it difficult to obtain foreign exchange for nonpriority imports.<sup>1</sup>

In the evolution of Brazilian exchange policy between 1889 and 1946, a number of historical periods can be distinguished. The first, which dates until October 1917, was one of complete freedom of exchange-rate operations. The second, from 1917 to 1926, marked the beginning of exchange control of financial operations. Such control was primarily meant to reduce financial remittances abroad in view of the war situation. Another objective was to eliminate exchange speculation on the part of private banks. The third period, from 1927 to 1930, was distinguished by the exchange-stabilization plan stemming from the monetary reform of 1926. The reform act created the Caixa de Estabilização and brought about the removal of the gold standard for Brazilian currency. Direct control of the exchange market came in a fourth phase, from 1931 to 1938. Except for a three-year period, the Banco do Brasil administered a monopoly of exchange operations. During this fourth phase, priorities were established for the purchase of foreign exchange. Finally, the fifth phase, from 1939 to 1946, saw a return to exchange freedom. At the same time, the exchange rate was held constant, though it could have been appreciated since excellent trade conditions had permitted an accumulation of reserves. These different stages and their impact on foreign trade are analyzed in the following pages.

<sup>1</sup> Protection would only be effective, it is well to remember, insofar as domestic raw materials could be used, as was the case in the textile, clothing, food, beverage, and tobacco industries.

## C.2 – The different phases of Brazilian exchange policy, 1889-1946

### C.2.1 – Exchange freedom, 1889 to October 1917

The Brazilian exchange market operated under conditions of complete freedom until October 1917. Although certain governmental measures could be interpreted as indirect attempts to control the exchange market, in point of fact they did not impose any restrictions on exchange operations. The measures referred to include charging customs duties in gold in 1890-1891, the regulatory actions of the Banco da República (later known as the Banco do Brasil) from 1899 on, and the creation of the Caixa de Conversão in order to stabilize exchange. Throughout this period, private banks, many of which were foreign-owned, competed with the Banco da República in the buying and selling of exchange. Under such circumstances, short-term oscillations in the exchange rate were frequent. The overall long-run trend was one of depreciation of the national currency. While the secular depreciation may be attributed to structural problems, the short-run fluctuations were caused by the functioning of the exchange market itself. Specifically:

(a) By accumulating speculative funds, private banks forced currency devaluation in times of foreign-exchange shortage. Although the Banco do Brasil had performed a regulatory role since 1895, and had repeatedly sought to avoid fluctuations by selling exchange reserves in times of shortage and by purchasing when the market was flooded, it was only with the control of exchange operations decreed in 1918 that speculation was slowly eliminated.

(b) The dependence of export earnings upon coffee sales meant that exchange was in excess supply at harvest time, and in short supply between harvests.

(c) With a great need for foreign exchange for service and amortization of the foreign debt, in addition to other necessary expenses involving foreign exchange, authorities from all levels of government made huge purchases of exchange at foreseeable intervals. As a consequence, the government became the largest buyer, and it was alleged that government purchases were the source of exchange variations.<sup>2</sup>

<sup>2</sup> *Jornal do Comércio (JC), Retrospecto Comercial, 1897, p. 36.*

(d) Finally, importers saw in the great fluctuations in the exchange rate an opportunity for speculative gains in the importation of goods, though imports were eventually discouraged by exchange devaluation.

As previously mentioned, the long-run depreciation of the Brazilian currency was rooted in structural problems. At times, the external debt demanded expenditures equal to or larger than the trade-balance surplus, which fluctuated considerably with variations in coffee prices. Thus, in the absence of sizeable capital inflows in periods of low coffee prices, deficits occurred in the balance of payments. Exchange-rate devaluation therefore had two policy objectives. First, it was hoped that devaluation would lead to larger trade-balance surpluses, since it discouraged imports and encouraged exports. Second, it was intended to maintain the income of the exporter, principally of the coffee exporter, who was faced with a situation of continually declining prices for his product to 1899 (except for a rise in 1893) and in 1914-1918.

The situation described above was characteristic of the early years of the Republic. The average annual surplus in the trade balance hovered around £ 2.9 million until 1898. But merely the foreign exchange required to service the external debt necessitated an annual average outflow of £ 3 million. The constant drain led to growing difficulties in the exchange market. As a result, important measures were taken in 1898 to reverse the trend toward depreciation of the exchange rate.<sup>3</sup> The first of these measures was the reinstatement of the obligation to pay customs duties in gold. Initially set at 10%, the "gold-quota" was to be increased in subsequent years until exchange stabilization was attained. Thus, the government was to have the resources necessary to meet its commitments without directly entering the exchange market. Its purchases would thereby cease to be the principal cause of exchange-rate fluctuations. The second measure was the consolidation of the external debt by means of the funding loan of 1898. Under the terms of the loan, amortization and interest payments on the consolidated debt were to be suspended for 13 years and the country was to receive more than £ 8 million.<sup>4</sup> At the same time, annual debt-servicing expenses during the years 1899-1902 were to be cut in half. Other factors helped to improve the country's balance-

<sup>3</sup> These measures were part of a "financial-normalization" policy placed in practice by Minister Joaquim Murinho. There is no intent to discuss this policy here, however, except with respect to its effects on the foreign-exchange market (see chap. 3).

<sup>4</sup> Ministério da Fazenda (MF), *Finanças do Brasil*, 20 vols. (Rio de Janeiro: Tipografia do Jornal do Comércio, Rodrigues & Cia., 1955), vol. 19: *Dívida Externa, 1824-1925*, by V. F. Bouças, p. 197.

of-payments situation. One of these was the counterspeculation carried out by the Banco do Brasil using the foreign exchange and gold certificates obtained through duties. Another intervening factor was the large trade-balance surplus in 1900. The surplus could be attributed on the one hand to the strong improvement in the price of coffee, and on the other to the reduction in imports as a result of the gold-quota and the new tariff of 1900. Finally, the government negotiated a loan of about £ 16 million for the purchase of several railroads, on which it had previously guaranteed interest payments.<sup>6</sup> All of these factors combined to relieve the exchange market. As a result, the rate of exchange was rising by the end of 1906.

The appreciation of the exchange rate, however, was harmful to the interests of domestic exporters and producers.<sup>6</sup> Thus, the government, much as it had combated speculation and exchange-rate depreciation by offering foreign exchange through the Banco do Brasil at the end of the last century, sought to brake the tendency toward exchange-rate appreciation by purchasing large amounts of foreign exchange which had already entered the country for the purpose of improving the port of Rio de Janeiro and the Sorocabana railroad, or in the form of substantial payments for the coffee and rubber sold abroad thanks to excellent harvests.<sup>7</sup>

Even so, a series of events combined to flood the market with foreign exchange in 1905-1906. First, the government negotiated foreign loans for the improvement of the port of Rio and the sale of the Sorocabana railroad. Second, loans arranged by states led to heavy foreign capital inflows. The most important of these loans resulted from the coffee-price-support plan of the states participating in the Taubaté agreement. Foreign loans totaling £ 12 million were arranged as part of the agreement. Third, the atmosphere of exchange stability at the beginning of the century had stimulated private capital inflows and large surpluses in the balance of trade. In response

<sup>6</sup> V. F. Bouças, *História da Dívida Externa*, 2d ed. (Rio de Janeiro: Edições Financeiras, S. A., 1950), pp. 188-93.

<sup>6</sup> "Concerned with the rise in the exchange rate, and making of it his program of government, the finance minister was responsible for this lamentable economic situation. In the three years of his administration, the rate of exchange rose 4 d. per mil-réis, the average rate last year being 115-116, which is approximately the present rate. This small advantage was achieved, on the one hand, at the cost of funding favors, and, on the other, at the sacrifice of the working classes, who today lack comfort and are submitted to all the privations. The present rate of exchange is, therefore, *the exchange rate of misery*." L. R. Vieira Souto, *O Último Relatório da Fazenda* (Rio de Janeiro: L. Malafias Júnior, 1902), p. 252.

<sup>7</sup> Report of Dr. Custódio Coelho, director of the exchange department of the Banco da República, presented on 20 January 1906 and transcribed in *JC, Retrospecto Comercial*, pp. 85-89.

to these mounting pressures against the exchange rate, the Caixa de Conversão was established jointly with the signing of the Taubaté agreement. By stabilizing the rate of exchange above free-market levels, the Caixa served the interests of domestic exporters and producers.<sup>8</sup>

In the following years, the stability of the exchange rate was maintained by the Caixa de Conversão and the quasi-monopoly of the Banco do Brasil in the exchange market. The bank sold no less than 75% of all foreign exchange and about 80% of the gold certificates received in payment of customs duties. It even guaranteed the existence of the gold deposits of the Caixa de Conversão. It furnished foreign exchange to private business at a rate slightly higher than that of the Caixa and always 1/32 to 1/16d, higher than those of the foreign banks.<sup>9</sup> At the same time, the great inflow of foreign capital in the form of official loans and private investments,<sup>10</sup> plus an average annual trade-balance surplus of £ 12 million, permitted the exchange market to bear the double burden of the external debt (on which payment was entirely resumed) and remittances of private capital. Even while such payments were being made, upward pressures on the rate of exchange were still manifest.

In May 1910, when the legal limit on deposits in the Caixa de Conversão was reached — resulting in the closing of the Caixa on the 21st of the month<sup>11</sup> — the exchange rate was valued upwards. Protests arose against this measure, both from exporters who saw in the appreciation of the rate a decrease in domestic currency prices of exported products, and from industrialists who were unhappy over the fact that foreign products would become cheaper in comparison to domestic goods. They were also alarmed by the fact that the gold-tariff (payable in domestic currency) would be cheaper in real terms.

<sup>8</sup> The Caixa de Conversão was created by law 1 575 of 6 December 1906. By maintaining a rate of exchange higher than that of the free market, it attracted foreign exchange which was purchased through stabilization notes, the printing of which was to be unlimited so as to allow the Caixa to maintain the stabilization rate of exchange. The difference between the stabilization and the free rates was still small enough to prevent international arbitrage operations. In point of fact, however, the Caixa was limited to issuing the equivalent of 320 thousand *contos de réis* in stabilization notes. Once this limit was reached, the Caixa was no longer able to operate effectively.

<sup>9</sup> JC, *Retrospecto Comercial*, 1907, pp. 71 and 115.

<sup>10</sup> "Between 1906 and 1912... new capital raised in foreign financial markets for Brazil rose to a total of £ 143 480 190 (£ 104 276 561 in official loans and £ 39 207 629 of private capital)." F. T. Souza Reis, *O Padrão de Câmbio Ouro como Solução do Problema Monetário Brasileiro* (São Paulo: Oficina Gráfica Monteiro Lobato & Cia., 1923), pp. 77-87.

<sup>11</sup> Banco do Brasil, *Relatório*, 1910, p. 15.

Law 2 357 of 31 December 1910, established in an obvious attempt to protect the interests of domestic producers, provided for the reopening of the Caixa de Conversão with a higher limit on deposits and the pegging of the exchange rate at a slightly higher level.<sup>12</sup> The new rate of exchange was maintained during the next few years. Even in 1913, when a foreign-trade crisis resulting from a fall in the international prices of principal export products led to a trade-balance deficit, the exchange rate remained unchanged. Huge capital inflows, both official (around £ 20 million) and private, in that year explain the stability. These inflows, by putting upward pressure on the free-market rate of exchange while the Caixa rate was fixed, paved the way for arbitrage operations that brought even more capital into the country.<sup>13</sup> With the effective market rate sufficiently below the conversion rate, arbitrage allowed for the importation of convertible currencies in exchange for conversion bills, and the subsequent purchase of foreign exchange at a profit more than sufficient to cover transport costs.<sup>14</sup>

The persistent crisis in the foreign sector and the outbreak of war in July 1914 combined to halt capital inflows.<sup>15</sup> Even a trade-balance surplus, largely due to the decrease in imports, was not sufficient to generate the foreign exchange needed to pay for the reduced level of imports and to maintain servicing of the external debt and cover other remittances. Debt repayments consumed about £ 15 million in 1913 alone. Then, in August 1914, the free-market exchange rate rose above that of the Caixa de Conversão and the entire exchange collapsed. The resulting run on the Caixa's deposits led to its closure.<sup>16</sup>

Although the situation was somewhat alleviated by the new debt-rescheduling agreement, the exchange rate was devalued at the end of 1917.<sup>17</sup> With the "stabilizing" apparatus of the exchange

<sup>12</sup> *Ibid.*

<sup>13</sup> JC, *Retrospecto Comercial*, 1913, p. 27.

<sup>14</sup> Suppose that the exchange rate of the Caixa de Conversão was fixed at 15 mil-réis per pound sterling and that the effective market rate was situated at around 14 mil-réis. Under such circumstances, each £ 1 000 imported would bring 15 contos de réis in Caixa bills, which could then be used to purchase £ 1 071.

<sup>15</sup> In fact, "European credit was constricted in such a way as to cause foreclosures in our country, resulting in frequent and sizeable remittances abroad and a consequent demand for foreign exchange in all the exporting centers". Banco do Brasil, *Relatório*, 1914, pp. 20-23.

<sup>16</sup> *Ibid.*

<sup>17</sup> According to the funding-loan agreement signed on 19 October 1914, by which the country received £ 14.5 million and a 13-year suspension of payments for services and amortization of the consolidated debt. MF, *Finanças do Brasil*, p. 255.

rate dismantled, it became difficult for the Banco do Brasil, as the only remaining regulator of the exchange rate, to provide the reserves necessary for transactions such as imports and remittances of private capital, and for payments on the nonconsolidated external debt. Moreover, exchange speculation was again becoming a cause of concern for the bank.<sup>18</sup> At the same time, the worsening of the exchange difficulties and the advent of war led the government to decree control of exchange operations and temporary restriction of private remittances abroad.

### C. 2. 2 — Control of exchange operational and normalization of the market, October 1917 to November 1926

Without restricting foreign trade, the control of exchange operations in this period was aimed at two objectives: to combat speculation and to prohibit the remittance of capital abroad during the war. At the outset, with a state of war declared, the government decreed a posteriori control of exchange operations, "to be carried out through the daily scrutiny of exchange operations handled by all banks on the preceding day".<sup>19</sup> This procedure revealed the existence of extensive movement of speculative capital.

Then, on 19 July 1918, by means of Decree 13 110, prior examination of capital remittances was established in order to prohibit exportation of negotiable bonds or money abroad for any reasons except the following: (a) payment of debts contracted by individuals, corporations, and federal, state, or local governments; (b) payment for nonrestricted imports; (c) support of Brazilians or nonenemy foreigners who owned property in Brazil but resided abroad.<sup>20</sup> All financial remittances made via withdrawals, stock certificates, checks, etc. were to be submitted for prior authorization by the finance minister or by designated representatives.

As a further measure of exchange control, the Banco do Brasil began to demand a contract for all exchange operations that had passed government formalities.<sup>21</sup> The bank also impeded forward

<sup>18</sup> Banco do Brasil, *Relatório*, 1917, pp. 56-70.

<sup>19</sup> From the message of the president of the Republic, transcribed in JC, *Retrospecto Comercial*, 1919, p. 73.

<sup>20</sup> Banco do Brasil, *Relatório*, 1918, pp. 12-13; JC, *Retrospecto Comercial*, 1918, p. 65.

<sup>21</sup> Banco do Brasil, *Relatório*, 1918, pp. 12-21.



speculation in the exchange market,<sup>22</sup> prohibited the forward sale of foreign exchange to other banks, put together a list of brokerage agents and exporters, and instituted other measures. Thus, as a result of Decree 13 110, which contained these provisions, "speculation disappeared almost entirely"<sup>23</sup> and the tendency toward depreciation of the exchange rate was reversed so that the rate went up in 1917-1918.

The year 1919 was marked by favorable developments in trade. The great increases in coffee prices and in the volume of coffee exports provided a trade-balance surplus of £ 45 million, almost three times the average surplus of previous years. The accumulated reserves, far in excess of requirements for foreign payments, led to appreciation of the exchange rate. The rate had already been strengthened by the depreciation of the currencies, principally the pound sterling, and by the elimination of short-term fluctuations in the exchange rate due to government control.<sup>24</sup> This appreciation of the rate however, contributed to later difficulties with the balance of payments and to the exchange crisis of 1920-1923.

The difficulties encountered in the ensuing years were due to a combination of circumstances. First, the volume of imports greatly increased as wartime restrictions on the purchase of both consumer goods and capital goods were eased and demand was stimulated by the cheapened foreign exchange. Second, the relative depreciation of foreign currency caused capital outflows, both on the part of the government for payments on the nonconsolidated external debt and on the part of private individuals who had not been able to make financial remittances since the war.<sup>25</sup> These outflows, along with the diminished export earnings resulting from a fall in both the price and volume of coffee exported in 1920-1922, led to a trade deficit in

<sup>22</sup> "Open trading in foreign exchange is carried out in different ways. Trading in future contracts is characteristic of such dealings. The July decree, by making forward operations more difficult and forbidding those between banks, dealt speculation a serious blow and, in fact, destroyed it." JC, *Retrospecto Comercial*, 1919, p. 75.

<sup>23</sup> Banco do Brasil, *Relatório*, 1918, p. 13.

<sup>24</sup> JC, *Retrospecto Comercial*, 1919, p. 73.

<sup>25</sup> "... trade surpluses were claimed by federal, state, and local governments, as well as private firms, since all needed to send money abroad in order to honor outstanding commitments." JC, *Retrospecto Comercial*, 1920, pp. 23-25.

1920-1921.<sup>26</sup> The result was a serious deficit in the balance of payments. The deficit situation led to an inevitable depreciation of the exchange rate. The devaluation was made even more drastic by the lack of a regulatory authority in the exchange market. The Banco do Brasil did not assume such a role until March 1921.<sup>27</sup> As a solution, albeit a partial one, new external loans totaling almost £ 38 million were taken in 1921-1922. As a consequence, the external debt of the country rose by 15%.

Exchange difficulties persisted into 1923, despite an increased trade-balance surplus. Liquidation of the deficits of previous years and the need for reserves to make payments on the external debt induced the federal government "to proceed to eliminate the coffee stock which had been acquired by the government as a guarantee for the loan of £ 9 million destined to prop up the price of coffee".<sup>28</sup> A total of 3.4 million bags of coffee were then sold abroad. According to one report, "the sale of this coffee must have produced approximately £ 12 million. The trade-balance surplus reached £ 22 571 million... but, unfortunately, the gold notes generated by the sale of the government coffee stock had no direct effect on the economy. Instead, the notes passed, according to the terms of the loan contract, from the hands of the coffee-price-support committee in London directly into the hands of the bankers who had arranged the loan".<sup>29</sup>

Thus, the trade-balance surplus in 1923 was actually much less, dropping after adjustment from £ 22 571 million to £ 10 571 million. "In 1923 the foreign debt alone demanded an expenditure of £ 14 million, while private remittances claimed another £ 12 million."<sup>30</sup> The figures convey an idea of the enormous deficit in the balance of payments in 1923. In excess of £ 15 million, the deficit brought in its wake a large depreciation of the exchange rate. With recourse

<sup>26</sup> "Given the need for remittances abroad, the country demanded a trade surplus on the order of £ 25 to 29 million in the three-year period 1920-1922.... Our export earnings did not even provide enough to cover our imports.... The trade balance provided us with nothing, not even for the payment of our debts in gold (which amounted to £ 14 million per year) or for private payments for amortization and interest on industrial capital invested in Brazil.... Thus, the deficit for the three-year period must be close to £ 90 million, a figure which was reduced only £ 22 million by loans.... To make matters worse, there was a capital outflow of £ 10 million as a result of the movement of the German mark." Banco do Brasil, *Relatório*, 1923, pp. 5-6.

<sup>27</sup> Decree 14 728 of 16 March 1921 regulated the control of banks and banking houses, and once again placed the exchange department of the Banco do Brasil over the exchange market.

<sup>28</sup> Banco do Brasil, *Relatório*, 1923, p. 10.

<sup>29</sup> *Ibid.*, p. 10.

<sup>30</sup> *Ibid.*, p. 11.

to foreign credit becoming more difficult,<sup>31</sup> important measures were adopted in 1923 with the objective of avoiding the oscillations and depreciations of the rate of exchange. Recognizing that the unpredictable flow of exchange — given the uncertainty about export earnings and government purchases of foreign exchange — was an important cause of exchange-rate fluctuations, the government resolved to promote:

(a) A smooth flow of funds by feeding in coffee-export earnings over an extended period of time. "About £ 60 million will enter the exchange markets at regular intervals throughout the year. This amount of money will no longer be thrust upon the market in just a few months' time, since this practice has caused foreign-exchange shortages during most of the rest of the year."

(b) The setting aside of funds by the Banco do Brasil for the purpose of stabilizing the market. These funds were to be held on deposit in Europe and the United States and were to be large enough to supply the needs of the market in export intervals (except in the case of coffee exports).

(c) The spreading out of exchange purchases by the government, through the Banco do Brasil, in order to avoid speculative manipulations of the exchange rate in expectation of the government's entrance into the market. In addition, state and local governments were instructed not to wait until the eve of due dates to purchase foreign exchange for the repayment of foreign debts.<sup>32</sup>

With these measures, and with the improvement in export earnings due to the new and artificial increase in the international price of coffee resulting from the third price-support plan (put into effect in 1921), the exchange rate again displayed an upward trend. This tendency was more marked in 1925-1926 than in 1924, since in this latter year internal revolutions disturbed economic activity in various states, principally in São Paulo. The 1924 disturbances reduced the volume of exports and provoked an exchange shortage.<sup>33</sup> Once such difficulties had been surmounted,

<sup>31</sup> "In a market in such formidable disequilibrium, it is not possible to maintain stability in the exchange rate without the existence of gold notes. These notes might be provided through foreign credit, but, in the case of Brazil, political instability and the growing budget deficit have generated a lack of confidence in financial markets." Banco do Brasil, *Relatório*, 1923, pp. 8-9.

<sup>32</sup> *Ibid.*, pp. 15-18.

<sup>33</sup> Banco do Brasil, *Relatório*, 1924, p. 6.

the exchange department of the Banco do Brasil sought to counteract the upward trend of the exchange rate.<sup>34</sup> In fact, the appreciation of the exchange rate was not looked upon favorably by the economically powerful, in particular by the industrialists.<sup>35</sup> The Banco do Brasil assumed the task of moderating the fall in the price of foreign exchange. The pegging of the exchange rate at a level above that determined by market conditions at the end of 1926 was proof of the government's intention to protect domestic production.

### C.2.3 — Exchange stabilization and the crisis of 1929-1930

With foreign exchange now cheaper, the crisis in domestic production toward the end of 1926 led the government to place in effect, by means of law 5 108 of 18 December 1926, a program of "monetary stabilization". The measure decreed the departure of Brazilian currency from the gold standard and the pegging of the exchange rate through the creation of the Caixa de Estabilização.<sup>36</sup> Despite the fact that exchange transactions continued to take place freely, the policy of pegging the exchange rate attempted to normalize the currency which, while undergoing violent fluctuations, demonstrated a persistent trend toward devaluation.<sup>37</sup> In fact, fixing the exchange rate at a level considerably above that which would have been established in a free market was responsible for keeping the rate stable for almost three years.

The secondary purpose in fixing the rate was to create conditions favorable to the growth of domestic production. Exporters began to receive more in domestic currency per pound sterling of exports, so that the following years were ones of great expansion of domestic production geared for export. This was especially true of coffee exports, which, in addition to benefiting from exchange stabilization, commanded greatly increased prices as a result of the price-support policy established for that product in the world

<sup>34</sup> JC, *Retrospecto Comercial*, 1925, p. 15.

<sup>35</sup> "The economic and financial situation of the country, which improved notably in 1925, was again disturbed in 1926 by the continual appreciation of the exchange rate. This led to the almost complete cessation of industrial activity and the devaluation of manufactures." Banco do Brasil, *Relatório*, 1926, p. 5.

<sup>36</sup> The operating procedure of the Caixa de Estabilização was identical to that of the Caixa de Conversão, which had been eliminated in 1919.

<sup>37</sup> H. R. Levy, *Prática Cambial no Brasil* (São Paulo: Editora Max Limonad, 1956), p. 35.

market. In the same way, domestic industrial production benefited from the higher prices of imported goods. Further, the stabilization exchange rate succeeded in attracting foreign capital for investment in private ventures.<sup>38</sup>

With the exchange market regulated by the measures adopted in 1923 and with the renewed inflow of both official and private capital (£ 81 million in official loans alone entered the country during the period, raising the foreign debt by almost a third), the exchange market was strengthened. With surpluses in the trade balance as well, the foreign-exchange situation improved enough to permit payments on the foreign debt on a basis never before attained (almost £ 70 million was repaid between 1926 and 1929). Finally, the exchange rate remained practically stable between 1927 and 1929.

With the beginning of the World Depression at the end of 1929, however, the Brazilian exchange market entered into a phase of growing difficulties. Although the trade-balance surplus remained at the same level in 1929 and even increased in 1930, with the disappearance of capital inflows it became the only surplus entry in the balance-of-payments accounts. Despite this development, heavy payments on the foreign debt were maintained. Since there were practically no restrictions on financial remittances, it became more and more difficult for the Banco do Brasil to hold the exchange rates near desired market levels according to the stabilization guidelines.<sup>39</sup> Despite the obstacles the bank sought to create for buyers of foreign exchange,<sup>40</sup> the exchange reserves of the country, which had reached £ 30 million between the Caixa de Estabilização and the Banco do Brasil by the beginning of 1930, were rapidly exhausted.<sup>41</sup> Attempting to confront the difficulties, the government declared — on 20 October 1930 and as an emergency measure — a monopoly on exchange operations to be carried out through the Banco do Brasil.<sup>42</sup> With the November

<sup>38</sup> "Foreign capital has recently demanded a stronger role in private ventures." (Banco do Brasil, *Relatório*, 1927, p. 7). "From abroad came credit remittances and currency for investment in private firms, land purchases, loans. . . ." (Banco do Brasil, *Relatório*, 1928, p. 5).

<sup>39</sup> Levy, p. 36.

<sup>40</sup> "It became very frequent in those days (1930) for the banker who had given the foreign-exchange order to be called to the Banco do Brasil before obtaining his order. In the face of this procedure, he would at times hold back for one or two days. With harsh statements, an attempt would be made to create an embarrassing situation for those who went to seek their exchange covers." Levy, p. 36.

<sup>41</sup> Banco do Brasil, *Relatório*, 1930, p. 16.

<sup>42</sup> *Ibid.*, p. 28.

revolution, however, this measure was rescinded. The new government, seeking to re-establish exchange and trade freedom, did away with the Caixa de Estabilização by means of Decree 19 423 of 22 November 1930. The same decree provided for the transfer of the Caixa's gold reserves to London for payment of the external debt and assigned the functions of the Caixa to the Banco do Brasil.<sup>43</sup>

However, the continuation of the difficulties in the exchange market in 1931 led to the adoption of more severe exchange control measures, in addition to the negotiation of a third agreement for consolidating the external debt.

#### C.2.4 – The introduction of exchange control, 1931-1938

The rapid deterioration of the terms of trade, together with the cessation of capital inflows, combined to reduce drastically the exchange earnings of the country in the Depression years. Continued payments on the external debt, profits and interest or foreign private capital, remittances of immigrants, and, above all, remittances for essential imports, caused a serious exchange crisis in 1931. The measures adopted to confront the situation were primarily aimed at limiting the demand for reserves, and only secondarily at increasing their supply.

As a first matter of business, the government began, in September 1931, negotiations leading to a new agreement for the consolidation of the external debt. Payments on the debt had been partially suspended since August due to the exchange difficulties.<sup>44</sup> The government sought to relieve the exchange market of its onerous burden and, to this end, arranged a new loan of £ 18 million. Simultaneously, it suspended all payments on the external debt, except those relating to the funding loans of 1898 and 1914 and to the interest payments on the new agreement itself.<sup>45</sup> Despite these measures, continued payment of the external debt foretold the continuation of exchange difficulties since foreign trade conditions showed no signs of improvement. The government was then forced to choose between two extreme measures: "either the government remove itself completely from the exchange market, or it would adopt an exchange monopoly giving preference to its

<sup>43</sup> *Ibid.*, p. 33.

<sup>44</sup> F. T. de Souza Reis, *A Depressão Comercial e o Funding-Loan de 1931* (Rio de Janeiro: Tipografia do Jornal do Comércio, 1934), p. 33.

<sup>45</sup> *Ibid.*, pp. 44-45.

own remittances and consequently placing restrictions on the foreign-exchange market.”<sup>46</sup> Preferring not to compromise the external credit of the country, the government opted for the second alternative.

The government intervened in the foreign-exchange market in September 1931.<sup>47</sup> The Banco do Brasil was given a monopoly on the purchase and sale of foreign exchange, a function it would exercise for the next three years. According to the system that was introduced, exports would be permitted only when exchange earnings, were sold ahead of time to the bank. Once in possession of these exchange earnings, the bank would proceed to attend to the needs of the market at the official rate of exchange and according to the following order of priorities: (1) government purchases and the foreign debt; (2) essential imports; (3) other exchange needs, including remittances abroad of private capital earnings.

These measures were mainly designed to restore equilibrium in the balance of payments. But by discouraging less essential imports, the new exchange policy indirectly benefited domestic industry, which was already enjoying a measure of protection in the continual currency devaluation. At the same time, the pegging of the official rate of exchange above the free-market rate lessened the effects of the fall in coffee prices on the income of the export sector.<sup>48</sup>

Despite these policies, the exchange situation did not improve until the beginning of 1934. The continual deterioration of the terms of trade served to diminish exchange earnings and, to an

<sup>46</sup> *Ibid.*, pp. 41-42.

<sup>47</sup> Banco do Brasil, *Relatório*, 1931, p. 5; U. S. Tariff Commission, *Economic Controls and Commercial Policy in Brazil* (Washington, D. C., 1945), pp. 16-17.

<sup>48</sup> The rate of exchange in relation to the dollar was the following:

Year	Mil-Réis/U.S.\$	
	Free Market	Official Market
1928	8.360	—
1929	8.470	—
1930	9.230	—
1931	13.660	16.020
1932	—	14.140
1933	—	12.690

Source: Banco do Brasil, *Relatório*, 1937, Appendix.

even greater degree, the trade-balance surplus in 1932-1933. Under the terms of the new agreement, payments on the external debt absorbed more than half the trade surplus in these same years. Black-market operations inevitably appeared, offering rates of exchange considerably above those of the official market.<sup>49</sup> The exchange crisis worsened again in early 1933 with the "development of new exchange shortages resulting not only from imports, but also from the unsatisfied demand for remittances of profits, interest, dividends, royalties, etc. The export base grew weaker; coffee was in crisis. It thus became necessary to do something about exports in order to alleviate the precarious exchange situation".<sup>50</sup>

The Banco do Brasil then passed a resolution creating a semi-official market which functioned from January to April 1933. The new market was to be provided with between 7 and 11% of total exchange earnings. Since the exchange rate used was higher than the official rate, though lower than the black-market rate, it came to be known as the "gray rate" (*taxa cinzenta*).<sup>51</sup>

Once the semi-official market had served its purpose, the bank abolished the system. Thus, by the latter part of April 1933, only the official rate was in force, with the bank holding the monopoly on all exchange operations.

The exchange difficulties, however, were not completely surmounted. Agreements had to be reached in June 1933 and May 1934 regarding the repayment of overdue trade debts.<sup>52</sup> Yet the difficulties persisted for a variety of reasons. First, a considerable

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(£ 1 000)

Year	Trade Balance <sup>1</sup> (A)	External Debt <sup>2</sup>			
		New Loans (B)	Payments (C)	Balance (D)	% D/A
1931	20 788	18 359	20 590	— 2 231	
1932	14 886	—	16 663	—16 663	
1933	7 658	—	5 134	— 5 134	
	43 332			24 028	(55.5)

(1) IBGE, *Anuário Estatístico do Brasil*, 1939-1940, pp. 1 358-59.

(2) MF, *Finanças do Brasil*, 19: 580, table 3.

<sup>50</sup> Levy, p. 40.

<sup>51</sup> *Ibid.*, p. 42.

<sup>52</sup> Banco do Brasil, *Relatório*, 1934, p. 11.



fraction of Brazil's total exports was destined for countries that impounded net foreign assets during the Depression. Second, payments on the external debt were still a heavy drain on available exchange.<sup>53</sup> Third, the attempt to cover outstanding trade debts itself consumed exchange resources. As a result, the country once again fell behind in meeting its trade-payment obligations. Thus, new agreements to cover outstanding debts were necessary in 1935. Repayments were scheduled to last until 1939.<sup>54</sup>

Despite the unfavorable train of events, the trend toward greater liberalization of the market became more pronounced in 1934. Initially, banks were authorized to operate in the free market with exchange receipts generated from nonexport sources.<sup>55</sup> Behind the liberalization was the intent to channel toward this type of operation the exchange resources that up to then had flowed to the black market. Throughout, the Banco do Brasil maintained its monopoly on the purchase of export receipts and entirely supplied the exchange necessary for essential imports.

Later, the earnings of nontraditional exports (except scrap iron) were channeled into the free market. Soon thereafter, by a resolution approved by the federal foreign trade council on 10 September 1934, exchange freedom was established for all exports except coffee.<sup>56</sup> The Banco do Brasil established an official exchange rate of 155 francs per bag of coffee exported. This figure corresponded to about 83% of the value per bag. Exporters were then able to negotiate the remaining 17%, or approximately 31 francs per bag, at the more advantageous free-market rates. In regard to imports, the Banco do Brasil assumed the obligation to provide the foreign exchange necessary for 60% of total imports.

In February 1935, the exchange policy was modified by the creation of a free market with a volume of operations greater than that of the official market. A resolution of the foreign-trade council, on February 11, henceforth required the sale, at the official rate of exchange, of 35% of export earnings to the Banco do Brasil. This exchange quota was earmarked exclusively for servicing the external debt and paying overdue trade debts. All other exchange operations, including those related to imports, were

<sup>53</sup> After February 1934, the payment of the external debt was reorganized. By Decree 23 829 of February 5, known as the Oswaldo Aranha Plan, the payments were substantially reduced, though from 1934 to 1938 they still demanded average annual amounts almost equal to the trade surplus.

<sup>54</sup> Banco do Brasil, *Relatório*, 1935, pp. 14-15.

<sup>55</sup> U. S. Tariff Commission, *Economic Controls*, p. 17.

<sup>56</sup> Banco do Brasil, *Relatório*, 1934, p. 13.

transferred to the free market, which was supplied by the remaining 65% of export exchange earnings.<sup>57</sup> This arrangement lasted until the end of 1937, with some initial flexibility in regard to the 35% quota made necessary by the exchange situation of certain export products.<sup>58</sup> Exporters of these favored products were permitted to take fuller advantage of the higher rates of the free market.

However, pressure continued to be placed on the exchange market by sustained payment on the external debt, when it would have been more sensible to have suspended such payment, and by repayment of overdue trade debts. In 1936, government exchange purchases amounted to about £ 15 million (two times greater than the trade-balance surplus). Such purchases were distributed as follows:<sup>59</sup>

	£	%
Service on the External Debt	7 915 324	52.9
Payment of Trade Debts	6 581 050	44.0
Federal Expenditures	273 960	1.8
Importation of Newsprint (50%)	192 233	1.3
	14 965 567	100.0

When the trade-balance surplus was reduced to less than £ 2 million in 1937, due to an almost 20% increase in imports the government was once again forced to decree a monopoly on all exchange operations. Exporters were again obliged to sell all export earnings to the Banco do Brasil at the official rate, and requests for foreign exchange were acted upon according to the following order of priorities: (1) government needs; (2) importation of merchandise and transportation of export products; (3) expenses abroad of public-service firms; (4) remittances of dividends and profits in general; (5) other remittances.

In addition, payments on the external debt were suspended for two years (1938-1939) and a 3% tax was levied on all exchange

<sup>57</sup> Banco do Brasil, *Relatório*, 1935, p. 15.

<sup>58</sup> *Ibid.*

<sup>59</sup> Banco do Brasil, *Relatório*, 1936, pp. 25-26.

transactions. This system lasted until April 1939, when improved conditions in the exchange market permitted the completion of payments of accumulated trade debts. The way was then cleared for a return to exchange-market freedom.

### C.2.5 — Return to a free exchange market, 1939-1946

The exchange monopoly lasted until 8 April 1939, when, by Decree 1201, freedom in exchange operations was almost entirely re-established.<sup>60</sup> Three exchange rates came into existence: the free, official, and special free rates.<sup>61</sup> The first rate, determined by market forces, was mainly sustained by exports. Exporters sold all export-exchange earnings to commercial banks, which were then obliged to transfer 30% of such receipts to the Banco do Brasil at the official rate. Remaining foreign-exchange earnings were set aside to attend to imports, which would also be handled at the free rate, albeit after authorization was obtained from the Banco do Brasil. Similar authorization was required for all other remittances abroad.

The official rate was administered exclusively by the Banco do Brasil. Foreign exchange negotiated in the official market was primarily destined for government needs. The special free rate was principally designed for nontrade operations, such as tourism and travel abroad.

In 1939, the 3% tax on exchange transactions created in 1937 (subsequently raised to 6% for nonimport transactions) was changed to 5% for all types of exchange operations, including those relating to government needs.

Except for a short period in 1939-1949, when the fall in the price of coffee together with the wartime loss of some of the principal European markets combined to reduce Brazilian export earnings, large surpluses in the trade balance were achieved throughout the war. This made it possible to partially resume payment of the external debt.

In fact, the accumulation of reserves that took place due to the restrictions on external supply could have justified not only exchange stabilization, but appreciation of the exchange rate as

<sup>60</sup> Banco do Brasil, *Relatório*, 1939, p. 16.

<sup>61</sup> U. S. Tariff Commission, *Economic Controls*, p. 19.

well. Such a move, however, was judged politically and economically inopportune during the war.<sup>02</sup>

This system lasted until the beginning of 1947. Although the return to exchange freedom had come about during the war, the war itself exerted controls. Necessary restrictions repressed the demand for imports and remittances. But within a few months after the war, imports and remittances had consumed all the reserves accumulated over several years. The resurgent demand led to the reinstatement of exchange controls and quantitative restrictions on imports.<sup>03</sup>

<sup>02</sup> "Appreciation of the *cruzeiro*, which could have relieved the internal inflationary pressure, was considered neither practical nor advantageous for a number of reasons, such as the desire to cooperate with the Allied war effort by stabilizing the prices of strategic goods and items important to the cost of living. Other factors for resisting the move included the convenience of permitting exporters to earn reasonable profits to offset the losses of the depression years, and the danger that an appreciation would have to be followed by a more drastic devaluation in the postwar period, when accumulated excess demand would be satisfied by imports." Comissão Mista Brasil-Estados Unidos, *Relatório Geral* (Rio de Janeiro, 1954), 1: 116.

<sup>03</sup> The study of postwar exchange policy is beyond the scope of this work. The topic is treated extensively by M. H. Simonsen. *Os Controles de Preços na Economia Brasileira* (Rio de Janeiro: CONSULTEC, 1961), and D. L. Huddle, "Balanço de Pagamentos e Controle de Câmbio no Brasil: Diretrizes Políticas e História, 1946-1954," *Revista Brasileira de Economia* 18 (March 1964): 5-40.

# D

## The evolution of the external debt

### D.1 – Introduction

Recourse to foreign loans has a long history in Brazil. All levels of government, as well as private firms, frequently used foreign capital for public-works projects, such as the construction of ports and railroads. Liberal borrowing abroad undermined any rational policy to use external credit for purposes of economic development. It was previously the practice of the federal government to cover budget deficits by means of foreign loans. Although it may be argued that such revenues were useful in the construction of railroads, the railroads were largely inefficient since the government guaranteed a rate of return on the capital used. With a guaranteed annual income, firms became unconcerned with choosing economical lines in operational terms, and were content to build lines that involved the lowest construction costs.

Beyond this, service on the external debt was almost never paid out of the country's foreign-exchange earnings. Indeed, since interest payments on the debt frequently exceeded the current balance-of-trade surplus, new loans had to be obtained to meet payments. Mature issues were paid with the proceeds of new bond issues.

Agreements for consolidating the external debt are notable examples of this policy of growing indebtedness. Such agreements, signed in 1898, 1914, and 1931 and always preceded by grave crises in the exchange market, actually served to constantly increase the external debt through repayment of old loans and accumulated interest via new loans generally involving higher rates of interest. It was only after completing the third agreement (in early 1934) that the country began to realize the errors committed up until

then, thereafter changing its policy in relation to the external debt. From 1934 on, the country began to repay its external debt without recourse to new loans, though payments were limited by the surpluses recorded in the trade balance. Thus, repayments were suspended at the time of the exchange crisis of the late 1930s and were taken up again during the war, when huge surpluses appeared in the trade balance.

This lack of a rational policy in the use of foreign credit up to 1934 resulted in the debt service becoming a heavy burden on the balance of payments. During the Empire, from 1822 to the end of 1889, foreign-debt service consumed almost one-and-a-half times the entire balance-of-trade surplus recorded over the period.<sup>1</sup> In the years of the Republic, from 1890 to 1933, almost 75% of the trade surpluses were used in repayment of the external debt. Between 1934 and 1945, this percentage was reduced to 40%. In relation to public spending, on the other hand, the burden of the external debt reached 21% in 1923 and 30% in 1931 (see Statistical Appendix, table 115).

But the most damaging aspect of the policy of exaggerated and onerous loans is evident in the following data: between 1822 and 1899, the country received £ 69 million in the form of new loans. During the same time, it paid amortization, interest, and commissions in the amount of £ 72.7 million and it still owed another £ 31.1 million at the end of the period. The situation worsened during the first Republican period: between 1890 and 1931 the country received new loans in the amount of £ 343 million. Although £ 365.4 million was paid back, total debt still increased by £ 245.9 million. This snowballing external indebtedness was only halted in the 1930s: between 1932 and 1945 no external loans were arranged. At the same time, £ 97.4 million was paid back and the debt was reduced by £ 100.6 million.<sup>2</sup>

<sup>1</sup> The data relative to the external debt are from the Ministério da Fazenda (MF), *Finanças do Brasil*, 20 vols. (Rio de Janeiro: Tipografia do Jornal do Comércio, Rodrigues & Cia., 1955), vol. 19: *Dívida Externa, 1824-1945*, by V. F. Bouças. Those on the balance of trade are from the Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil, 1939-1940*, pp. 1358-59.

<sup>2</sup> The fact that the debt was reduced by an amount greater than that paid in amortization and interest is explained by the fact that after 1944 the external debt was paid according to the guidelines proposed in Decree-Law 6019 of 23 November 1943. This piece of legislation offered creditors two alternatives: by the first, interest was reduced while the nominal principal was maintained; by the second, the government proposed to reduce the nominal principal by a discounted advance payment and agreed to pay a slightly higher rate of interest than under the first alternative. The second alternative was accepted by the external debt creditors. MF, *Dívida Externa do Brasil: O Plano Souza Costa* (Rio de Janeiro: Imprensa Nacional, 1943).

It was during the first Republican period, therefore, that the greatest indebtedness was incurred; it is this period which will now be analyzed.

## D.2 — External indebtedness, 1890-1933

Growing indebtedness abroad was characteristic of the period 1890-1933. External loans were contracted in excessive number under onerous conditions and almost always without consideration of the objective of economic development. Debts were frequently paid by means of new loans contracted for the purpose. Three rescheduling agreements were necessary during the years of Republican rule. Each agreement resulted in the floating of a new bond issue in order to pay amortization and overdue interest. By 1933, both the volume of outstanding debt and the level of interest payments were almost 10 times higher than they had been in 1890. Growing national insolvency made a radical change in debt policy necessary from 1934 on.

Upon accession to office in 1890, the Republican government inherited debt obligations that annually consumed almost the entire trade-balance surplus (see table 84). As bad as the situation was, it was to become even worse over the course of the next seven years. Post-1890 financial policy (a cause of later inflation) and constant federal budget deficits<sup>3</sup> counted heavily upon foreign credits. By 1897, external debt had risen by about 30%. Service and amortization on the debt then absorbed almost 80% of the annual balance-of-trade surplus.

Such a situation was tenable as long as the supply of foreign exchange, provided principally by trade surpluses and new loans, was maintained at a sufficiently high level. However, when the trade surplus decreased in 1896-1897, largely as a result of the fall in coffee prices, an exchange crisis was created that made continued payments on the external debt impossible. It was then, for the first time, that a debt-consolidation agreement was considered. Through debt consolidation, or rescheduling, present creditors were to be repaid by means of a new loan that was to increase the volume of outstanding debt and the flow of annual service payments for years to come.

Contracted on 15 June 1898, the first funding loan determined that the interest on all external debts of the federal government, as well as the guaranteed rate of return that the government had granted to the railroads, would be paid between July 1898 and June

<sup>3</sup> See chap. 3.

Table 84

*Brazil: Trade Balance and External Debt, 1822-1933*  
(Values in £ Million)

Period	Trade-Balance Surplus (1)		External Debt (2)		
	New Loans	Payments	Outstanding Balance*		
1822-1889	Total	69.0	72.7	50.2	31.1
	Annual Average	( 1.0)	( 1.1)	( .7)	
1890-1897	Total	24.3	14.2	18.8	49.5
	Annual Average	( 2.7)	( 1.6)	( 2.1)	
1898-1910	Total	173.6	106.2	72.1	120.3
	Annual Average	( 13.4)	( 8.2)	( 5.5)	Execution of First Funding Loan
1911-1914	Total	34.9	52.4	50.9	162.0
	Annual Average	( 8.7)	( 13.1)	( 12.7)	
1915-1926	Total	201.6	77.4	127.5	211.5
	Annual Average	( 16.8)	( 6.5)	( 10.6)	Execution of Second Funding Loan
1927-1930	Total	36.1	74.8	75.5	267.2
	Annual Average	( 9.0)	( 18.7)	( 18.9)	
1931-1933	Total	43.3	18.4	42.4	267.4
	Annual Average	( 14.4)	( 6.1)	( 14.1)	Execution of Third Funding Loan

Sources: (1) Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil*, 1939-1940, pp. 1358-59.

(2) Ministério da Fazenda (MF), *Finanças do Brasil*, 20 vols. (Rio de Janeiro: Tipografia do Jornal do Comércio, Rodrigues & Cia., 1955), vol. 19: *Dívida Externa, 1824-1945*, by V. F. Bouças, p. 580, chart 3.

\* At the end of the last year in each period.



1901, not in cash, but in new debt titles.<sup>4</sup> Amortizations were suspended, until 1 July 1911, not only on the funding itself, but also on all loans included in the consolidation.<sup>5</sup> However, in exchange for agreeing to the conditions of the loan, foreign bankers practically demanded control over the economy of the country. In addition to demanding a lien on the revenues from all the customs houses in the country and prohibiting all new external and internal loans, or even the guaranteeing of new loans, until June 1901, the foreign creditors required the federal government to withdraw from the money stock paper notes in the amount of the loan titles at an exchange rate of 18 pence per *mil-réis*. To this end, the government, beginning in 1899, agreed to make deposits in three specified foreign banks during a three-year period. The deposits collected were to be burned, or, if the rate of exchange became "favorable", to be used in London to purchase bonds in favor of the financial agents of the creditors. The bonds would then be "transferred to the credit of a fund earmarked for the future payment, in gold, of the accumulated interest on the loans and warrants of the railroads".<sup>6</sup>

While the domestic economy must have been rocked by the deflationary effects of the decrease in the money stock, the funding loan and subsequent events proved a healthy tonic for the balance of payments.<sup>7</sup> Other helpful policy measures adopted at the same time included a new duty, the "gold-quota" applied to existing duties, and, despite the demand imposed by the foreign bankers in the 1898 agreement, the negotiation of a new loan with guaranteed interest for the purpose of expropriating several railroads.<sup>8</sup>

With the balance-of-trade surplus steadily increasing until 1912 (see graph 26 and table 84), the governmental authorities were no longer overly concerned about payments on the external debt. With the breathing spell provided by the favorable external developments, activity intensified on a series of public-works projects which were largely financed from abroad. Thus, numerous foreign loans

<sup>4</sup> V. F. Bouças, *História da Dívida Externa*, 2d. (Rio de Janeiro: Edições Financeiras, S.A., 1950), pp. 160-64.

<sup>5</sup> The amortization was later accomplished ahead of time. MF, *Finanças do Brasil*, 19:197.

<sup>6</sup> Law 581 of 20 July 1899.

<sup>7</sup> This is not the place to analyze the economic consequences of the deflation policy (see chap. 3).

<sup>8</sup> It was argued at the time that such expropriations were harmful to the economy of the country, insofar as the annual burden represented by the interest on the guarantee was less than the interest on the debt contracted to finance the expropriations. L. R. Vieira Souto, *O Último Relatório da Fazenda* (Rio de Janeiro: L. Malafala Júnior, 1902), pp. 86-88.

were contracted between 1901 and 1912 for the purpose of building railroads, improving ports in Rio de Janeiro, Recife, Paranaguá, etc. To an extent, these projects coincided with the first coffee-price-support plan (adopted in 1906), which obliged the coffee-producing states to contract huge foreign loans. As a result, even while the agreements related to the first debt-consolidation plan were being carried out, the outstanding external debt tripled between 1898 and 1910. And the internal economic benefits were not always sufficient to justify the rapidly increasing indebtedness.

Not only did the government policy of guaranteeing a rate of return damage the efficiency of the railroads, but the rail lines themselves were not always economically viable. Spurs were frequently constructed in isolated regions with little traffic in terms of freight or passengers.<sup>9</sup> With regard to port improvements, since the work was financed by a specific tax (the gold-tax) on imports, the ports undergoing improvements became less competitive and suffered a decline in importance. For example, a large part of the imports originally destined for the port of Rio de Janeiro were rerouted to Santos in the state of São Paulo.

When the moratorium associated with the first rescheduling agreement expired in 1911, full-scale payment of the external debt was resumed. Total debt had, however, grown enormously as a result of the loans contracted in 1910. The situation became calamitous in 1913-1914 with the drop in the international prices of Brazilian export products and the European crisis that was to degenerate into World War I. Trade-balance surpluses were drastically reduced with a resulting deficit in 1913. The outbreak of war in July 1914 spelled an end to capital inflows, and further debt remittances became impossible. The solution adopted was one characteristic of the period: the negotiation of a new agreement for the consolidation of the debt.

By the terms of the second funding loan, signed on 9 October 1914, the country received £ 14.5 million to be issued in bonds for the payment of interest on foreign loans that were due or set to fall due between 1 August 1914 and 31 July 1917. Exceptions were the loans connected with the first rescheduling and those contracted in 1903 for the improvement of the port of Rio de Janeiro.<sup>10</sup> Service on these loans would continue to be paid in gold. Amortiza-

<sup>9</sup> Since the railroad was practically the only means of transportation to the interior of the country at the time, construction of rail lines in sparsely settled regions was justified from the standpoint of integration of the national territory, but it came at a high social cost.

<sup>10</sup> MF, *Finanças do Brasil*, 19: 246.

tion of all loans, with the exception of the consolidation loan, was suspended for a period of 13 years.

Throughout the period of the new agreement, annual debt-related expenses were reduced and the annual average of new loans was cut in half (table 84). Moreover, excellent trade conditions, due to the two coffee-price-support plans of 1917 and 1922, provided a sufficiently large average trade-balance surplus to permit the payment of services related to the debt during the period as a whole.

In the six years subsequent to the signing of the agreement, no new inflow of loans was recorded. Moreover, the war-related expansion of exports (with an especially high increase in 1919) permitted uninterrupted payment of the debt until at least 1920 by means of foreign-exchange earnings. Graph 26 shows how the volume of external debt fell steadily from 1916 to 1918.

The great demand for imports, which had been repressed during the war, wiped out these favorable trends and caused a balance-of-trade deficit again in 1920-1921. Despite the large surplus of 1919, it was once again necessary to look for external loans.<sup>11</sup> In 1921, a large loan was arranged to finance public works in the Northeast and to back up obligations of the treasury.<sup>12</sup> To this loan were added the loans of 1922 for the coffee-price subsidies and the construction of railroads, so that the new loans totaled almost £ 38 million and increased the external debt and debt-service obligations by 25%. From 1922 to 1926, no new loans were recorded. With the exchange market stabilized by specific measures<sup>13</sup> and with the trade balance once again in surplus, the volume of the outstanding debt was reduced, albeit only slightly (see graph 26).

Expenses related to the uprisings of 1924 had burdened the federal budget, and the deficit worsened considerably in 1926. In an effort to alleviate the budgetary strain of the internal debt, the government arranged a \$ 60 million loan in the United States. At the end of 1926, a monetary reform was decreed. The effectiveness of the reform relied heavily upon new and burdensome external loans.

Thus, by the end of the execution period of the second consolidation agreement, the external debt had increased by slightly more than 30%. After 1927 the situation grew progressively more complicated. Debt-service payments were resumed, but they were

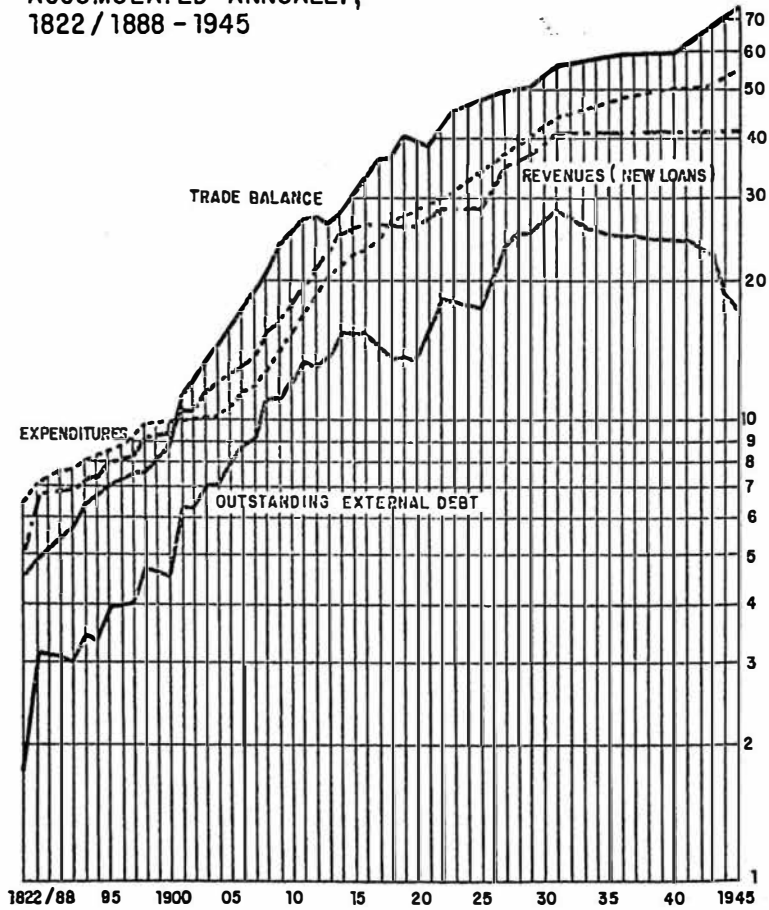
<sup>11</sup> The surplus was in large part used to cover overdue obligations on private foreign capital. *Jornal do Comércio, Retrospecto Comercial*, 1920, pp. 23-25.

<sup>12</sup> MF, *Finanças do Brasil*, 19: 272.

<sup>13</sup> See app. C, "Foreign Trade and Foreign Exchange Policy."

Graph 26

**BRAZIL :**  
**TRADE BALANCE AND EXTERNAL DEBT,**  
**ACCUMULATED ANNUALLY,**  
**1822 / 1888 - 1945**



Sources : IBGE, *Anuário Estatístico do Brasil*, 1939 - 1940; MF/SZEF, *Comércio Exterior do Brasil*, various years; MF, *Dívida Externa*, 1824 - 1945, p. 580.

more burdensome because of the monetary-reform loans. The coming of the Great Depression foretold a decline in the average balance-of-trade surplus and the virtual cessation of private capital inflows after 1929. It therefore became more and more difficult for the government to fulfill its obligations abroad. When in 1930 the exchange rate passed beyond the stabilization limits, approximately £ 30 million in gold deposited in the Caixa de Estabilização and in the Banco do Brasil rapidly disappeared.<sup>14</sup> The exchange and monetary crisis that resulted in 1931 prevented the government from continuing payments and made a new consolidation agreement necessary.

Thus, the three years of monetary reform witnessed new loans in the amount of £ 74.8 million and debt repayments of £ 75.5 million, but, more significantly, an increase in the volume of outstanding debt of more than £ 55.7 million. By mid-1931, the government was finding it difficult to make payments on the external debt due to the shortage of exchange.<sup>15</sup> In August, amortization payments on some loans were suspended,<sup>16</sup> and in September negotiations began for a third rescheduling agreement.<sup>17</sup> After surmounting initial difficulties resulting from creditor demands, the consolidation was authorized by Decree 21 113 of 2 March 1932. By the agreement, the country issued bonds in the amount of £ 18.4 million and used the revenues to pay "the interest on federal loans already due or falling due between October 1931 and October 1934, the interest on loans in French francs due before October 1931 and not yet paid, and some of the principal of these overdue loans".<sup>18</sup>

The third consolidation agreement was carried out in the midst of the worldwide Depression.<sup>19</sup> During these difficult years, Brazil received capital inflows of £ 18.4 million while paying out £ 42.4 million, thereby financing a net capital outflow of £ 24 million with its own resources. Nonetheless, it was unable to reduce the volume of outstanding external debt (see table 84).

This was the last agreement by which overdue interest was paid by means of new interest-bearing issues. Beginning in 1934,

<sup>14</sup> Banco do Brasil, *Relatório*, 1930, p. 16.

<sup>15</sup> MF, *Finanças do Brasil*, 19: 296.

<sup>16</sup> F. T. de Souza Reis, *A Depressão Comercial e o Funding-Loan de 1931* (Rio de Janeiro: Tipografia do Jornal do Comércio, 1934), p. 32.

<sup>17</sup> *Ibid.*, p. 33.

<sup>18</sup> MF, *Finanças do Brasil*, 19: 302.

<sup>19</sup> Starting in February 1934, payment would be made on a new basis in accord with the Oswaldo Aranha Plan, which will be discussed shortly.

payment on the external debt was finally limited in accord with the economic conditions dictated by the balance of payments.

### D.3 – External debt policy, 1934-1945

It was only after 1934 that real progress was made in paying the external debt. Payment plans carried out during this period managed to reduce not only the annual payments burden, but the volume of outstanding debt as well by avoiding recourse to new loans. Although it may seem paradoxical, this change in the external-debt policy was beneficial to the country. It is evident that external loans comprise a valid and useful means of fostering economic development in any country; in fact, external finance has played that role in many of the countries that are today developed. However, the history of the use of foreign credits in Brazil has not been a happy one. Hard loans and absurd guarantees demanded by creditors have constantly increased the debt burden while providing little stimulus to economic growth.

Adopted in 1934, the new strategy for paying the external debt was dictated by the prior budgetary difficulties of the federal government. A severe drought in the Northeast and a revolutionary movement in São Paulo in July 1932 had required heavy federal outlays. The new policy – the result of studies into the foreign-payments problem – was written into Decree-Law 23 829 of 5 February 1934 and known as the “Oswaldo Aranha Plan”. The plan of Minister Aranha set down the guidelines upon which debt-service payments would be carried out from 1 April 1934 to 31 March 1938.<sup>20</sup>

In the decree, the government revealed its determination to avoid recourse to the suicidal policy of funding loans for the purpose of debt consolidation. This plan led to “a virtual reduction of capital outflows through the reduction, in real terms, of interest paid”.<sup>21</sup> The consequent savings in foreign exchange was significant. In addition, all amortization on overdue state and municipal obligations was delayed until the paper fell due (i.e., delayed for a period of 20 to 25 years) without payment of accumulated interest.

Throughout the period the Oswaldo Aranha Plan was in effect, the entire balance-of-trade surplus was used in payment of the external debt. The average annual surplus was sufficient to cover these payments from 1934 to 1936. However, when the trade surplus

<sup>20</sup> Bouças, p. 351.

<sup>21</sup> *Ibid.*, pp. 351-56.

was reduced to less than £ 2 million at the end of 1937, the government was unable to continue remittances for the payment of the external debt. Remittances were accordingly suspended after 20 November 1937.<sup>22</sup>

Payments on the external debt were resumed only in March 1940, but Brazil had been involved in negotiations regarding the payments since July 1939. Despite the small deficit in the trade balance in 1940, moderate private capital inflows<sup>23</sup> permitted the resumption of payments, which were carried out in accordance with Decree-Law 2 085 of 8 March 1940. By the decree, the basic provisions of the Oswaldo Aranha Plan were reactivated for four years, though the payments envisioned in the earlier plan were generally reduced by about 50%.

Repayment of the external debt on the basis of Decree-Law 2 085 was to have continued until 31 March 1944, but favorable trade conditions and a consequent accumulation of foreign exchange stimulated debate about a shorter period of repayment in the national interest.<sup>24</sup> Studies culminated in Decree-Law 6 019 of 23 November 1943, known as the Souza Costa Plan.

The principal characteristic of this plan was its declaration of a permanent reduction in interest payments. Two alternatives were offered to bondholders.<sup>25</sup> The first, called alternative A, maintained the original value of the bond, but reduced the effective interest rate to an average of 2.49%. Under alternative B, the outstanding capital would become the responsibility of the federal government, and its nominal value would be immediately reduced by about 37%. The reduction would take place through the early payment of an amount equivalent to 11% of the original face value. However, the effective interest rate, having been standardized at 3.75%, was a little higher than that of alternative A.

Under the Souza Costa Plan, the volume of outstanding external debt was reduced substantially in 1944-1945, and continued high average annual balance-of-trade surpluses (about £ 38 million) made it relatively easy to maintain payments of about £ 15 million per year (see table 85).

Hence, the new policies of Aranha and Souza Costa managed to reduce the net foreign indebtedness by £ 91.1 million (about one-third of the outstanding debt in 1934) through outlays of only £ 75.5 million without recourse to additional foreign financing.

<sup>22</sup> MF, *Finanças do Brasil*, 19: 313.

<sup>23</sup> Banco do Brasil, *Relatório*, 1940, p. 27.

<sup>24</sup> A. Souza Costa, *Questões Financeiras* (Rio de Janeiro: Tipografia do Jornal do Comércio, 1945), p. 9.

<sup>25</sup> MF, *Dívida Externa do Brasil*, pp. 24-25.

Table 85

*Brazil: Trade Balance and External Debt, 1934-1945*  
(Values in £ Million)

Period	Trade-Balance Surplus (1)		External Debt (2)		
	New Loans	Payments	Outstanding Balance*		
1934-1937	Total	26.3	31.1	243.7	Period of the Oswaldo Aranha Plan
	Annual Average	(6.6)	(7.8)		
1940-1943	Total	81.6	15.0	227.3	
	Annual Average	(20.4)	(3.7)		
1944-1945	Total	76.5	29.5	176.4	Period of the Souza Costa Plan
	Annual Average	(38.2)	(14.8)		

Sources: (1) Primary data from MF/SEEF, presented in *mil-réis* and converted into pounds sterling at the annual average exchange rate of the Rio de Janeiro Stock Exchange (Câmara Sindical dos Corretores da Bolsa de Valores do Rio de Janeiro), as given in IBGE, *Números Índices dos Preços e Quantidades do Comércio Exterior e de Cabotagem*, Estudos de Estatística Teórica e Aplicada (Rio de Janeiro, 1951).

(2) MF, *Dívida Externa, 1824-1945*, p. 580, chart 3.  
\* At the end of the last year in each period.



# E

## The protection of industry

### E.1 — Introduction

From the early days of the Republic, the government employed various instruments to protect Brazilian industry. It should be pointed out, however, that protection was provided in a nonsystematic fashion and frequently without any idea of its effects. At other times, policies adopted for other reasons had protective effects. Such was the case, for example, with the frequent exchange-rates depreciations which sought to increase the balance-of-trade surplus in order to facilitate debt servicing, but at the same time maintained the income of the export sector provided some protection to domestic manufacturers by increasing the price of imported manufactures. A similar case is that of the policy of exchange restrictions carried out in the 1930s. As already seen this policy had a great protectionist impact on Brazilian industry, though its basic objectives were to protect the balance of payments against the fall in the prices of export products and to permit external debt servicing. Customs duties themselves, despite their protectionist effect, were by design an instrument of tax policy.

In addition to the forms of protection mentioned above, the ones that were most used were bank loans, exemptions from customs and sales taxes, preferential shipping rates, etc.

Until the mid-1930s, these diverse forms of protection were applied in an uncoordinated way through various institutions. Then, with the creation of the Conselho Federal do Comércio Exterior (federal foreign-trade council) in 1934, the government began to assist the industrial sector in a more effective manner, and began

to take into account the relationship between aiding domestic industry and resolving trade problems.<sup>1</sup>

The foundation of the agricultural and industrial credit department (CREAI) of the Banco do Brasil in 1937 permitted the government to fund the formation of new basic industries such as pulp and paper, aluminium, steel (using coal), etc. In general, CREAI began to carry out the functions of an industrial development bank. It made loans for the purchase of machinery and equipment, initially for five-year periods (later increased to 10 years), and at low rates of interest.

## E.2 — Customs duties

The first Republican government was concerned with using tariffs to protect existing industries, in part because of the protectionist ideas then prevalent in the United States and Germany, and in part because of the desire to create a new class that would oppose the return of the monarchy. It should be remembered, however, that as a rule the tariffs were not essentially protectionist,<sup>2</sup> despite their being high and at times even exorbitant. Their primary purpose, rather was the collection of import duties, which were always the principal source of federal revenue. Furthermore, the Brazilian tariffs were specific, and thus required frequent revision.

The first tariff of the Republic, due to Ruy Barbosa, reflected the concern to expand revenues from duties, while at the same time granting moderate protection to existing industries.<sup>3</sup> It was after 1900, with the so-called Murinho Tariff that tariffs began to represent an important protective barrier. This was due not to any change in the tariff rates,<sup>4</sup> but to the increase in the gold-quota from 15% to 25% of import duties. The gold-quota had been re-

<sup>1</sup> Conselho Federal de Comércio Exterior, *Dez Anos de Atividades, 1934-1944* (Rio de Janeiro: Imprensa Nacional, 1944).

<sup>2</sup> A protectionist tariff is understood to be one that favors finished products manufactured in the country by means of higher tariffs on similar imports. At the same time, such a tariff charges lower rates on raw materials that must be imported and higher rates on those that the country produces. In the first stage of development, protection is given to consumer goods, with only low tariffs being applied to capital goods and raw materials not produced in the country. In the second stage, capital goods are taxed more, as are raw materials of which local production is desired.

<sup>3</sup> N. V. Luz, *A Luta pela Industrialização do Brasil* (São Paulo: Difusão Européia, 1960), p. 160.

<sup>4</sup> "Rate" here means the ratio between the amount of the specific tariff and the official minimum value given to the imported merchandise.

established in 1898 after the Prudente de Morais government contracted the first funding loan.

Changing part of the customs taxes in gold foreign exchange provided some elasticity in the Brazilian tariffs, and helped combat the problem of falls in custom revenues due to depreciation of the currency. The principal objective in charging the gold-quota was to cope with external debt servicing. At the same time, though, this implied an increase in the price of imports, affording an additional degree of protection to industries.

The examples in table 86 illustrate how certain Brazilian tariffs came to be exorbitant. Calculating tariffs by applying the fixed rate to the official values of foreign merchandise (which were much higher than the market values) resulted in nominal rates of 50 to 60% producing effective rates of more than 200% in some cases. To this is added the fact that the part of the duties paid in gold was figured not by the going exchange rate, but according to the par rate (which in 1913 was 15 *mil-réis* per pound sterling while the market rate was only 8.89 *mil-réis*). This difference of 6.11 *mil-réis* (68.7% of \$8.89) was the so-called gold premium.

Same tariffs, despite being high, furnished weak protection. The cotton and woolen industries provide examples. In these cases, weaving was protected, but not spinning operations, even after the latter were established in the country.<sup>5</sup> This reveals much about the lack of development considerations in setting tariffs. While low tariffs on thread were at first necessary in order to ensure national weavers an adequate supply, tariffs were not raised on thread when domestic spinners began operations. Both cotton and wool were raw materials produced in Brazil, justifying in principle the organization of spinning in the country.

After 1903, import duties were annually modified through the bills that approved the budget. Frequently, changes were motivated by pressures from industrial groups, principally those of the textile industry, and always with the object of helping some special interest. In 1934, a reform was enacted which substantially simplified the system and increased the number of items subject to tariffs from 827 to 1 897. In addition, the reform did away with duties charged in gold and established general and minimum duties (the latter being 20% lower than the former). Nevertheless, the majority of the tariffs remained specific.

<sup>5</sup> O. P. Nogueira, *Em Torno da Tarifa Aduaneiras* (São Paulo: Editora do CIFT, 1931), pp. 7-18.

Table 86  
*Real Customs Duties on Selected Products, 1913*  
 (% of Market Value)

Country	Shoes	Canned Fruits	Beer	Burlap and Sacking Material	Cotton Cloth	
					Raw	Bleached
Argentina	40.0	125.0	95.8	7.5	25	21
United States	16.7	89.7	87.5	25.0	—	—
Germany	13.4	87.5	19.7	18.0	29	27
France	10.4	—	35.4	15.0	35	31
Brazil	115.4	268.0	837.5	145.0	154	98

Source: M. J. Muller, *Relatório Sobre a Tarifa das Alfândegas* (Paris, 1913), pp. 21-150.

### E. 3 — Exchange depreciation

It was argued above that, since the frequent depreciations which occurred after the proclamation of the Republic served to raise the prices of imported manufactures,<sup>6</sup> they constituted a protectionist barrier that was perhaps more important than the changes in tariff rates. It is also true, however, that negative impacts were simultaneously produced, since the prices of raw materials and capital goods for industry, that is, the prices of the inputs for industrial production, also increased. In the case of the industries that basically processed Brazilian raw materials — that is, those which were less dependent upon imports (except in regard to capital goods or replacement parts), of which the textiles, clothing, footwear, beverage, and tobacco industries are examples — it appears that the growth occurred simultaneously with the depreciation of the exchange rate. This is shown in graph 27 in which the curve labeled “Index of Industrial Output” (covering only the textile, clothing, footwear, beverage, and tobacco industries) is shown along with a curve describing changes in the rate of exchange for the period 1911-1939.

### E. 4 Exemption from taxes and reduction of transport costs

Exemption from customs duties for the import of equipment and raw materials was another instrument of industrial promotion used from the beginning of the Republic. Industries benefiting from these measures included coal, cement, glass, cellulose, beer, sugar, steel, and many others. Although these concessions were often granted to specific firms rather than to industrial sectors, at times they were subsequently extended to the sectors of which the firms were a part.<sup>7</sup>

It is worth noting that, in line with the concern to protect national industry, exemption from customs duties was prohibited for those products for which there were national “similar”.<sup>8</sup> A “similar” was understood not as an identical product, but as one that could serve similar purposes. It was only in 1911 that a “register of similars” was organized.

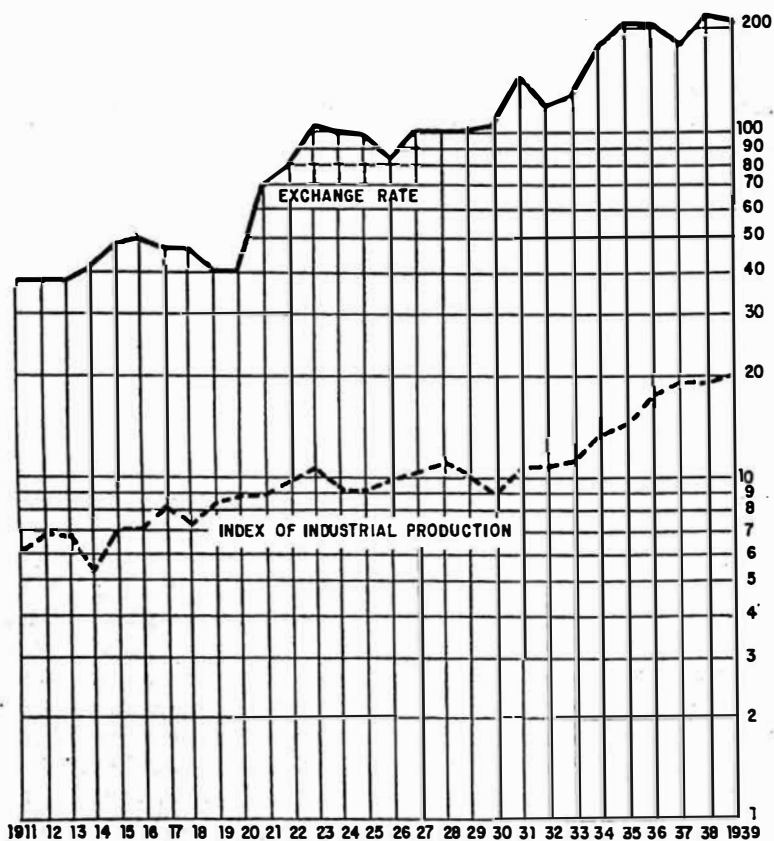
<sup>6</sup> R. C. Simonsen, *A Evolução Industrial do Brasil e Outros Estados* (São Paulo: Cia. Editora Nacional, 1973), p. 34.

<sup>7</sup> C. M. Peláez, “The State, the Great Depression and the Industrialization of Brazil” (Ph.D. dissertation, Columbia University, 1968), p. 79.

<sup>8</sup> Decree-Law 947 of 4 November 1890.

Graph 27

**BRAZIL :**  
**EXCHANGE RATE AND INDEX OF INDUSTRIAL PRODUCTION,**  
**1911 - 1939.**



Source : Statistical Appendix, tables 120 and 126.

The so-called "law of similars" came to be applied vigorously only in the 1950s, when it served as a powerful instrument of industrial protection. Nonetheless, in the 1920s, this law, along with the tariff exemption on industrial inputs, appears to have been extremely beneficial for foreign industries established in Brazil.<sup>9</sup> These industries imported raw materials, semifinished products, or unassembled manufactured goods from Europe. Consequently, when foreign-owned industries pressured for higher duties on imported products with national similars, they were seeking not temporary protection, but a constant increase in the prices of their products in the internal market. This was possible because with each increase in the duties on foreign-made products the prices of domestic products could be raised proportionally.

With regard to exemptions from the sales tax and the reduction of transport rates on federal railroads, such benefits were granted for the first time in 1910 as incentives to the development of the nascent steel industry.<sup>10</sup> Nevertheless, none of the projects contemplated were carried out. Actual results were only obtained in 1922 with a contract between the federal government and the Usina Queiroz Júnior, the first producer of pig iron in the country. To stimulate the expansion of the mill, the government exempted the firm from customs duties on imported machinery and from all federal taxes on the production of pig iron and the mining of iron ore. At the same time, the company obtained reduced freight charges on all the means of transportation owned by the federal government.<sup>11</sup>

Identical incentives were granted to the cement industry through legislation enacted in 1924.<sup>12</sup>

## E. 5 — Loans

Federal loans to industry date back to the first days of the Republic. As early as 1892, the Floriano Peixoto administration authorized the Banco do Brasil to aid industries adversely affected by the stock-market crisis. This aid was to be financed through the issue of 100 thousand *contos de réis* in registered bonds, offered in denominations of 200 *mil-réis* to one *conto*. Those bonds paid 4% nominal interest

<sup>9</sup> F. C. B. Nunes and J. R. Silva, *Tarifa das Alfândegas* (Rio de Janeiro: Oficinas Alba Gráficas, 1929-1932), 1: i-iv.

<sup>10</sup> Luz, p. 188.

<sup>11</sup> Peláez, pp. 117-18.

<sup>12</sup> *Ibid.*, p. 162.

and were to be amortized five years from date of issue in quotas previously determined by the government.<sup>13</sup>

Table 87

*Banco do Brasil: Industrial Loans, 1935-1945*  
(1 000 Contos de Réis)

Year	Total	(%) <sup>a</sup>	CREAI
1935	159 <sup>b</sup>	19.7	—
1936	139 <sup>b</sup>	17.9	—
1937	110	15.6	—
1938	141	15.8	18
1939	242	19.6	59
1940	292	17.2	54
1941	362	15.2	237
1942	424	14.7	147
1943	676	20.5	236
1944	1 317	21.6	142
1945	1 377	15.6	157

Source: Banco do Brasil, *Relatório*, 1938-1945.

<sup>a</sup> Percentage of total of all loans to the private sector, which, according to the classification used, covers the following subsectors:

- (a) agriculture, forestry, and mining
- (b) the manufacturing industries
- (c) the construction industry
- (d) the transport industry
- (e) commerce
- (f) miscellaneous

<sup>b</sup> Includes the construction industry.

In the 1920s, the government granted loans to the steel industry in order to promote its development. The Queiroz Júnior and Belgo-Mineira mills received loans in the amounts of 1.5 and 1.8 thousand *contos de réis*, respectively.<sup>14</sup>

<sup>13</sup> Luz, pp. 170-71.

<sup>14</sup> Peláez, pp. 118-19. Luz, p. 190, fn. 116, cites as other firms that might have received loans from the federal government the Anglo-Brazilian Iron and Steel Syndicate Ltd., Cia. Siderúrgica Mineira; Cia. Carbonífera Rio Grandense; Cia. Norte Paulista do Combustíveis; and the Cia. Eletro-Metalúrgica Brasileira.



Global and systematic data on federal loans to industry are only available for the period after 1935. Moreover, it was only with the creation of CREA in 1937 that the federal government began to supply medium- and long-term credit for the purchase of machinery and equipment.

The data in table E. 2 reflect the orientation of the government after 1935, when it became concerned with financing new basic industries such as pulp and paper, aluminum, and the steel mill at Volta Redonda, the construction of which had been aided by a \$45 million loan from the U.S. Export-Import Bank.



# F

## Industry in the state of São Paulo

### F.1 — Introduction

Two factors were decisive in making the state of São Paulo the foremost industrial center in Brazil as of the twenties and in enabling it to solidify its position as such following the Great Depression. First, the inflow of Europeans, in great part the outcome of an adept immigration and colonization policy,<sup>1</sup> led to the appearance of a varied entrepreneurial class<sup>2</sup> and the creation of a skilled labor force that was large relative to that in the rest of the country. Skilled foreign workers came to hold many of the most important production positions in industry.<sup>3</sup> Second, the state took advantage of its energy

<sup>1</sup> According to data provided by the Serviço de Imigração e Colonização, 2.7 million immigrants entered the state of São Paulo between 1885 and 1939. Of these, 65% came between 1885 and 1914. Immigration halted during the war, then regained impetus in 1920-1930. The majority of the immigrants were initially Italian, Portuguese or Spanish, and later (mainly between 1925 and 1939) Japanese. Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil*, 1939-1940, pp. 1 307-8.

<sup>2</sup> In 1933, 45% of the factories in São Paulo were owned by foreigners. These factories accounted for 27.4% of the capital invested in industry, 25.3% of industrial employment, and 28.4% of the total value of production. By March 1940–November 1941, 34.6% of the partners in São Paulo industry were of foreign origin and were responsible for 48.8% of the invested capital. Secretaria de Agricultura, Indústria e Comércio de São Paulo, Diretoria de Estatística, Indústria e Comércio (SAICSP/DEIC), *Estatística Industrial do Estado de São Paulo*, 1933, p. 25; 1938-1939, pp. 374-75.

<sup>3</sup> In 1934, Roberto Simonsen observed the following: "In my experience as an industrial engineer, I have noted, and with regret, that the best-paid positions, requiring the greatest amount of skill, are generally held by foreigners. To the Brazilian worker, due to his lack of training, are relegated the heaviest

(mainly hydraulic) potential, rapidly expanding its capacity and extending its network into the interior.<sup>4</sup>

These two factors, together with the abundance of locally-available raw materials, joined to create the external economies prerequisite to the industrial surge that began in the thirties and soon ranked the state as the undisputed industrial center of the nation. Add the transportation network left to industry as a legacy of the coffee economy, a local market reasonably well-developed thanks to foreign immigration and internal migration, and the foreign capital available for investment in industry,<sup>5</sup> and it becomes clear that the state was endowed with the conditions necessary to the process of industrialization that has continued to the present.

The ensuing analysis of the industrial development of São Paulo takes the above-mentioned factors into account. The division by period is according to the national and international events which affected the Brazilian economy.

## F.2 — Industry in São Paulo before 1930

The first industrial undertakings in the state of São Paulo date back to the beginning of the Republic, but industrial development truly got under way only after the adoption of the high tariffs promulgated by Decree 3 617 of 19 March 1900. This decree, which had a protectionist effect despite its objectives being purely fiscal, stimulated the local production of diverse manufactured articles, especially textiles and clothing.

The first industrial census, taken in 1907, showed the state of São Paulo as the second most important industrial center in the

and lowest-paid tasks." "Ensino Técnico em São Paulo," *Observador Econômico e Financeteiro*, Ano 7, n.º 96 (January 1944): 94.

Since the 1940s, the Organização do Serviço Nacional do Aprendizado Industrial (SENAI), following the example of São Paulo, has made substantial contributions to raising the level of the industrial labor force.

<sup>4</sup> The installed energy capacity of the state doubled between 1930 and 1945. Hydroelectric capacity alone grew 62.5% in the three-year period 1935-1938, thus coming to represent 55.4% of the installed hydroelectric capacity of Brazil. In addition, by 1935 the state distribution network already covered 434 *municípios*. The importance of capital from abroad was striking in this sector, for two foreign firms accounted for nearly all the energy produced — São Paulo Light and Power Co., Ltd. (Canadian) and Empresas Elétricas Brasileiras (American).

<sup>5</sup> Between 1932 and 1937, the total amount of capital invested in the major São Paulo firms rose 118%. Over the same period, the number of workers employed increased by 63%. SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo*, 1932 and 1937.

country, surpassed only by the Distrito Federal. It then possessed 314 industrial establishments and employed 24 thousand workers.<sup>6</sup> That the state was still in an early stage of development could be seen in its dependence on imported raw materials (cotton, jute, and silk thread; raw and spun wool; straw for hats, etc.) and imported machinery and equipment. The need for imports, however, was not an obstacle, given the country's excellent foreign-trade position. Moreover, São Paulo was the main producer of coffee, which was the principal export.

Industrial output expanded rapidly, as the data in table 88 attest. The production of cotton fabrics, at that time the most important industrial activity in the state, as in the country as a whole, quadrupled between 1900 and 1915. The production of other goods also increased, albeit on a lesser scale (e.g. shoes, hats, and non-cotton textiles).

From 1914-1915 on, diverse factors combined to accelerate the pace of industrial production in the state. Among these factors were the greater abundance of electrical energy, the expanded market provided by railway links with Minas Gerais and the Distrito Federal, and the increased demand of the nations at war for textiles and food products such as sugar and canned and refrigerated beef.

These developments were reflected in the industrial census of 1920, which showed the state of São Paulo as the principal industrial center of the country, with 4.1 thousand industrial establishments (3.8 thousand had been created between 1907 and 1920), 84 thousand workers (almost three times the number employed in 1907), and 35.2% of the industrial value added in the country.<sup>7</sup>

The bulk of production consisted of the output of the traditional industries, with textiles, clothing and shoes representing 42.9% of the industrial value added of the state. Food, beverages and tobacco accounted for an additional 25.4%. Table 89 shows that in some manufacturing sectors the value added in São Paulo (as a percentage of the value added nationwide) was significantly higher than the average value added by industry in the state as a whole (35.2%).

Some of the country's most important industries, such as textile and clothing manufacturers, were well represented in São Paulo. However, the so-called traditional industries were generally underrepresented (i. e. value added was less than the statewide average

<sup>6</sup> Excluding rural industries and sugar plantations. *Diretoria Geral de Estatística, Censo Industrial, 1920, p. vi.*

<sup>7</sup> Excluding rural industries and sugar plantations.

Table 88

## State of São Paulo: Output of Principal Manufactures, 1900-1928

	1900	1905	1910	1915	1920	1925	1926	1927	1928	
<b>Woven Products</b>										
Cotton	(1 000 m)	33 540	36 646	75 834	121 590	186 520	206 148	238 933	203 889	191 139
Jute	(1 000 m)	...	...	19 088	33 463	25 367	86 151	97 852	81 573	84 613
Wool	(1 000 m)	...	...	218	617	1 573	3 506	3 083	4 212	4 330
Silk	(kg)	---	---	---	5 185	34 586	40 110	49 104	103 051	232 030
Silk Ribbons	(kg)	---	---	---	18 899	22 503	48 648	48 108	53 109	72 018
<b>Clothing</b>										
Hats	(1 000)	1 060	1 400	2 588	2 654	2 342	3 983	4 247	4 303	4 693
Shoes	(1 000 Pairs)	1 600	1 980	3 608	4 865	6 756	10 036	10 948	11 204	12 580
<b>Beverages</b>										
Beer	(1 000 Liters)	...	...	20 989	27 959	28 518	50 007	50 670	54 353	62 207

Sources: Secretaria de Agricultura, Indústria e Comércio de São Paulo, Diretoria de Estatística, Indústria e Comércio (SAICSP/DEIC), *Estatística Industrial do Estado de São Paulo, 1928 and 1937*.

Table 89

*State of São Paulo: Share in National Value Added by Sector, 1919*

Sector	%
Nonmetallic Minerals	54.5
Metallurgy and Electrical Equipment	48.8
Transport Equipment	46.0
Wood	17.0
Furniture	26.6
Leather Products	32.2
Chemicals, Pharmaceuticals, Perfumes, Paper, Cardboard, and Rubber	55.2
Textiles	39.2
Clothing, Footwear and Woven Articles	40.9
Food Products, Beverages, and Tobacco	28.2
Printing and Publishing	50.8

Source: Primary data from Diretoria Geral de Estatística, *Censo Industrial do Brasil*, 1920.

of 35.2%),<sup>8</sup> while the basic or dynamic industries were overrepresented. This distribution exercised a powerful influence over the subsequent growth of local industry, in view of the external economies offered by the production of machinery and equipment and of basic raw materials (metals, nonmetallic minerals such as cement, electrical and communications material, and chemical products).

The surge of industrialization in the state continued until 1923, when its pace was slowed by exogenous factors, mainly the revolutionary movement of 1924 and an electric-energy crisis that lasted until 1926.<sup>9</sup> Thus, in this latter year, the production of cotton fabrics (table 88) was only 28% higher than it had been in 1920, and that of silk articles 42% higher. Other woven products (of jute and wool) of lesser importance showed higher indices of increased production during the same period, as did hats (up 81%), shoes (up 62%) and beer (up 77%).

Then, in the mid-twenties, the whole Brazilian textile industry entered a period of crisis, recovering only after 1932, that is, in the

<sup>8</sup> An admittedly precarious indicator was used for industrial concentration in the state of São Paulo in 1920. It should be pointed out, moreover, that the quantitative methods developed by Isard in *Methods of Regional Analysis: An Introduction to Regional Science* (Cambridge: MIT Press, 1960) could not be used due to the questionable nature of the statistical data.

<sup>9</sup> SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo*, 1930.

depths of the Depression. In São Paulo, cotton-textile production declined 20% between 1926 and 1928, with repercussions on jute fabrics (down 13.5%) and on the woolen industry, which remained practically stagnant. Only the silk industry, which was then gathering strength, was left untouched; the output of silk fabrics rose almost four-fold during these two years. The crisis in the textile industry apparently spread to other closely related activities such as the manufacture of clothing and shoes.

The textile crisis led to a demand on the part of industrialists to revise the tariffs on woven products, as well as to prohibit the importation of textile machinery on the grounds of overproduction.<sup>10</sup> In fact, what was actually taking place was that inventories were mounting due to a drop in the demand for domestic products. Even so, both measures were adopted by the government — the first in 1929,<sup>11</sup> and the second by means of Decree 19 739 of 7 March 1931. Nevertheless, the crisis affecting the major industry in the state, as well as interrelated industries such as clothing and footwear, would not abate until after the Great Depression.

### F.3 — The Depression of 1929-1933 and its effects on industry in São Paulo

Industry in São Paulo was clearly battered by the abnormal economic conditions brought on by the world depression that set in toward the end of 1929. There were drops in both the number of factories (down 22.2% in 1930 relative to 1928) and the number of workers employed (down 20%) in the same period. The physical production of the manufacturing industries fell 12% between the two years (see table 90), while the value of production decreased about 16% (table 91). This indicates that there was a decline in the absolute price level of manufactured goods.

The Depression seems to have had a greater impact on industrial activity in São Paulo than in Brazil as a whole. Growth indices for São Paulo indicate an annual decline of 1.3% between 1928 and 1932. On the other hand, in Brazil as a whole, production levels were the same in 1928 and 1932, with temporary drops being registered only in 1929 and 1930.

<sup>10</sup> In this regard, see C. D'Agostino, "Nova Crise de Tecidos," *Observador Econômico e Financeiro*, Ano 2, n.º 13 (February 1937): 24-25; "Super-produção Industrial?" *Observador Econômico e Financeiro*, Ano 2, n.º 14 (March 1937): 91-103; H. Ferreira Lima, "A Indústria Têxtil no Brasil," *Observador Econômico e Financeiro*, Ano 11, n.º 122 (March 1946): 50-66.

<sup>11</sup> By Decree 5 650 of 9 January 1929, tariffs on woven goods and fibers were altered.



Table 90

*State of São Paulo: Indices of Physical Output of the Manufacturing Industries by Sector, 1928-1945*  
(1935 = 100)

Sector	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
Manufacturing	67.6	65.6	59.5	64.8	64.2	75.0	87.9	100.0	111.5	123.6	136.2	164.5	182.1	222.6	210.1	221.7	220.8	203.5
Nonmetallic Minerals	57.0	59.0	45.6	76.9	61.0	68.6	87.4	100.0	115.0	122.5	137.6	170.5	179.8	179.2	164.5	161.4	188.3	179.0
Metallurgy	69.9	71.4	53.1	42.1	50.0	59.8	96.0	100.0	131.8	131.0	183.1	217.6	214.4	230.9	230.3	247.6	261.1	316.6
Machinery	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Electrical and Communication Equipment	—	—	—	—	10.5	57.2	60.8	100.0	118.1	113.5	—	—	—	—	—	—	—	—
Transport Equipment	—	—	23.6	—	24.8	40.4	64.4	100.0	94.2	110.0	—	—	—	—	—	—	—	—
Wood	—	—	58.3	—	73.8	81.0	113.3	100.0	160.2	121.0	—	—	—	—	—	—	—	—
Furniture	125.4	98.0	80.1	86.7	104.8	84.4	50.1	100.0	124.8	137.9	—	—	—	—	—	—	—	—
Paper and Cardboard	13.1	10.1	50.3	39.1	22.0	60.6	60.0	100.0	87.0	80.3	—	—	—	—	—	—	—	—
Rubber	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Leather Products	80.6	46.1	58.5	73.0	60.1	64.0	94.8	100.0	132.8	125.7	—	—	—	—	—	—	—	—
Chemicals	94.5	93.7	86.1	72.0	68.7	68.7	79.7	100.0	110.3	139.5	186.5	330.2	405.0	523.1	355.3	394.1	513.3	422.6
Pharmaceuticals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Perfumes, Soaps, and Cosmetics	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Plastics	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Textiles	70.5	58.7	50.2	62.7	67.6	84.2	66.2	100.0	105.1	124.9	115.2	122.9	137.0	181.3	206.3	221.0	103.4	140.7
Clothing, Footwear, and Woven Articles	77.4	78.2	57.9	67.2	57.0	78.3	69.4	100.0	98.8	108.4	—	—	—	—	—	—	—	—
Food Products	34.9	40.2	66.2	60.2	80.8	58.4	90.7	100.0	107.7	100.2	104.1	104.0	100.2	108.8	124.5	117.8	124.3	110.8
Beverages	98.0	105.2	99.0	49.0	46.0	52.3	61.3	100.0	100.3	165.5	—	—	—	—	—	—	—	—
Tobacco	68.2	77.6	71.4	81.9	74.6	75.0	84.8	100.0	120.6	170.1	174.9	—	—	—	—	—	—	—
Printing and Publishing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Construction	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Public Utilities	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Source: Primary data from SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo, 1928, 1930, 1932, 1934, 1935, 1936, 1937 and 1938-1939*; São Paulo, Departamento Estadual de Estatística, *Anuário Estatístico do Estado de São Paulo, 1940 and 1942*; Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil, 1938, 1938, 1939-1940, and 1941-1945*; idem, *Censo Industrial, 1940*; idem, *Sinopse Estatística do Estado de São Paulo, n.º 3 (1935) and n.º 4 (1937)*.

Note: The procedure used to construct these indices was as follows. First, simple output indices were derived from production statistics for individual products. These indices were then aggregated by sector, using as weights the share of each product in the value of the output of the sector in 1935. To obtain the overall index, the share of each in total value added by manufacturing in 1939 was used as a weight. Figures for this second index came from the industrial census of 1940.

Table 91

*State of São Paulo: General Characteristics of the Manufacturing Industries,<sup>a</sup> 1928-1932*

	1928	1930	1932
Number of Factories	6 923	5 388	6 070
Capital Invested (Contos de Réis)	1 101 824	1 477 490	1 589 750
Number of Workers	148 376	119 296	150 808
Installed Horsepower	171 076	189 499	192 159
Value of Production (Contos de Réis)	2 216 732	1 864 295	1 944 988

Source: SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo*, 1928-1929, 1930, and 1932.

- <sup>a</sup> Excluding rural industries (sugar production; ment and meat by-products; flour and farine; coffee and cotton processing), but including power generation and distribution.

The industries that were most affected by the Depression, in order of importance, were: textiles (30% drop in production in just two years), clothing and footwear, chemicals and pharmaceuticals, metallurgy, beverages, furniture, and nonmetallic minerals. At the same time, some industries escaped the effects of the crisis, and increased their production in the period 1928-1932. One such case was the food industry. This was clearly due to the rapid growth of state sugar production, which coincided with the recovery of export markets for sugar (the product had almost disappeared from the country's export list in 1924-1925). Other industries which raised their output included paper and cardboard (existing firms enjoyed an almost oligopolistic situation after the prohibition on the importation of new machinery), leather goods, and tobacco products.<sup>12</sup>

The important fact to note, however, is that the major industries — textiles, clothing and footwear, which together accounted for 56% of industrial employment and half the value of industrial output — continued in crisis despite the measures taken by the government. Although the importation of woven goods was substantially lowered, the production of the São Paulo textile manufacturers dropped to 1915-1916 levels, with a fall of 43.4% from the peak attained in 1928.

<sup>12</sup> "Super-produção Industrial," p. 97.

At first, the number of working hours per day was reduced. Then the work week was cut from six days to three. Finally, the number of looms in operation was reduced.<sup>13</sup>

Only in 1931 would industry in São Paulo begin to recover. Two important factors coincided to bring this about: first, import restrictions raised the demand for domestic goods; second, the prohibition on the importation of new equipment as of March 1931 made it impossible to open new factories with more modern installations. The latter measures mainly benefited the textile manufacturers.<sup>14</sup>

Despite this recovery as of 1931, in 1932 industry in São Paulo was still operating at levels lower than those registered in 1928. For example, though the textile industry increased its output by 25% in 1931 and 7.8% in 1932, it failed to attain pre-Depression levels. Moreover, the industry employed 14% less workers in 1932 than it had in 1928. The branches of the textile industry most affected were those producing cotton cloth and knits.

Table 92

*State of São Paulo: Textile Industry, 1928-1932*

Product	Year	Number				Installed Horsepower
		Factories	Workers	Looms	Spindles	
Cotton	1928	82	43 059	22 823	730 844	47 242
	1932	112	37 388	24 861	803 509	61 194
Jute	1928	6	6 390	2 703	36 200	7 085
	1932	11	5 223	2 988	39 296	8 382
Silk	1928	42	5 592	1 822	9 304	2 818
	1932	70	4 831	2 005	...	2 536
Wool	1928	21	2 302	843	28 034	2 011
	1932	20	3 247	887	28 410	3 423
Knits	1928	114	7 187	244	31 388	2 864
	1932	133	4 762	...	...	1 616
Total	1928	264	64 510	28 440	835 758	62 620
	1932	346	55 449	...	...	67 051

Source: Same as table 01.

From 1933 on, industrialization again accelerated, especially in the nontraditional sectors, with the establishment of new industries for the production of basic raw materials (mainly cement and steel) and machinery and equipment.

<sup>13</sup> S. J. Stein, *The Brazilian Cotton Manufacture: Textile Enterprise in an Underdeveloped Area, 1850-1950* (Cambridge: Harvard University Press, 1957), p. 128.

<sup>14</sup> Decree 19 739 of 7 March 1931, later extended until 1937, prohibited the importation of equipment for industries believed to be overproducing.

## F.4 — The industrial surge of 1933-1939

The maintenance of certain economically questionable measures may not have impeded the industrial surge in the country, and consequently in the state of São Paulo, but they did lead to a type of unbalanced development. These measures included: the prohibition on the importation of machinery and equipment for the establishment of new firms in certain industrial sectors; the tariff reform of 1934; and the successive changes in exchange-rate policy which culminated in the Banco do Brasil being granted an exchange monopoly in December 1937,<sup>16</sup> and thereby made it more difficult to import nonpriority items. In addition, the terms of trade continued to deteriorate. As a result, some industries were able to develop by modernizing and increasing their productive capacity (cement, metallurgy, machinery and equipment,<sup>16</sup> electrical energy, etc.). But other sectors (mainly the textile industry) could only raise output through more intensive use of existing capacity, so plants and equipment were soon run down.<sup>17</sup>

Thus, by 1939 São Paulo had a much more diversified industrial base than it had had in 1920 (see table 93). Whereas in 1919 the traditional industries accounted for about 70% of the value added by manufacturing as a whole, by 1939 the share of such industries had fallen to 56.7%. While the traditional industries were still the most important in the state, a marked structural change had taken place: the dynamic industries (metallurgy, electrical equipment, transport equipment, and chemicals) had practically doubled their share in total production.

The indices of industrial growth suggest that, in 1933-1939, the pace of growth was more rapid in São Paulo (14%) than in the nation as a whole (11.2% over the same period).

Sectoral indices of the growth of physical output (table 90), though incomplete, serve to corroborate these affirmations. Over the period, the traditional industries developed the least, with the growth rates being 2.9% for food products, 6.5% for textiles, and 8.0% for clothing and footwear. An intermediate group of other traditional in-

<sup>16</sup> Banco do Brasil, *Relatório*, 1938, p. 15.

<sup>16</sup> In 1935, São Paulo was already producing machines for processing coffee, rice and cotton; other farm equipment such as cultivators and seeders; equipment for the control of insects; high-compression cotton balers; paper presses; machines and boilers to provide horsepower; metallurgical equipment; and equipment for the sugar industry and other activities. SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo*, 1935.

<sup>17</sup> This aspect will be treated in more detail when the performance of the textile industry during the period is highlighted.

Table 93

*State of São Paulo: Sectoral Composition of the Manufacturing Industries, 1919 and 1939*  
(% of Total Value Added)

Sector	1919	1939
Nonmetallic Minerals	8.7	5.6
Metallurgy	{ 6.3	{ 6.4
Machinery		
Electrical Equipment	2.7	10.7
Transport Equipment	2.3	3.9
Wood	1.6	
Furniture	{ Included in	1.4
Paper and Cardboard		.6
Rubber	1.8	1.3
Leather Products	7.6	10.4
Chemicals, Pharmaceuticals, and Perfumes	32.8	28.0
Textiles	10.1	5.3
Clothing and Footwear	{ 25.4	15.7
Food Products		6.1
Beverages and Tobacco	.6	3.3
Printing and Publishing	.1	1.3
Others		

Source: Primary data from IBGE, *Censo Industrial*, 1920 and 1940.

dustries, of lesser importance with respect to their share in state-wide value added, recorded higher rates of output growth; examples are beverages (17.9%), tobacco (18.2%), furniture (13.1%), wood (10.5%), paper and cardboard (7.3%), and leather products (18.4%). At the same time, the basic industries expanded at much higher rates. In this seven-year period, the metallurgical industry grew 24% per year, chemicals and pharmaceuticals 29.9%, transport equipment (i.e. vehicle assembly) 39%, and nonmetallic minerals (mainly cement) 16.4%.

It is sufficiently clear, then, that it was this structural diversification that was chiefly responsible for the high rate of growth of the São Paulo manufacturing industries as a whole (14%). This diversification also generated external economies, which, in turn, attracted new industrial ventures.

The data in table 94, while not strictly comparable,<sup>18</sup> provide a general indication of the course taken by industry during the period 1933-1939. They reveal that the number of establishments and the amount of capital invested practically doubled, that the number of workers employed increased by almost 50%, and that installed horsepower doubled as well. This last fact points to the further use of capital-intensive techniques.

Table 94

*State of São Paulo: General Characteristics of the Manufacturing Industries, 1933-1939*

	1933 <sup>a</sup>	1937 <sup>a</sup>	1939
Number of Factories	6 555	9 051	12 850
Capital Invested (Contos de Réis)	1 906 482	3 460 452	4 679 371
Number of Workers	171 667	245 715	254 721
Installed Horsepower	212 108	279 573	432 650
Value of Production (Contos de Réis)	2 060 363	3 851 878	7 107 547

Source: SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo*, 1933 and 1937; IBGE, *Censo Industrial do Brasil*, 1940, pp. 232-33.

- <sup>a</sup> Excluding meat-packing plants, processing plants (coffee, cotton, flour, and farina) and sugar mills, but including power and heat distribution.

Industry was able to adopt more machinery in part due to the greater availability of electrical power. Between 1935 and 1939, installed electric-generating capacity rose 64.4%, that is, at an annual rate of 13.3%. By 1939, the hydroelectric plants in São Paulo accounted for 97% of the installed capacity in the state and for 57% of the national total. Comparative figures are again helpful: in 1930, 400 towns in the interior of the state were served by electrical energy, supplied by 83 firms employing 1.9 thousand workers and operating with an installed capacity of 385.9 thousand horsepower. In 1935, 434 localities were served by 87 firms with 10.5 thousand workers and an installed capacity of 470.5 thousand horsepower.<sup>19</sup>

<sup>18</sup> It should be noted that, for 1933 and 1937, the exclusion of rural establishments from the São Paulo statistics is partially offset by the inclusion of power and heating companies, which are not in the manufacturing sector and are not included in the data for 1939 (1940 census).

<sup>19</sup> SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo*, 1930 and 1935.

Foreign capital helped provide this electricity in the thirties. By 1939-1945, foreign companies, through their two major subsidiaries, Rio Light and Empresas Elétricas Brasileiras, accounted for about 88% of total installed capacity in the state.<sup>20</sup> Foreign capital was also important in the following industries: meat packing, cement, metallurgy, electrical equipment, and transportation.<sup>21</sup>

Immigrants, particularly Italians, played an important role in the formation of the São Paulo entrepreneurial class. Between November 1940 and March 1941, almost 33% of the owners of industrial firms, responsible for 42.3% of invested capital, were of foreign origin. Italians and Portuguese predominated, together representing 18.1% of the owners and 14.3% of the invested capital (table 95).

Table 95

*São Paulo Industry: Distribution of Invested Capital and Number of Owners by Nationality*  
(November 1940 — March 1941)

Country of Origin	Number of Owners	%	Invested Capital (Contos de Réis)	%
Brazil	8 426	67.4	503 699	57.7
Italy	1 654	13.2	102 562	11.8
Portugal	611	4.9	22 059	2.5
Germany	311	2.5	13 684	1.6
Spain	301	2.4	9 837	1.1
Syria	216	1.7	12 431	1.4
Lebanon	202	1.6	21 290	2.4
Japan	150	1.2	6 965	.8
Poland	70	.6	1 561	.2
Argentina	49	.4	3 421	.4
Others	517	4.1	175 353	20.1
<b>Total</b>	<b>12 507</b>	<b>100</b>	<b>872 862</b>	<b>100</b>

Source: SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo, 1938-1939*, pp. 362-63.

<sup>20</sup> N. W. Sodré, "História da Indústria em São Paulo," *Observador Econômico e Financeiro*, Ano 12, n.º 144 (January 1948): 85.

<sup>21</sup> General Motors Overseas Operations, *Economic Survey of Brazil* (São Paulo, 1943), vol. 2.

Finally, industry in São Paulo utilized predominantly domestic raw materials.<sup>22</sup> In 1937, only cotton produced in the country was used in weaving, and 80% of this cotton came from São Paulo itself.<sup>23</sup> Likewise, the wool used in manufacturing was almost entirely of national origin (only 2.5% of the raw wool and 28.9% of the spun wool was imported). On the other hand, jute was imported in substantial quantities, and the Brazilian weavers of silk cloth depended heavily on natural and synthetic silk thread imports (80.0% and 13.8%, respectively).

Other industries used raw materials that were produced entirely in Brazil. Among these, the following might be cited: wood, leather products, nonmetallic minerals (an exception was marble cutting, in which imported stone accounted for 62% of all stone used), and food products (though most wheat was imported). In the metallurgical sector, 98% of the pig iron used was of Brazilian origin. With regard to other metals, the relative dependence on imports must have been greater, but the statistical basis for conclusions is weak.

Imported raw materials were also of little importance in the tobacco (less than 1% of the leaves were imported), beverage, clothing (slightly more than 5% of the material used was imported), and rubber industries.

However, in the paper and cardboard sector, as well as in printing, imported pulp and paper comprised an important part of the inputs needed.

In general, therefore, the major industries used domestic raw materials, largely from the state of São Paulo itself. This was especially true of intermediate manufactured inputs.

## F.5 — The situation of industry in 1939

The industrial census of 1940 reveals the state of São Paulo to have been the principal industrial center of the country. At that time, the state contained 28.8% of all industrial establishments, employed 34.9% of industrial workers, and accounted for 37.4% of installed horsepower. It also contributed 39.3% of the value added by Brazilian industry.

Despite the high rates of growth achieved by nontraditional industries from 1933 to 1939, the traditional sectors, especially tex-

<sup>22</sup> SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo*, 1930 and 1935.

<sup>23</sup> In the 1930s, the growth of cotton production indirectly contributed to the industrialization of São Paulo, because cotton replaced coffee as the state's principal source of agricultural income, and thus prevented a larger drop therein. Agriculture, in turn, provided a market for the state's industry.



tiles, still accounted for most of the value added by São Paulo industry in 1939.

The growing concentration of industry in São Paulo is shown in table 96, which reveals that, in 1939, 40.9% of the value added by the manufacturing industries was generated in São Paulo. The corresponding figure for 1919 was 35.3%. It should be emphasized, however, that fully 78% of the value added by the so-called dynamic industries (i.e. machinery, electrical equipment, and transport equipment) was generated in São Paulo. The textile industry, the most important in the country, produced 51.6% of its value added in the state.

Table 96

*State of São Paulo: Share in National Value Added by Sector, 1919 and 1939*

Sector	1919	1939
Mining	...	13.1
Manufacturing	35.3	40.9
Nonmetallic Minerals	54.5	43.8
Metallurgy	50.0	34.7
Machinery, Electrical Equipment, and Transport Equipment	47.9	78.0
Wood and Furniture	19.9	30.3
Paper and Cardboard	...	39.6
Rubber	...	35.0
Leather Products	32.2	29.8
Chemicals and Pharmaceuticals	55.2	43.5
Textiles	39.2	51.6
Clothing and Footwear	40.9	43.9
Food Products	28.2	26.4
Beverages and Tobacco		37.4
Printing and Publishing	50.8	37.5
Others	1.1	49.6
Construction	...	17.1
Public Utilities	...	55.7

Source: IBGE, *Censo Industrial*, 1920 and 1940.

The textile sector, after seven years of severe restrictions on the importation of machinery and equipment (1931-1937), entered 1939 with equipment worn down by intensive utilization. The 1940 census shows that about half the machines were of unknown age (i.e. were much older than 10 years), while 42.1% were at least 10 years old. Thus, 91.7% of the machines were entirely depreciated according to normal accounting standards.

The situation was especially critical for cotton weaving (97.1% of the machines were over 10 years old or of unknown age), wool weaving (87%), and jute weaving (90.6%). Fortunately, this pattern was not repeated in other sectors. Even so, in 1939, 74.6% of all industrial machinery was more than 10 years old or of unknown age. 14.1% was between five and 10 years old, while the remaining 11.3% was less than five years old.

Thus, a prime need of São Paulo manufacturers at the time was to renovate the industrial park so that industrialization could continue.<sup>24</sup> However, the outbreak of World War II and wartime hostilities overshadowed the problems of low productivity and high production costs. Among the São Paulo industries, textile production would soon enter a golden age, conquering export markets abandoned by the nations at war.

## F.6 — São Paulo industry during World War II, 1939-1945

The performance of São Paulo industry in the war years can be evaluated with the aid of table 97.<sup>25</sup> Two distinct periods can immediately be distinguished: one extending from 1939 to 1943, in which industrial production expanded at an annual rate of 7.8%; and a second lasting from 1943 to 1945, during which a decline of 4.3% per year in the physical product of industry was registered.

These two periods coincide with those observed in the textile industry, in which production expanded at an annual rate of 15.9% between 1939 and 1943, when national fabrics were easily placed on foreign markets despite their high prices. The abuses committed by some firms, such as overcharging and shipping merchandise inferior to that promised, as well as the high prices, led foreign buyers to return to traditional sources once the war difficulties eased. As a result, the production of the Brazilian textile industry, and

<sup>24</sup> SAICSP/DEIC, *Estatística Industrial do Estado de São Paulo, 1938-1939*, pp. v-xxvii; "Alguns Aspectos da Indústria Paulista em 1941," *Boletim do Departamento de Estatística*, n.º 1 (1945): 145-246; "Análise Comparativa entre a Indústria Norte-Americana de 1937 e a Indústria Paulista de 1942," *Boletim do Departamento Estadual de Estatística*, n.º 3 (1946): 97-186.

<sup>25</sup> Although only five industries are listed, these accounted for 66% of the industry of the state in 1939. Only the index of the chemical industry requires qualification, since it represents only vegetable oils and a few chemical products.

Table 97

*State of São Paulo: Annual Rates of Growth of Industrial Production by Principal Sector, 1939-1945*

(1935 = 100)

(%)

Sector	1939-1943	1943-1945	1939-1945
Manufacturing	7.8	- 4.2	3.6
Nonmetallic Minerals	- 1.4	5.3	.8
Metallurgy	3.3	13.1	6.4
Chemicals	4.5	3.5	4.2
Textiles	15.9	-17.8	3.3
Food Products	2.9	- .4	1.8

Source: Table 90.

particularly that of São Paulo, began to decline from 1943 on, with consequent adverse effects on industry as a whole.<sup>26</sup>

On the other hand, the output of the São Paulo metallurgical industry grew continually by filling the gaps created by import restrictions. Its annual rate of growth, 6.5%, was higher than that of industry as a whole. At the same time, nonmetallic minerals (cement) practically stagnated, and food products barely kept pace with the 2.2% annual growth rate of the population. With regard to the chemical industry, production oscillated considerably during the period, but rose appreciably relative to the level attained in 1939.

Doubtless, the principal factor that kept São Paulo industry from maintaining the high rates of growth registered from 1933 to 1939 was the shortage of essential raw materials and fuels due to import difficulties during the war. The metallurgical and electrical-materials sectors were hurt by the shortage of copper. The ceramic manufacturers were shut down by the lack of fuel, the rationing of which also caused transport problems and thereby affected the rest of the economy.<sup>27</sup>

<sup>26</sup> It is important to point out that the index of industrial output is considerably less accurate for São Paulo than for the country as a whole, especially during the war years. This explains why the index for Brazil rose appreciably faster than that for São Paulo (5.4% versus 3.7% per year).

<sup>27</sup> In this regard, see H. Dantas, "As Indústrias Paulistas," *Observador Econômico e Financeiro*, Ano 8, n.º 98 (January 1944): 33-44.

## F.7 – Conclusion

The preceding analysis shows that the industrialization of São Paulo truly began only in the thirties. Up to the Depression, the output of the state consisted almost entirely of consumer goods, mainly textiles and foodstuffs. The production of such goods was raised to meet the demands of a rapidly expanding population whose growth was due, above all, to internal migration and foreign immigration.

However, the Depression having ended, the number of factories doubled within a few years and the number of workers employed rose by 50%. The factors that made this industrial surge possible included: an entrepreneurial class and skilled labor force formed by European immigrants; availability of capital; a rapid increase in installed power capacity; a reasonably well-developed transportation network constructed during the coffee era; and a market that was large in comparison to those in other regions. Thus, the state of São Paulo became the largest industrial center in Brazil, and perhaps the largest in Latin America.

During World War II, the economic growth of the state slowed down, except in the textile sector. The textile manufacturers enjoyed their heyday, conquering markets left open by the nations at war and seeing their products stand out on the Brazilian export list.

After the war, the São Paulo manufacturers once again turned to the domestic market, and industry grew at a steady pace.

# G

## Electric energy

In the early years of the Republic, electric-generating capacity was minimal at less than one thousand kilowatts, as shown in table 98. Although generating capacity had grown steadily throughout the 1890s, it was only at the beginning of this century that an installed capacity greater than 100 megawatts was attained. Particularly notable is the growth in the period 1907-1914, during which installed capacity increased 5.7 times. Growth in the 1920s was also rapid, installed capacity rising to 393 megawatts by 1929, or more than double the figure for 1920.

The immense hydroelectric potential of the country began to be tapped, and by 1901 such sources had come to account for 87% of the power generated. Use of this potential was essential, given the fact that the country was poor in reserves of fossil fuels, principally coal, which had to be imported. An estimate of the hydroelectric potential of Brazil today is presented in table 99. This estimated potential ranks among the highest in the world. The importance of the Center-South and South is to be noted.

The existence of this hydroelectrical potential led to a great concentration of installed capacity in the states of Rio de Janeiro (including the former Distrito Federal) and São Paulo, as can be seen in table 100 below. From 1920 to 1945, this area accounted for an average of 68% of the installed capacity in Brazil. This helps explain the industrial development of the region, where productive capacity in manufacturing was likewise concentrated.

In the 1920s, available electric power grew slightly faster than demand, and this stimulated industrial and urban growth. The massive growth of the power industry during this period was mainly due to the efforts of two foreign firms, which were to provide

Table 98

*Brazil: Installed Power-Generating Capacity, 1883-1945*

Year	Installed Capacity (Mw)		Total
	Thermal	Hydroelectric	
1883	.052	—	.052
1884	.080	—	.080
1885	.080	—	.080
1886	.080	—	.080
1887	.240	—	.240
1888	.400	—	.400
1889	.500	.250	.750
1890	1.017	.250	1.267
1891	1.017	.250	1.267
1892	3.034	.375	3.409
1893	3.034	.636	3.670
1894	3.293	1.285	4.578
1895	3.843	1.991	5.834
1896	4.083	3.592	7.675
1897	4.083	3.652	7.735
1898	4.083	4.049	8.132
1899	4.183	4.509	8.692
1900	5.093	5.283	10.376
1901	4.918	32.662	37.580
1902	4.663	33.585	38.253
1903	4.823	34.421	39.249
1904	5.094	34.442	39.536
1905	6.676	38.260	44.936
1906	8.646	40.375	49.021
1907	9.286	43.851	53.137
1908	11.986	89.773	101.759
1909	13.050	103.034	116.084
1910	32.729	124.672	157.401
1911	35.424	131.945	167.369
1912	43.933	180.018	223.951
1913	49.370	194.859	244.229
1914	50.423	253.015	303.438
1915	51.106	258.692	309.798
1916	52.657	260.436	313.093
1917	53.120	266.413	319.533
1918	55.274	271.673	326.947
1919	62.642	278.394	341.036
1920	66.072	300.946	367.018
1921	66.206	305.109	371.315
1922	68.806	313.588	382.394
1923	75.017	320.656	395.673
1924	78.862	387.031	465.894
1925	90.608	416.875	507.483
1926	102.660	489.282	591.942

(continued)

(continuation)

Year	Installed Capacity (Mw)		Total
	Thermal	Hydroelectric	
1927	110.732	539.108	649.840
1928	130.829	576.607	707.436
1929	138.559	621.747	760.336
1930	148.752	630.050	778.802
1931	153.325	646.086	799.411
1932	155.926	649.518	805.444
1933	159.301	658.316	817.617
1934	163.349	665.307	828.656
1935	173.430	676.699	850.129
1936	179.255	745.726	924.981
1937	192.381	754.629	947.010
1938	214.743	946.917	1.161.660
1939	224.060	951.976	1.176.036
1940	234.531	1.099.346	1.243.877
1941	242.243	1.019.015	1.261.258
1942	247.022	1.060.646	1.307.668
1943	248.275	1.067.163	1.315.438
1944	257.239	1.076.969	1.334.208
1945	261.806	1.079.827	1.341.633

Source: Conselho Nacional de Águas e Energia Elétrica (CNAEE).

Table 99

*Brazil: Hydraulic Potential*

Region	Potential (Mw)
North	5 480.1
Northeast	12 025.4
Center-South	30 978.9
South	27 200.1
Center-West	3 674.8
Total	79 359.3

Source: Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Brasil*, 1971, p. 34.

Note: The data were not sufficiently disaggregated to permit a breakdown of capacity according to the economic nature of the various regions. The above regions correspond to physiographic zones.

Table 100

*Brazil: Growth of Power-Generating Capacity, 1920-1945*  
(Mw)

Region	1920	1930	1940	1945
North	5.7	10.0	15.7	16.0
Northeast	16.9	56.7	91.9	101.6
Bahia-Sergipe	22.4	26.1	31.0	31.7
Espírito Santo	4.0	8.3	9.0	9.0
Minas Gerais	42.5	90.7	144.6	158.7
Rio de Janeiro-DF	100.4	193.6	279.3	317.6
São Paulo	150.7	331.2	564.7	576.8
Paraná	7.1	10.1	17.8	23.4
Santa Catarina	7.3	9.3	16.7	19.7
Rio Grande do Sul	9.5	40.2	65.7	78.4
Center-West	.7	2.6	7.4	8.7
Brazil	367.2	778.8	1 243.8	1 341.6

Source: CNAEE.

about two-thirds of the country's electricity until the early 1950s.<sup>1</sup> These two firms were the Brazilian Traction, Light, and Power Co. (Canadian) and Empresas Elétricas Brasileiras (American). The first-named firm served the former Distrito Federal, the upper Vale do Paraíba, greater São Paulo, and the port of Santos. Empresas Elétricas Brasileiras served Porto Alegre, Curitiba, large sections in the north and west of the state of São Paulo, Niterói, Petrópolis, Belo Horizonte, Salvador, Maceió, Recife, João Pessoa and Natal.

The Canadian firm was able to obtain capital for the undertakings in the period 1900-1930 from the European capital market, especially from English investors. The American firm, on the other hand, drew on U.S. investors in the 1920s.

These foreign firms provided not only the capital necessary for the construction of hydroelectric plants, but the technical know-how as well. In so doing they educated a team of competent Brazilian engineers, who were later to demonstrate their ability to both plan and construct hydroelectric installations.

<sup>1</sup> Comissão Mista Brasil - Estados Unidos para o Desenvolvimento Econômico, *Relatório Geral* (Rio de Janeiro, 1954), 1: 241-81.



Before the enactment of the water code (Código de Águas) in 1934,<sup>2</sup> electricity rates were set by a complicated system designed to protect the concession-holders from possible losses on their investments due to changes in the exchange rate. Rates were changed on a monthly basis, and when depreciation was rapid, they often rose so fast that sales, in kilowatt terms, declined. The water code abolished this system (known as the "gold-clause") and established a new procedure in which profits were limited to a 10% return on investment, and capital was valued at its purchase price for the purpose of determining the rate of return.

The water code was designed to regulate the setting of electricity rates, organize studies of the hydroelectric potential of the country, and control the granting of franchises. It also called for reexamination of contracts already granted. In sum, it was a broad-ranging mandate for the control of the generation and distribution of electricity. In 1939, the national water and electric-energy council (Conselho Nacional de Águas e Energia Elétrica) was created to administer the water code.

From 1934 to the outbreak of World War II, it was difficult to obtain a franchise to produce and distribute electricity. In addition, companies were prohibited from increasing their installed capacity in different regions as existing concessions were reexamined. By 1940, however, it was apparent that reviewing the existing contracts was extremely difficult, and to avoid further delays, firms already in business were given permission to increase their capacity. Nonetheless, wartime hostilities and priorities made it hard to order the necessary equipment, and little was done immediately to expand facilities.

As might have been expected, the provision in the water code for the valuation of capital based on purchase price (rather than replacement cost) resulted in some decapitalization of power firms as inflation continued in Brazil. This provision also discouraged new investments in the industry. This situation, which lasted until the sixties, led the government to devise all sorts of expedients, including taxes and surcharges on electricity to obtain investment funds. It also led to the creation of mixed enterprises on both the state and the federal levels. This was necessary because the low profits in electricity failed to attract private investors, whether foreign or Brazilian.

On a per capita basis, installed capacity grew from .09 watts in 1890 to 29.0 watts in 1945. Growth was not evenly distributed

<sup>2</sup> Decree-Law 24 623 of 10 July 1934.

throughout the country, as can be seen from table 100 and from the following data:

Table 101  
*Installed Electric Capacity, 1920 and 1945*  
(Watts per Inhabitant)

Region	1920	1945
North	4.0	9.6
Northeast	2.3	9.1
Bahia-Sergipe	5.9	6.4
Rio de Janeiro-DF	36.9	78.4
São Paulo	32.8	71.6
Center-West	.9	6.2
Brazil	12.0	29.0

Note: Unadjusted population figures were used to calculate the data for 1920.

Prior to 1930, little was done to interconnect the plants of the major companies. In fact, this has only been done recently in regions served by Rio Light and Empresas Elétricas Brasileiras. When the first small generators were installed, techniques for transmitting electricity over long distances were still in the developmental stage, so companies purchased equipment only on the basis of relative machine prices and the size of the local market. When low-cost methods of transmission were made available, the diversity of the equipment in operation made interconnection difficult.

Another interesting development in the power industry was the increase in the intensity with which installed capacity was used during the period 1935-1945, when companies were temporarily forbidden to build new plants until existing contracts were reviewed (see above). Despite an increase of only 26% in installed capacity per capita, the production of electricity per capita rose 70% from 1935 to 1945 (see table 102).

Table 102

*Installed Capacity and Production of Electricity,  
Total and Per Capita, 1935-1945*

Year	Installed Capacity (M)	Production of Electricity (10 <sup>6</sup> Kwh)	Watts per Capita	Kwh per Capita
1935	850	2 318	23	62
1940	1 244	3 188	30	77
1945	1 341	4 914	29	106

Source: CNAEE.



# H Transport

## H.1 — Introduction

The continental dimensions and poor transportation network of Brazil hindered the formation of a national market during the period 1889-1945. Economically speaking, the country was still a string of semi-independent islands, each at a different level of development, at the end of World War II.

The earliest means of travel between regions was coastal navigation. Ports were linked to inland areas by rivers and crude roads. By the end of the Empire, railroads had become the second most important mode of transportation, following coastal shipping. In the first part of the twentieth century, the introduction of automobiles induced much highway construction, especially after 1930. Highways were rapidly expanded, while the railroads were neglected due to the difficulties in connecting regional systems. Air transportation did not account for a significant proportion of the movement of goods and passengers until after World War II, though from its earliest days it did provide vital links between the far-flung reaches of the country.

## H.2 — Ship transport

### H.2.1 — Maritime transport<sup>1</sup>

Two factors resulted in maritime transport becoming the main, and sometimes the only means of transportation between major economic

<sup>1</sup> Statistics and bibliography on maritime transport in Brazil prior to 1945 are relatively scarce. The best data on coastwise navigation are found in Instituto Brasileiro de Geografia e Estatística (IBGE), *Brasil em Números* (Rio de Janeiro, 1960), pp. 94-101. The main studies are: (1) Serviço dos

centers in Brazil. First, the country is endowed with an extensive coastline dotted with good harbors. Second, the geography of Brazil makes interregional communication by river or by highway difficult. The mountain ranges of the Serra do Mar and the Serra da Mantiqueira effectively isolated the narrow coastal plains from the interior, and few rivers (with the exception of the Amazon and the São Francisco and their tributaries) offer easy access to the interior of the country. And in many cases, mountain ranges come right down to the sea, making intercoastal land transport more difficult. These geographical features were also responsible, in part, for most Brazilian economic activity being concentrated along the coast.

Three aspects of coastal shipping, the only transportation network worthy of the name (at least up to World War II), will be discussed herein: (a) the ports, (b) the ships, and (c) the traffic carried.

Although the opening of Brazilian ports to ships of all flags in 1808 can be seen as the cornerstone of harbor legislation in Brazil, virtually nothing was done to improve the ports during the period of colonial rule or during the Empire. The first studies of conditions in Brazilian ports were carried out in 1851-1852, when the establishment of regular runs between Brazil and England and along the Amazon River led to interest in improving docking facilities.<sup>2</sup> However, measures to stimulate construction of such facilities were not taken until 1869, when the imperial government enacted legislation providing for surcharges on harbor traffic to finance improvements (Law 1746 of 13 October, 1869). Private firms were to do the work and receive the surcharges as a return on their investments.<sup>3</sup>

While several firms obtained franchises to carry out such work, none actually did anything until the government strengthened the incentives by guaranteeing returns on investments and repayment of the principal (budget law of 1887). Revenues were obtained by creating special *ad valorem* tariffs on imports and exports. Even

Países S.A. in collaboration with the Departamento Nacional de Portos, Rios e Canais, *Os Portos Brasileiros: Sua Evolução, Características e Movimento Comercial* (São Paulo: IPSIS S.A., 1949); (2) Comissão Mista Brasil-Estados Unidos para o Desenvolvimento (CMBEU), *Projetos Transportes* (Rio de Janeiro, 1953), vols. 8 and 9; and (3) M. M. F. Silva, *Geografia dos Transportes no Brasil* (Rio de Janeiro: IBGE, 1949), pp. 167-86.

<sup>2</sup> Serviço dos Países, *Os Portos Brasileiros*, p. 6.

<sup>3</sup> *Ibid.*, p. 7.

these guarantees, however, called forth little response. Only Santos and Manaus were benefited; the first sections of new docks were inaugurated in 1892 in Santos and in 1903 in Manaus.

At the beginning of the twentieth century, only three ports had improved docking facilities: Rio de Janeiro, Santos and Manaus. It was at this time that a plan was drawn up to improve the ports on a large scale using capital obtained abroad.<sup>4</sup> This plan was part of a general public-works program adopted at the time. Interest and amortization payments on the loans contracted were to be repaid out of taxes levied on traffic in the ports that were improved. The budget law of 1903 (Law 957 of 30 December 1902) authorized the government to borrow the necessary funds and "to organize the investment of the funds in the manner deemed most convenient".<sup>5</sup>

The following loans<sup>6</sup> were the most significant obtained under this authorization: (1) £ 8.5 million in 1903, (2) 40 million French gold francs in 1909, (3) £ 4.5 million in 1911, and (4) £ 11 million in 1913. The capital thus made available was invested in port improvements in Rio de Janeiro, Recife, Paranaguá, and Corumbá. At first, this capital was allocated among the funds set up for each port. When it became evident that the smaller ports would not be able to pay off their debt under this system, a single special ports fund (the Caixa Especial de Portos) was created, and all capital obtained abroad was deposited therein.<sup>7</sup>

At the same time, a 2% *ad valorem* tax on imports, to be levied in gold on the basis of the official price of merchandise, was enacted and used, along with other customs receipts, to guarantee the loans. The 2% tax and other customs receipts comprised the main sources of revenue for the special ports fund. The fund was terminated in 1923, but during its existence many major Brazilian

<sup>4</sup> Francisco Bicalho, one of a group of Brazilian engineers specially trained in water works at the end of the nineteenth century, was the architect of this plan. He and many of his companions were students at the Escola Politécnica in Rio de Janeiro, where a special course on seaports was offered beginning in 1874. Serviço dos Países, *Os Portos Brasileiros*, p. 7.

<sup>5</sup> *Ibid.*, p. 9.

<sup>6</sup> V. F. Bouças, *História da Dívida Externa*, 2d ed. (Rio de Janeiro: Edições Financeiras, S.A., 1950), pp. 205-39.

<sup>7</sup> Serviço dos Países, *Os Portos Brasileiros*, pp. 9-10.

ports were built. By the beginning of the 1930s, construction had been finished at the following: <sup>8</sup>

Year	Port	Administrative Responsibility
1892	Santos	Private Concessionaire
1903	Manaus	Private Concessionaire
1908	Belém	Federal Government
1910	Rio de Janeiro	Federal Government
1914	Salvador	Private Concessionaire
1918	Recife	State of Pernambuco
1919	Rio Grande	State of Rio Grande do Sul
1921	Porto Alegre	State of Rio Grande do Sul
1925	Ilhéus	Private Concessionaire
1930	Niterói	State of Rio de Janeiro
1932	Natal	Federal Government
1934	Angra dos Reis	State of Rio de Janeiro

However, as these ports were being built, world shipping was undergoing profound changes. Faster and more expensive ships demanded efficient unloading facilities so as to reduce the time they spent in port. In order to finance further improvements, various decree-laws were adopted in 1934: (1) the 2% warehousing tax on imports was substituted by a 10% surcharge on tariffs, (2) the responsibilities of the various ministries vis-à-vis the ports were defined, and (3) fees for harbor services were standardized. <sup>9</sup>

From 1935 until the close of World War II, construction of new port facilities was undertaken and completed as indicated in the following list: <sup>10</sup>

Year	Port	Administrative Responsibility
1935	Cabedelo	State of Paraíba
1935	Paranaguá	State of Paraná
1940	Pelotas	State of Rio Grande do Sul
1940	Vitória	State of Espírito Santo
1942	Maceió	State of Alagoas
1943	Imbituba	Private Concessionaire
1943	Laguna	Federal Government

<sup>8</sup> IBGE, *Anuário Estatístico do Brasil*, 1938, p. 255.

<sup>9</sup> CMBEU, *Projetos Transportes*, 8: 67-68; Serviço dos Países, *Os Portos Brasileiros*, pp. 10-11.

<sup>10</sup> Serviço dos Países, *Os Portos Brasileiros*, pp. 12-13.



Once the war was over, the federal government found it necessary to further improve and equip the ports. Accordingly, a special tax, called the "emergency tax", was levied on traffic, in all ports, and the revenues used to buy new equipment and pay for additional construction (Decree-Law 8 311 of 6 December 1945).

Yet, despite all these investments, Brazilian ports remained by and large inadequate to satisfy the demands placed upon them. In many cases, docks had been extended only slightly. Modern cargo-handling equipment had not been purchased. The result was frequent delays in loading and unloading cargo in the busiest ports, such as Santos and Rio de Janeiro.

Around half of all the cargo carried by coastwise shipping up to the end of World War II was carried by two large firms (Companhia Lloyd Brasileiro and Companhia de Navegação Costeira). A large number of small firms accounted for the rest of the traffic. Most of the firms in which the government had an interest were always in the red. They used obsolete vessels that burned either coal or oil to power steam engines. These ships used seven or eight times as much fuel as more modern vessels of the same capacity.<sup>11</sup>

While some private firms were able to obtain large profits, the industry had many problems. Tonnagewise, about 25% of the shipping used was more than 40 years old, and about 54% of the ships weighed less than 1 500 dwt. This meant it was difficult to earn a profit, and service was very inefficient.

Despite the poor condition of the ships used and the slow pace of port construction, the volume of coastal traffic increased steadily, especially after 1930, when the progress in import substitution made it necessary to ship goods between regions in greater quantities. The data in table 103 attest that the amount of coastwise traffic doubled from the early 1920s to the period 1934-1939, and almost tripled during World War II, again compared to the 1920s.

The following observations, taken from the study of a joint U.S.—Brazilian commission for economic development,<sup>12</sup> serve to place the level of traffic attained by the end of the forties in perspective, relative to the growth of the domestic economy:

(a) In 1949, about 45% of all interstate freight was carried by coastal shipping.

(b) In the same year, coastal shipping carried traffic equal to that transported by the railroad system (8 billion ton-kilometers).

<sup>11</sup> CMBEU, *Projetos Transportes*, 9: 64-67.

<sup>12</sup> *Ibid.*, 9: 24-29. Detailed information was not available for earlier years.

Table 103

*Freight Carried by Coastwise Shipping, 1921-1945*  
(Annual Average in Each Period)

Period	1 000 Tons
1921-1923	1 190
1924-1929	1 781
1930-1933	1 697
1934-1939	2 442
1940-1945	3 124

Source: Instituto Brasileiro de Geografia e Estatística (IBGE), *Brasil em Números* (Rio de Janeiro, 1960), p. 94.

(c) Coastwise shipping carried between 74 and 99% of all interstate freight in eight states (six in the North or Northeast, and two in the South).

(d) Coastal shipping was the only means of transportation between the extreme North and South of the country.

(e) Most of the goods shipped between the Rio de Janeiro – São Paulo area and the southern and northeastern regions were carried by boat.

Most of the goods carried by coastwise shipping in Brazil are dense and have a low unit value. During the period under study, the three most important products, in terms of tonnage, were salt shipped from the Northeast to the South, coal from the South to the Center, and lumber. Next in descending order of importance were sugar, wheat flour, rice, manioc flour, wood manufactures, drinks, and goods made of iron and steel. By the end of the forties, raw materials accounted for about 53%, by weight, of all coastwise freight, foodstuffs for 36%, and manufactures for 11%. On the other hand, manufactures accounted for about 39% of the value of these goods, foodstuffs for 33%, and raw materials for only 28%.

## H.2.2 – River transport

Although Brazil is endowed with a more extensive network of rivers than any other comparable area of the globe, no concentrated effort has been made to adapt this network for transportation. Surely this has cost the country in terms of its economic develop-

ment, inasmuch as the experience of the United States and of many European countries has been that river transportation "should be developed in preference to any other means of transport",<sup>13</sup> provided there are rivers that are navigable for a good part of their course.

While rivers served the early explorers of the country as natural roads to the interior,<sup>14</sup> river navigation was carried out by very primitive methods during the first three centuries after Cabral's voyage. Small wooden boats moved by oars or poles, or occasionally by sail, were the only ships used. It was not until 1818, 10 years after Brazil's ports were opened to international commerce, that steamships were allowed to be used on the rivers (decree of 3 August 1818). Thereafter, progress was relatively rapid. The Amazon, Tocantins, Tapajós, Madeira, Negro, and São Francisco rivers were later opened to foreign ships. In 1853, the Visconde de Mauá was allowed to begin operation of a steamship line on the Amazon River from Belém to Manaus.<sup>15</sup> In 1866 the Companhia Fluvial do Alto Amazonas began operations on the Amazon, and in 1867 the Companhia Fluvial Paraense followed suit. Steamships began to ply the waters of other river basins, such as the São Francisco, around this time.

Despite this initial impulse, river navigation did not continue to grow at the same pace, and "was of little importance in the Empire or the first Republic".<sup>16</sup> A preference for rail and highway transportation — not economically justifiable in some areas — inhibited the development of the transportation potential of rivers. What work was done in the construction of dams and the dredging of waterways was undertaken in conjunction with hydroelectric or irrigation schemes. Since the building cost of a kilometer of canal is less than that of a kilometer of railroad,<sup>17</sup> and since the cost of transport per ton-kilometer is much lower by water than by any other means, it is surprising that Brazil did not take better advantage of her rivers.

### H. 3 — Land transport

Transportation by land was initially used only to complement ship transport and to help move goods from seaports to the interior,

<sup>13</sup> CMBEU, "Aproveitamento das Aquavias do Brasil," in *Projetos Diversos* (Rio de Janeiro, 1954), 14: 220.

<sup>14</sup> Silva, p. 156.

<sup>15</sup> *Ibid.*, p. 157.

<sup>16</sup> *Ibid.*

<sup>17</sup> CMBEU, "Aproveitamento das Aquavias," p. 223.

and vice versa. At first, pack animals were employed to haul goods along trails. These trails were later widened, and carts were introduced. After steamships came into general use in the nineteenth century, however, it became necessary to reduce the time required to move merchandise between the interior and the coast. The first proposal to achieve this goal through the construction of a railroad came in 1835, but the development of a network of railroads did not begin until 1854. The last years of the Empire and the second decade of the Republic were periods of intensive railroad development. Thereafter, highway construction was given priority, as the automobile began to replace the train as the single most important means of land transport.

### H.3.1 — Railroads<sup>18</sup>

The historical growth of railroads, in terms of kilometers of track laid, is shown in table 104. From 1854 to 1872, growth was relatively slow. In the final years of the Empire, construction was speeded up, thanks in large part to foreign investment, especially by English investors, in the rail system. During the first two decades of the Republic, the pace slowed, then accelerated again from 1908 to 1914. Large amounts of capital were borrowed abroad to finance expansion. Purchases of machinery and supplies were greatly facilitated by the overvalued exchange rate then prevailing (due to the operation of the Caixa de Conversão). The foreign-trade crisis of 1912-1913, followed by the outbreak of World War I, brought this railroad boom to an end. The Depression of 1929-1933 further slowed the pace of railroad construction. A new surge took place from 1935 to 1938, as an attempt was made to connect the various regional networks, but this effort was hampered by the beginning of World War II, with its attendant shortages of fuel and equipment. In summary, railroad development was limited as of the late 1920s by the poor economic situation of the country, and as of the 1930s by the widespread turn to truck transportation and concomitant highway construction.

Only a few years after the invention of the steam locomotive, Brazil became one of the first countries to pass legislation designed to encourage railroad construction. Law 101 of 31 October 1835 outlined the procedure for granting franchises and authorized the extension of certain privileges (exemption from customs duties on imported machinery and materials, as well as a monopoly position

<sup>18</sup> This section relies heavily on the notes and statistical tables kindly provided the authors by Carlos M. Peláez of Vanderbilt University.

Table 104  
*Growth of the Railroad System, 1854-1945*  
 (Km)

Period	Track Laid by End of Period	Increase in Track Laid during Period	Annual Average Increase in Track Laid
1854-1872	932.2	932.2	49.1
1873-1888	9 320.9	8 388.7	524.2
1889-1907	17 605.2	8 284.3	436.0
1908-1914	26 062.3	8 437.1	1 208.1
1915-1928	31 851.2	5 788.9	413.5
1929-1934	33 106.4	1 255.2	209.2
1935-1938	34 206.6	2 355.4	588.9
1939-1945	35 280.0	1 073.4	153.3

Source: IBGE, *Anuário Estatístico do Brasil*, 1939-1940, p. 1 336, for data up to 1939; IBGE, *Brasil em Números*, p. 61, for data from 1939 to 1945.

for a period of 40 years) to firms that would undertake to build lines from the federal capital (then the city of Rio de Janeiro) to the capitals of the states of Minas Gerais, Rio Grande do Sul, and Bahia.<sup>19</sup>

Almost 20 years were to pass between the enactment of this legislation and the beginning of rail service. Some franchises were granted but never used. Potential investors were discouraged by the competition presented by a relatively well-developed shipping system, by the topography of the terrain over which the lines were to be built, and by the tropical climate.

The first railroad was not built until further incentives were extended to capitalists in the form of a guaranteed return on their investments (Law 641 of 1852).<sup>20</sup> This was the line, built by Mauá and inaugurated on 30 April 1854, from the port of Rio de Janeiro to Raiz da Serra de Petrópolis in the state of Rio de Janeiro. Shortly thereafter, in 1858, the first kilometers of track of the Pedro II Railroad (later called the Central do Brasil) were placed in

<sup>19</sup> For more on this, see O. F. de Carvalho, *Ensaio sobre a Problemática dos Transportes* (Rio de Janeiro: Ministério da Guerra, 1957), p. 233; CMBEU, "O Transporte Ferroviário no Brasil e Seus Problemas," in *Projetos Diversos*, 14: 182.

<sup>20</sup> Carvalho, p. 236; CMBEU, "O Transporte Ferroviário," p. 182.

service.<sup>21</sup> While the Petrópolis line was difficult to justify, in retrospect, from an economic point of view ("since it crossed swampy lands and ended in a relatively isolated mountainous area where there were few prospects for obtaining much traffic in the short run"),<sup>22</sup> the Central do Brasil was to become an important means of transportation to a rich agricultural region, especially the coffee plantations of the Vale do Paraíba.

The pace of railroad construction was too slow, however, so several states banded together to guarantee an additional 2% return on railroad investments (the imperial government guaranteed only a 5% return). This attracted foreign investors. Four railroads, with railheads in Recife, Bahia, Rio de Janeiro<sup>23</sup> and Santos,<sup>24</sup> were financed by British capitalists. These railroads ran through some of the most productive regions of the country, and provide perfect examples of the kind of lines that were to characterize the Brazilian system for a long time. They did not cover long distances, were not interconnected, and were built solely to carry produce from inland regions to market.

The Paraguayan War dampened railroad construction. But the heavy losses suffered during this war, due in part to the inadequacy of the transportation system, convinced the government that it should intensify its effort to develop the rail system. Accordingly, builders were offered new incentives. By Law 2450 of 24 September 1873, the imperial government raised the guaranteed return on railroad investments to 7%. Foreign capitalists were allowed to remit capital at the official exchange rate (27 pence per *mil-réis*), even though the market rate was 15% below this.<sup>25</sup> These new incentives induced a wave of railroad construction, and by the end of the Empire the amount of track in service had risen to 9.3 thousand kilometers (table 104).

The lucrative nature of the franchises led to political corruption, as was also the case in many other countries.<sup>26</sup> Franchises were often granted to persons with political influence, who then sold them to the highest bidder. The guaranteed return on

<sup>21</sup> Carvalho, p. 234; CMBEU, "O Transporte Ferroviário," p. 132.

<sup>22</sup> E. A. Zalduendo, *Las Inversiones Británicas para la Promoción y Desarrollo de Ferrocarriles en el Siglo XIX* (Buenos Aires: Instituto Torcuato di Tella, Centro de Investigaciones Económicas, 1969), 2: 10.

<sup>23</sup> The Central do Brasil, or Pedro II, was financed in large part by the London firm of E. Price. CMBEU, "O Transporte Ferroviário," p. 132.

<sup>24</sup> Zalduendo, p. 11.

<sup>25</sup> *Ibid.*, p. 17.

<sup>26</sup> *Ibid.*, p. 19.

investments also exerted a perverse effect, as railway builders were encouraged to neglect cost considerations in their choice of routes. Technically flawed and excessively long lines were built, with long-lasting effects on the price of rail service. This problem was ameliorated in 1878, when the government announced it would guarantee a 7% return only on cost figures submitted and approved prior to construction, and not on actual expenditures incurred. Even so, guaranteed returns continued to distort the allocation of resources until the beginning of the twentieth century, when they were suspended for most lines.<sup>27</sup>

In the early years of the Republic, railroad construction was deemphasized. In 1901, it was resolved that the government should expropriate several of the railroads which enjoyed guaranteed returns. These acquisitions were to be financed through a large foreign loan.<sup>28</sup> Calculations for the year 1887 give an idea of the size of government payments required to guarantee a 7% return on investments.<sup>29</sup> Invested capital totaled approximately £ 18 million, so interest on this would have amounted to £ 1.3 million, or close to 6% of total export earnings.<sup>30</sup>

The plan for public-works construction adopted in 1903, together with the capital obtained through new borrowing abroad, led to renewed expansion of the railways, particularly from 1908 to 1914, when large quantities of equipment, rails, and materials were imported. A third of the trackage in use at the outset of World War I was laid during this seven-year period, which may be taken as the golden age of Brazilian railroads. Thereafter and until the 1930s, the pace of railroad construction slackened, mostly due to the problems of the coffee sector and the slow growth of agriculture in general.

Railroad construction picked up again in 1934, when a national transport plan was drawn up, and it was proposed for the first time to integrate the country's system of land transportation. The poor coordination of the railroads was partly owing to the shifting nature of the principal export crops. The pattern was for regional rail systems to be built during the boom phase. These systems were

<sup>27</sup> At the end of the nineteenth century, almost 50% of the railroads enjoyed guaranteed returns. Zalduendo, p. 19.

<sup>28</sup> See app. D, "The Evolution of the External Debt."

<sup>29</sup> Zalduendo, p. 21.

<sup>30</sup> Some critics of the time argued that the government struck a bad bargain, since the monopoly rights of many companies were about to terminate, and the service on the loan obtained (£ 18 million) to expropriate these lines was about the same as the annual expenditures on interest guarantees.

typically designed solely to get the products to the major port(s) of the region, from whence they would be exported; no connections were established with other regional systems. If the export product began to decline in a given region, railroad revenues fell, and the company became unable to respond to new opportunities. The new plan was an attempt to integrate regional transport systems via the construction of new roads between the national capital and state capitals, between the different state capitals, and along the national borders. In all, 22 thousand kilometers of road were to be built, though it was not specified which sections were to be highway, which railway. Furthermore, the plan did not recommend immediate construction of all proposed roads, or discuss how the necessary funds should be raised.<sup>21</sup> These omissions crippled the plan from the outset, and from 1935 to 1938, only a little over one thousand kilometers of new roads were built. With the start of the Second World War, railroad construction was further slowed by difficulties in the form of equipment and fuel shortages.

A notable aspect of the evolution of Brazilian railroads was the gradual decline of private ownership. At first, government guarantees attracted many foreign investors, mainly English, to the industry. In 1870, four British firms, with assets of £ 6.2 million, owned 72% of all Brazilian track.<sup>22</sup> The evolution of British investment from 1870 to 1900 is shown below:

Table 105

*British Investments in Brazil, 1870-1900*

Year	£ Million		Railroad Investment as % of Total Investment
	Total Investment	Railroad Investment	
1870	—	6.2	—
1880	38.8	11.6	30.0
1890	68.6	26.0	38.0
1900	90.6	33.6	37.2

Source: E.A. Zalduendo, *Las Inversiones Británicas para la Promoción y Desarrollo de Ferrocarriles en el Siglo XIX* (Buenos Aires: Instituto Torcuato di Tella, Centro de Investigaciones Económicas, 1969), 2:22.

<sup>21</sup> M. M. F. Silva, *Pneu versus Trilho* (Rio de Janeiro: Departamento de Publicidade Técnica, 1937), p. 65; CMBEU, "O Transporte Ferroviário," pp. 135-36.

<sup>22</sup> Zalduendo, p. 21.



In 1901, the government suspended the system of guaranteed returns, thereby discouraging further direct foreign investment in Brazilian railroads. From 1901 until the outbreak of the First World War, railroad construction was financed mainly by the federal government, using capital obtained through foreign loans. The principal investments made and the sources of the capital were as follows: <sup>33</sup>

Year	Loan Obtained	Use Made of Funds
1908-1909	100 million paper francs	Itapurá-Corumbá Railroad
1910	100 million gold francs	Goiás Railroad
1911	60 million gold francs	Railroad construction in Bahia
1911-1912	£ 2.4 million	Ceará transportation network
1913	£ 13 million	Part of the Western Minas Gerais Railroad

The importance of French capital at this time is to be noted.

From this period on, Brazilian railroads became progressively government-owned. As can be seen from table 106, by 1929 only 51% of the railroad lines were run by private firms and only 33% of all track was the property of private interests. The share owned by federal and state governments climbed from 67% in 1929 to 94% in 1953.

Table 106

*Distribution of Administration and Ownership of Brazilian Railroads, 1929-1953*

(%)

Year	Federal		State		Private	
	Adminis- tration	Owner- ship	Adminis- tration	Owner- ship	Adminis- tration	Owner- ship
1929	20	60	20	7	51	33
1937	37	62	31	9	32	29
1945	41	68	31	0	28	23
1953	69	79	25	15	6	6

Source: Comissão Mista Brasil-Estados Unidos para o Desenvolvimento Econômico—CMBEU; "O Transporte Ferroviário no Brasil e seus Problemas," in *Estudos Diversos* (Rio de Janeiro, 1954), 14:23.

<sup>33</sup> Bouças, pp. 205-61.

This increase in government ownership was due not to expropriation and confiscation, but to the unprofitability of Brazilian railroads. Unfortunately, increased government administration rendered the railroads even less efficient.

The level of traffic carried by Brazilian railroads is portrayed by the statistics in table 107. The amount of merchandise carried (the principal source of revenue) practically doubled from 1916-1920 to 1925-1929, a period during which the production of export crops expanded on a large scale. During the Depression, traffic in goods dropped by a little more than 10%, reflecting the magnitude of the decline in real national product. From 1935 to 1939, the amount of merchandise carried rose considerably (by about one-third relative to the total freight carried in 1926-1929). Since agricultural output remained at Depression levels during this period, this increase was probably due to rapid industrialization, though there is no statistical evidence to support this hypothesis. Passenger traffic, the second most important source of revenue, experienced similar growth. The number of passengers carried increased by about four-and-a-half-fold over the period for which data are available.<sup>34</sup> Other kinds of traffic increased to a lesser extent.

As far as the profits of the railroads are concerned, there was a long-run tendency for profits to fall and deficits to rise, as can be seen from table 108. In 1907, of the 48 railroads owned, operated or enfranchised by the federal government, 20 of them (accounting for 21% of the track of the entire group) were operating in the red; in 1910, 21 (36% of the track) out of 51 ran a deficit. The Leopoldina, Central do Brasil, and Nordeste do Brasil railroads presented the largest losses.<sup>35</sup> Only in the 1920s, at the height of the export era, and during World War II, when they benefited from a temporary monopoly on land transport due to difficulties in importing gasoline and lubricants, did the railroads register higher profits.

The decline of administration by private firms aggravated the tendency of railroads to run a deficit. Frequent changes in management, administrative featherbedding, political pressures, and a reluctance to press for fare increases despite widespread inflation

<sup>34</sup> The ideal, of course, would be to measure growth of traffic in comparison to traffic carried by other means. Unfortunately, data for such a comparison are not available. It is interesting to note, however, that with reference to the traffic carried by all means, 3.5 times as many passengers and three times as much merchandise was transported per kilometer in 1940-1945 as in 1916-1920. IBGE, *Brasil em Números*, p. 62.

<sup>35</sup> *Jornal do Comércio* (JC), *Retrospecto Comercial*, 1911, pp. 61-63, and 1912, pp. 83-91.

Table 107

*Traffic Carried by Brazilian Railroads, 1907-1945*  
(Annual Averages)

Period	Passengers	Livestock	Baggage and Packages	Merchandise
	(Million/Km)	(Million/Km)	(Million Tons/Km)	(Million Tons/Km)
1907-1910 <sup>a</sup>	775.7	—	—	805.6
1916-1920	1 712.5	464.4	49.2	2 069.7
1921-1925	3 196.6	582.1	87.2	2 666.6
1926-1929	4 237.4	594.1	130.7	3 979.1
1930-1934	4 216.9	591.9	126.4	3 556.2
1935-1939	5 406.4	939.9	138.5	5 338.9
1940-1945	7 652.6	1 222.8	213.0	6 793.5

Source: Data for 1907-1910 come from the *Jornal do Comércio, Retrospecto Comercial*, 1911, pp. 61-63, and *Retrospecto Comercial*, 1912, pp. 83-91. All other figures are from IBGE, *Brasil em Números*, p. 61.

<sup>a</sup> This includes only railroads served or operated by the federal government, or operated under federal franchises.

Table 108

*Brazilian Railroad Finances, 1916-1945*

Period	Annual Average (1 000 Contos de Réis)		Ratio of Expenditures to Receipts (%)
	Receipts	Expenditures	
1916-1920	264.2	245.9	93.1
1921-1925	527.9	488.0	92.5
1926-1929	849.5	754.8	88.9
1930-1934	800.1	721.9	90.2
1935-1939	1 097.1	1 052.3	95.9
1940-1945	2 074.7	1 896.8	91.4

Source: IBGE, *Brasil em Números*, p. 61.

lowered the efficiency of the railroads run by the government. Even worse, the revenues of federal lines were used as general government accruals, rather than retained by the railroads that generated them.

As a consequence, there was no incentive for individual lines to increase their revenues.

Other reasons for the unprofitability of Brazilian railroads should be mentioned. First, firms were too small. In 1910, 45 of the 51 railroads owned by the federal government had trackage of less than 500 kilometers. These 45 railroads accounted for only 7.2 thousand kilometers, or 56% of the total track operated by all 51 federal railroads.<sup>36</sup> In 1952, 25 railroads (61% of all the firms) operated a combined trackage of only 3.7 thousand kilometers or 10% of all the track in service.

A second problem was the equipment used. Brazilian railroads were built with different gauges, and this plagued later attempts to integrate different lines.<sup>37</sup> To move passengers and freight along a route on which more than one gauge was employed, it was necessary to transfer all cargo from one train to another at the junction point. The broad range of equipment in service meant that large stocks of spare parts had to be maintained, and service often had to be discontinued temporarily when lengthy repairs were required. By 1930, most of the locomotives in service were old and obsolete. In this year, for example, only 16.7% of the locomotives belonging to the Central do Brasil, one of the largest railroads in the country, were less than 10 years old, and almost half had seen 20 to 40 years of service.<sup>38</sup> In 1949, at least 60% of all the locomotives in the country were more than 40 years old (or of unknown age), and 90% were steam engines.<sup>39</sup> In 1945, only 2.4% of all track in service was electrified. The run-down state of the equipment is partially explained by the impossibility of importing parts and engines during the war.

Finally, fuel costs and shortages limited the profits of the railroads, together with those of other sectors of the economy. As indicated in table 109, most of the fuel used by railroads in Brazil in 1945 was firewood, an inefficient means of obtaining energy and a source of rising costs, since the progressive exhaustion of supplies close to rail lines meant that additional transport costs had to be incurred. Furthermore, beginning in 1937, railroads were required

<sup>36</sup> JC, *Retrospecto Comercial*, 1912, pp. 83-91.

<sup>37</sup> The five gauges in use were of the following widths: 1.60 m, 1.00 m, .76 m, .66 m, and .60 m. 90.52% of all trackage was equipped with one-meter gauge, and only 6.33% with the widest gauge. Ministério da Viação e Obras Públicas, Departamento Nacional de Estradas de Ferro, *Estatística das Estradas de Ferro do Brasil*, 1945 (Rio de Janeiro, 1952), 47: 14.

<sup>38</sup> Estrada de Ferro Central do Brasil, *Relatório*, 1930, p. 287.

<sup>39</sup> CMBEU, "O Transporte Ferroviário," pp. 14 and 88.

to use a certain amount of domestic coal (also an inefficient source of energy). During World War II, when supplies of foreign coal were reduced, the consumption of domestic coal increased, and efficiency suffered even more.

Table 109

*Consumption of Fuels and Electricity by  
Brazilian Railroads, 1945*

Power Source	Quantity Used	Value (Contos de Réis)
Imported Coal	503 842 Tons	193 461
Domestic Coal	786 051 Tons	149 581
Firewood	6 257 819 Tons	300 475
Liquid Fuels	13 325 Tons	7 774
Other Fuels	2 840 Tons	254
Electricity	224 932 000 Kwh	215 964

Source: Ministério da Viação e Obras Públicas, Departamento Nacional de Estradas de Ferro (MVOP/DNEF), *Estatística das Estradas de Ferro do Brasil, 1945* (Rio de Janeiro, 1952), 47:18-19.

Due to the shifting character of export products, the railroads developed into independent regional systems. While some regions of Brazil had rather satisfactory railroad systems, others were virtually devoid of tracks, as a glance at table 110 reveals. In the North, railroads were designed to satisfy the needs of the cities and never expanded to any great length. In the Northeast, tracks were laid to service the sugar and tobacco plantations. In the East, they helped connect Rio de Janeiro and the productive regions of Minas Gerais and the Vale do Paraíba. In the state of São Paulo, railroads played an important role in incorporating new coffee regions, such as those in the Northwestern part of the state, and provided the vital link between the plantations and the port of Santos. São Paulo railroads were later extended to the South and helped develop the frontier state of Paraná. In the Center-West, railroads were used more for military than for economic purposes, and consequently tended to be located close to international borders.

In summary, railroads did not play as important a role in Brazilian development as they played in other countries.<sup>40</sup> They developed in response to short-lived spurts of regional economic

<sup>40</sup> Zalduendo, p. 31.

Table 110  
*Railroad Track in Service by Region,<sup>a</sup> 1945*  
 (Km)

Region	Track
North	742
Northeast	4 526
East	14 590
South	14 049
Center-West	1 373
Total	35 280

Source: DNEF, *Estatística das Estradas de Ferro*, p. 16.

- This division was adopted because the data were not sufficiently disaggregated to permit a more detailed analysis.

activity, and made use of a great variety of equipment and gauges; this made formation of a true national railroad system difficult in later years. Initially developed to complement river and maritime transport, the railroad entered a period of decadence after the twenties, when highways began to be expanded and competition from truck transport increased. By the end of World War II, the railroads were handicapped by poor administration, obsolete equipment, inefficient sources of power, and the absence of electrified lines. After the war, growing financial problems led many private lines to sell out to the government; inefficient government administration subsequently worsened an already poor situation.

### H.3.2 — Highway transport

Analysis of the development of highway transportation is complicated by lack of data on the volume of traffic carried. The increasing use of cars and trucks in Brazil can only be observed indirectly through the pattern of growth of the highway network.

Three distinct stages can be observed in the evolution of Brazilian highways. In the first stage, crude "general roads" were made into "cart-roads"<sup>41</sup> to serve animal-drawn vehicles. One of the more important roads built in this period was the 144-mile-long stretch between Petrópolis and Juiz de Fora (Estrada União e Indústria).

<sup>41</sup> Silva, *Geografia dos Transportes no Brasil*, p. 85.

It was inaugurated in 1861 and was a principal route for coffee shipments from Juiz de Fora, Posse, Entre Rios, Paraíba do Sul, and other towns.<sup>42</sup> Other important roads were the Serra da Estrela (from Petrópolis to the coast), Mangaratiba, Presidente Pedreira, Dona Francisca (in Santa Catarina and Paraná), and the Estrada da Graciosa (built in 1866 to link Mato Grosso and Paraná with the River Plate countries).

Then came a stage of neglect, covering the years from the end of the Empire until the 1920s. Rail transport was pushed during this period, and construction of new highways was stopped. Old highways were sometimes abandoned, while in other cases roadbeds were converted for use by railways as this mode of transport expanded.<sup>43</sup>

The third and final stage began in the twenties, as new highways were built and old ones reconstructed to meet the demands of the automobile.<sup>44</sup> This was the beginning of the highway era in Brazilian transportation history.<sup>45</sup> In 1926 the first Rio—Petrópolis highway was opened to traffic, and plans were made for a Rio—Bahia road. By 1928-1930, the length of highways in service was four times total railroad trackage (see table 111). While the highway system was still diminutive relative to the total land area of Brazil, it had developed significantly in the economically developed sections of the country.

Highway construction, like railroad construction, was carried out without reference to a general plan. Given the growing inefficiency of the railroads and the lower initial cost of highways, roads came to be preferred to rails as a means of integrating regional transportation systems. The cost of transport per kilometer was ignored. Work progressed rapidly, and in the 1930s highway construction averaged more than 15 thousand kilometers per year.

As was seen above, the 1930s witnessed the adoption of a national transit plan. The provisions of this plan called for the construction of 20 thousand kilometers of new highways, which would later be converted to railroad lines if regional economic development so demanded. This plan, as noted, was not fully implemented,

<sup>42</sup> Ministério da Viação e Obras Públicas, Departamento Nacional de Estradas de Rodagem, *Relatório Trienal, 1940-1942*, p. 34.

<sup>43</sup> Silva, *Pneu versus Trilho*, p. 40.

<sup>44</sup> It is argued that the invention of the tubed tire revolutionized highway transport since it permitted higher speeds and greater comfort. Silva, *Pneu versus Trilho*, pp. 19-20.

<sup>45</sup> M. M. F. Silva, *Roda e Assa*, ed. José M. Marti (Rio de Janeiro: Oficinas Gráficas ALBA, 1941), p. 15.

Table 111  
*Growth of the Highway System, 1928-1943*  
 (Km)

Period	Highways in Service by End of Period	Average Annual Increase	Highways per 1 000 Km <sup>2</sup> by End of Period
1928-1930	121 784	4 107	14.3
1931-1939	258 390	15 178	30.4
1940-1943	276 700	4 578	32.5

Source: M.M.F. Silva, *Geografia dos Transportes no Brasil* (Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 1949), p. 129; IBGE, *Anuário Estatístico do Brasil, 1939-1940*, p. 275.

though the Departamento Nacional de Estradas de Rodagem underlined its recommendations shortly thereafter (1938) by proposing a second plan which called for the construction of 19 thousand kilometers of highways over a 20-year period.

Highway construction was seriously slowed down by the outbreak of World War II, and the annual average length of highway built fell to around one-third the corresponding figure for 1931-1939. Construction did not pick up again until the war was over.

It should be emphasized that despite the underdevelopment of the highway system in the thirties, the highway era had begun, and that in the years following World War II, car and truck transportation clearly surpassed rail transport as the most important means of land transportation. The highways, crude as they were (96% were dirt, and 75% were unimproved in 1939), still provided a more efficient means of transportation than the railroads.

Nearly all the motor vehicles used in Brazil up to the end of World War II were imported, although some foreign firms had installed assembly plants in the 1920s. This meant that the trade crisis that affected Brazil from the twenties on limited the availability of parts and new vehicles. In 1939, there were only 190 thousand motor vehicles in the country (see table 112), or less than one vehicle per kilometer of highway. Furthermore, during the Second World War, fuel shortages resulted in reduced utilization of available vehicles, especially those not used for business purposes.



Table 112

*Stock of Motor Vehicles, 1939 and 1940*

Type of Vehicle	1939		1943 <sup>a</sup>	
	Number of Vehicles	Vehicles per Km of Highway	Number of Vehicles	Vehicles per Km of Highway
Passenger	125 911	.49	73 225	.26
Cars	111 832		59 564	
Buses	5 853		5 767	
Others	8 226		7 894	
Freight	64 701	.25	76 020	.28
Trucks	63 069		70 377	
Others	1 622		5 652	
Total	190 612	.74	149 254	.54

Source: IBGE, *Anuário Estatístico do Brasil*, 1939-1940, p. 278, and 1946, p. 192

<sup>a</sup> Vehicles in use.

As was the case with railroads, more highways were built in the South and Southwest than in the rest of the country. These two regions possessed 66% of all highway mileage in 1943, and from 1928 to 1943 their mileage increased two-and-a-half times, while that of the Northeast did not even double. Whereas the antidrought agency (Inspetoria de Obras Contra as Secas) was responsible for highway construction in the Northeast,<sup>46</sup> in the South and Southeast no agency was needed to sponsor highway development, which occurred as a natural response to urbanization and economic growth. In 1940-1943, the ratio kilometers of highway/one thousand square kilometers of land area was only 32.5 in the Northeast, compared to 128.0 in the South and 116.2 in the Southeast.<sup>47</sup>

<sup>46</sup> Ministério da Vinção e Obras Públicas, *Estradas de Rodagem e Carroçóeis Construídas no Nordeste Brasileiro pela Inspetoria de Obras Contra as Secas*. (Rio de Janeiro, 1927).

<sup>47</sup> The South includes the states of Paraná, Santa Catarina, and Rio Grande do Sul. The Southeast comprises the states of Espírito Santo, Rio de Janeiro, Guanabara, São Paulo, and Minas Gerais.

## H. 4 — Air transport

Civil aviation began to provide an organized means of transportation in Brazil at the end of 1927. At first, it was limited to connections between state capitals along the coast, but it gradually penetrated inland and soon provided a rapid means of long-distance transportation.<sup>46</sup> During the Second World War, air transport increased by leaps and bounds, with both the number of kilometers flown and the number of passengers carried per year quadrupling. Freight traffic grew even faster. In table 113 these statistics are broken down, and it can be seen that the volume of passenger and cargo traffic per kilometer increased four and nine times, respectively. However, despite its rapid growth, air transport did not come to play a truly important role in the national transportation system until after World War II.

Table 113

### *Traffic Carried by Civilian Air Transport, 1940 and 1945*

Year	Passengers (Million/Km)	Baggage (1 000 Tons/Km)	Mail (1 000 Tons/Km)	Cargo (1 000 Tons/Km)
1940	63.8	1 251.7	528.5	867.0
1945	258.5	5 041.1	867.0	6 729.1

Source: IBGE, *Brasil em Números*, p. 67.

## H. 5 — Conclusion

At the end of the Second World War, the means of transportation in Brazil were still not sufficient to handle the demands placed upon them. The principal means of communication between the most important economic regions of the country was coastwise navigation, but obsolete ships, high operating costs, and poorly equipped ports were obstacles to further expansion.

<sup>46</sup> "The first air routes approximated a large quadrilateral on a map. There was a coastal route, supplemented in 1940 by a direct Panamerican flight from Belém to Rio. Other routes connected Rio and Corumbá, Corumbá and Porto Velho (the Condor line), and Porto Velho and Belém." Silva, *Geografia dos Transportes no Brasil*, p. 189.

Railroads presented an alternative, but failed to play an important role in uniting different regions due to the systems being isolated and mainly serving to connect areas that produced exportable goods with the closest ports. Railroad integration was further barred by the variety of equipment and gauges. When the highway era began in the 1920s and a trade crisis arose in the 1930s, the railroads entered a period of decline. By the end of World War II, the situation of the railroads was sad indeed, with many firms operating at a deficit and the equipment worn out and obsolete. The government took over the administration of many lines, and this decreased railroad efficiency even further.

Despite all these failings, coastal shipping and railroads continued to be the principal means used to transport goods and passengers in Brazil up to the end of the World War II. The highway system began to develop rapidly during the thirties, but a shortage of motor vehicles and the unimproved roads constructed prevented highway transport from replacing railroad transport as the most important means of land transport. Air transport was introduced late in the period and grew quickly during the war years, but was still of little economic importance in 1945.



# I

## Statistical appendix

Table 114  
Principal Monetary Time Series, 1889-1945  
(Year-End Totals)

Year	Stock of Paper Money (1)	Currency Held by the Banco do Brasil (2)	Paper Money in Circulation (3)	Currency Held by Commercial Banks (4)	Paper Money Held by the Public (5)	Demand Deposits (6)	Means of Payment (7)
1889	211	—	—	—	—	—	—
1890	298	—	—	—	—	—	—
1891	448	—	—	—	—	—	—
1892	524	—	—	—	—	—	—
1893	632	—	—	—	—	—	—
1894	712	—	—	—	—	—	—
1895	678	—	—	—	—	—	—
1896	712	—	—	—	—	—	—
1897	780	—	—	—	—	—	—
1898	780	—	—	—	—	—	—
1899	734	—	—	—	—	—	—
1900	700	—	—	—	—	—	—
1901	680	—	—	—	—	—	—
1902	676	—	—	—	—	—	—
1903	675	—	—	—	—	—	—
1904	674	—	—	—	—	—	—
1905	689	—	—	—	—	—	—
1906	702	—	—	—	—	—	—
1907	744	—	—	—	—	—	—
1908	734	—	—	—	—	—	—
1909	854	—	—	—	—	—	—
1910	925	—	—	—	—	—	—
1911	962	—	—	—	—	—	—
1912	1 064	36	968	166	803	431	1 284
1913	807	41	856	173	683	475	1 168
1914	980	28	952	284	668	389	1 057
1915	1 077	30	1 047	311	736	440	1 176
1916	1 217	41	1 176	209	877	575	1 452
1917	1 484	31	1 453	356	1 097	710	1 807
1918	1 700	28	1 672	464	1 208	1 059	2 287
1919	1 748	59	1 689	512	1 177	1 196	2 373

(Continued)

(Continuation)

Year	Stock of Paper Money (1)	Currency Held by the Banco do Brasil (2)	Paper Money in Circulation (3)	Currency Held by Commercial Banks (4)	Paper Money Held by the Public (5)	Demand Deposits (6)	Means of Payment (7)
1920	1 848	107	1 741	732	1 009	1 342	2 351
1921	2 068	132	1 936	727	1 239	2 100	3 339
1922	2 306	142	2 224	563	1 661	2 433	4 094
1923	2 649	142	2 507	581	1 946	2 633	4 579
1924	2 964	114	2 850	574	2 278	2 722	4 998
1925	2 707	165	2 842	517	2 025	2 300	4 415
1926	2 589	176	2 413	450	1 963	2 568	4 531
1927	3 005	270	2 735	540	2 186	2 996	5 182
1928	3 379	505	2 874	540	2 334	3 575	5 909
1929	3 394	690	2 704	579	2 125	3 450	5 575
1930	2 842	323	2 519	573	1 946	2 808	4 754
1931	2 942	279	2 663	646	2 017	3 501	5 518
1932	3 238	458	2 780	571	2 290	4 314	6 523
1933	3 037	379	2 658	443	2 236	4 071	6 307
1934	3 157	312	2 845	463	2 382	4 849	7 231
1935	3 612	277	3 335	483	2 852	4 770	7 662
1936	4 050	211	3 839	450	3 280	5 215	8 504
1937	4 550	399	4 151	685	3 436	5 992	9 478
1938	4 825	554	4 271	602	3 579	6 223	11 002
1939	4 971	362	4 609	755	3 854	7 379	11 233
1940	5 185	327	4 858	764	4 094	7 474	11 568
1941	6 647	406	6 241	931	5 310	8 714	14 024
1942	8 238	944	7 294	1 194	6 130	12 596	18 726
1943	10 981	678	10 303	1 761	8 542	19 895	28 437
1944	14 462	827	13 635	1 973	11 662	24 047	35 709
1945	18 535	839	16 698	2 375	14 321	27 168	41 489

Sources and Methodology by Column:

- 1) Caixa de Amortização, *Relatório*, 1931, pp. 50-54; Ministério da Fazenda, Serviço de Estatística Econômica e Financeira (MF/SEEF), *Relatório*, 1956, pp. 163-65.
- 2) MF/SEEF, *Quadros Estatísticos*, n.º 3 Q.E.A. 1932-1939, pp. 2-3; *idem*, *Movimento Bancário do Brasil, 1939-1945*; Banco do Brasil, *Boletim Estatístico*, n.º 19 (October 1942): 47-48.
- 3) Column (1) — column (2).
- 4) MF/SEEF, *Relatório*, 1956, p. 144. The figures refer to the currency held by all banks except the Banco do Brasil (column 2).
- 5) Column (3) — column (4).
- 6) MF/SEEF, *Movimento Bancário do Brasil, 1919-1945*. The data cover the demand deposits in both the Banco do Brasil and commercial banks. Real demand deposits are overestimated for all years due to the inclusion of certain deposits which should not be so classed: (a) inter-bank deposits and the deposits of commercial banks in the Banco do Brasil prior to 1922; (b) checking deposits prior to 1939; (c) federal deposits in all years (federal deposits are listed together with those of state governments and autonomous agencies).
- 7) Column (5) + column (6). This is the usual definition of means of payment, i.e. paper money held by the public plus demand deposits. Since demand deposits are overstated, so are the means of payment. Estimates were made for 1946 in order to draw comparisons with the means-of-payment time series published by the Banco Central in 1972. In relation to the Banco Central series, the figure for demand deposits was 4% higher and that for total means of payment 2% higher. The reasons for the higher estimates are those given above, plus the fact that the Banco Central used information obtained directly from the Banco do Brasil.

Note: Seasonal variations were not eliminated from the above series. It would be more interesting to have figures on a quarterly or even monthly basis. While this data could be obtained through detailed examination of bank balance sheets, the time and effort required were beyond the resources available for this study.

Table 115  
*Federal Expenditures by Economic Category, 1890-1945*  
 (%)

Year	Consumption	Subsidies	Transfers	Debt Service	Gross Fixed Capital Formation	Purchase of Physical Assets	Purchase of Stocks and Bonds	Total
1890	60.8	1.3	2.2	24.7	10.8	.2	—	100.0
1891	64.6	1.6	3.0	23.0	7.8	—	—	100.0
1892	68.9	1.0	2.6	18.5	9.0	.0	—	100.0
1893	69.2	.7	2.7	19.7	7.7	—	—	100.0
1894	78.7	.7	2.4	13.0	6.2	.0	—	100.0
1895	72.8	.7	2.8	17.5	6.2	—	—	100.0
1896	74.0	1.0	2.7	16.1	6.2	—	—	100.0
1897	76.1	.8	2.8	17.1	3.2	.0	—	100.0
1898	41.1	.4	1.6	53.2	3.7	—	—	100.0
1899	61.6	1.0	3.0	21.6	5.9	6.0	—	100.0
1900	52.7	.6	2.7	41.5	2.5	—	—	100.0
1901	65.3	.8	3.6	27.5	2.6	.2	—	100.0
1902	62.6	.8	4.4	28.5	3.8	.0	—	100.0
1903	56.5	.7	3.5	25.2	9.0	6.0	—	100.0
1904	42.3	.7	2.0	23.3	16.8	14.1	—	100.0
1905	55.1	.8	3.7	25.9	14.2	.3	—	100.0
1906	57.3	.8	3.4	24.9	13.6	.1	—	100.0
1907	55.8	.5	3.8	20.7	19.8	.2	—	100.0
1908	57.8	.4	3.2	20.7	15.5	2.3	—	100.0
1909	58.8	.3	3.3	24.6	13.0	—	—	100.0
1910	51.3	.5	2.9	37.1	18.2	.0	—	100.0
1911	55.7	.4	3.2	20.4	20.3	.0	—	100.0
1912	51.8	.4	4.0	18.3	24.0	1.5	—	100.0
1913	51.5	.3	4.8	21.6	21.8	.0	—	100.0
1914	54.0	.5	5.2	18.0	21.6	.0	—	100.0
1915	46.8	.6	6.3	24.7	21.6	.0	—	100.0
1916	33.9	.5	5.8	38.1	21.7	—	—	100.0
1917	30.3	1.2	7.4	37.4	23.7	—	—	100.0
1918	33.3	.5	7.5	29.6	28.1	—	—	100.0
1919	39.7	.4	7.6	26.7	25.6	—	—	100.0
1920	41.7	.4	6.9	26.9	24.1	—	—	100.0
1921	47.7	.3	5.8	20.5	25.7	—	—	100.0
1922	47.7	.3	5.3	20.5	25.7	—	—	100.0
1923	61.2	.6	4.0	29.6	3.7	.9	—	100.0
1924	60.5	.8	3.7	29.3	6.6	—	—	100.0
1925	61.8	.9	3.6	26.6	7.1	—	—	100.0
1926	63.6	.6	3.6	23.9	8.3	—	—	100.0
1927	61.6	.6	3.4	30.7	3.7	.0	—	100.0
1928	56.9	1.3	3.5	33.0	5.3	.0	—	100.0
1929	60.0	1.6	3.4	30.2	4.8	—	—	100.0
1930	74.1	1.5	3.2	16.7	4.5	—	—	100.0
1931	55.0	1.1	4.2	36.5	3.2	—	—	100.0
1932	77.3	.7	3.3	13.3	6.4	—	—	100.0
1933	29.2	1.5	5.1	53.9	10.3	.0	—	100.0
1934	68.7	1.0	4.8	23.3	2.4	—	—	100.0
1935	67.7	1.1	5.0	23.1	3.1	—	—	100.0
1936	68.3	1.2	4.9	19.8	5.8	—	—	100.0
1937	78.8	.2	4.0	15.5	1.0	.0	—	100.0
1938	69.6	2.0	3.0	21.1	4.1	.0	—	100.0
1939	59.1	1.0	2.9	19.0	18.0	.0	—	100.0
1940	63.0	—	3.1	15.8	18.0	.1	—	100.0
1941	58.9	.9	2.8	13.1	19.1	.2	—	100.0
1942	55.6	2.0	4.7	13.6	22.7	.8	.6	100.0
1943	51.4	1.9	5.3	18.6	22.3	.2	.3	100.0
1944	53.5	2.1	6.5	13.1	17.0	1.9	.9	100.0
1945	60.3	2.0	4.7	13.4	14.2	.6	4.8	100.0

Source: Fundação Getúlio Vargas, Instituto Brasileiro de Economia, Centro de Estudos Fiscais (FGV/IBRE/CEF), based on analysis of federal balance sheets.

Code: — = no expenditures.

0 = negligible expenditures.

Table 116

*Federal Government: Gross Fixed Capital Formation, 1890-1945*  
(Contos de Réis)

Year	Construction											
	Studies and Projects	Commu-nications	Ports, Canals, Dredging	Reservoirs, Dams, Irrigation	Military Installations	Railroads	Highways and Bridges	Hospitals	Repairs and Modifi-cations	Other	Highways and Railroads	Schools, Univer-sities, Research Institutes
1890	—	287	250	312	753	16 873	185	122	—	3 382	—	22
1891	1	489	170	611	280	9 524	80	66	270	3 658	—	190
1892	—	604	1 183	256	1 008	11 584	—	—	221	4 690	—	24
1893	—	1 312	2 014	97	719	5 514	82	59	282	3 448	—	96
1894	125	706	1 901	657	857	6 151	116	831	14	3 801	—	23
1895	7	1 280	1 472	776	1 408	6 964	100	707	365	3 778	—	219
1896	106	871	1 317	276	453	11 423	60	489	88	4 067	—	209
1897	—	210	872	—	688	3 190	—	194	114	2 659	—	32
1898	—	13	848	—	1 892	790	—	39	1 076	2 897	—	60
1899	—	—	10	23	1 364	8 667	—	—	1 585	2 484	—	—
1900	—	—	238	269	1 687	2 842	10	—	294	2 474	—	—
1901	—	247	286	707	1 213	1 460	22	204	226	3 122	—	—
1902	—	638	382	278	1 885	1 754	118	—	203	3 890	—	37
1903	—	475	13 095	621	2 410	4 126	—	—	827	3 169	—	70
1904	600	582	40 099	776	2 831	3 089	370	281	221	3 809	—	262
1905	—	196	16 046	1 456	2 196	5 347	300	100	663	5 749	—	510
1906	277	938	12 220	3 127	2 269	8 377	130	363	50	5 797	—	1 513
1907	249	1 253	32 518	2 116	4 353	13 276	340	141	42	6 027	—	4 052
1908	466	1 659	18 974	2 548	6 748	6 688	444	150	0 714	6 714	—	2 900
1909	—	221	20 883	1 069	6 233	22 737	250	62	398	6 562	—	2 753
1910	273	1 162	26 354	953	7 778	60 826	5	80	461	7 362	—	1 805
1911	918	1 228	25 686	3 025	3 996	74 355	100	—	431	6 238	—	828
1912	298	202	16 224	11 044	6 681	186 078	2 148	500	514	10 153	—	270
1913	1 218	654	65 649	7 097	756	69 248	126	50	377	17 043	—	857
1914	300	—	56 306	4 016	850	89 340	—	512	279	6 787	—	178
1915	—	—	—	—	—	—	—	—	—	130 607	—	—
1916	—	—	—	—	—	—	—	—	—	149 097	—	—
1917	3	200	47	3 260	710	6 000	—	—	—	150 323	—	—
1918	—	—	990	1 987	—	49 145	—	—	—	151 198	—	—
1919	400	—	—	50	1 200	34 378	—	—	—	189 860	—	—
1920	—	—	—	—	—	840	26 898	—	—	210 216	—	—
1921	50	—	500	—	830	47 256	—	—	—	302 729	—	463
1922	—	—	—	—	—	—	—	—	—	345 753	—	—
1923	—	—	—	7 200	2 808	89 877	90	252	—	2 272	—	—
1924	—	—	3 108	23 179	1 627	45 778	—	—	—	32 433	—	—
1925	—	—	7 353	3 458	2 783	98 590	11	700	—	3 534	—	—
1926	—	944	9 504	6 037	3 220	120 570	—	—	3 973	1 366	—	—
1927	—	—	6 433	6 629	3 133	6 183	1 000	—	—	32 639	—	—
1928	—	—	13 146	3 492	3 084	23 520	20 919	—	—	27 847	—	—
1929	—	92	—	9 430	3 545	19 742	40 126	—	—	20 268	—	—
1930	—	—	20 176	6 967	3 060	34 460	35 182	—	—	2 293	—	—
1931	—	—	6 268	13 829	2 264	19 733	15 482	—	—	7 448	—	—
1932	—	—	22 772	8 822	—	10 510	10 356	—	—	11 983	80 000	—
1933	—	2 000	11 539	69 235	3 445	10 211	12 274	—	464	73 000	73 000	12 268
1934	100	2 000	1 005	6 215	—	1 979	10 304	—	—	60 474	—	430
1935	319	—	—	3 592	—	—	20 248	—	—	55 016	—	6 900
1936	—	—	2 200	34 521	—	—	19 601	4 778	—	117 961	—	1 780
1937	—	1 253	—	—	—	—	19 388	—	5 780	—	4 880	2 000
1938	—	491	6 000	—	101 996	11 897	5 784	6 278	317	41 595	—	2 400
1939	—	—	—	14 300	—	77 618	13 500	6 697	—	476 099	—	3 000
1940	—	1 860	6 000	800	—	81 433	4 100	1 533	368	488 864	—	37 591
1941	—	—	7 495	500	8 000	71 834	6 073	12 483	2	548 053	—	10 490
1942	2 969	12 591	27 842	60 115	—	221 956	140 488	29 420	2 027	327 659	—	7 268
1943	10 041	13 746	28 700	62 393	—	256 841	103 273	13 152	9 277	496 629	—	14 867
1 1944	—	—	7 281	—	—	68 568	29 700	7 585	3 343	80 700	—	3 472
1945	7 499	3 379	16 502	87 757	3 537	272 152	204 459	5 202	3 891	226 305	—	2 597

Source: Same as table 115. For the year 1912 to 1932, the data are proportional to the expenses listed in the corresponding budgets.  
Note: The totals for 1904 and 1905 should be increased by 10 684 contos and 15 116 contos, respectively. These were the amounts paid to Bolivia for the territory of Acre.



Installations and Equipments

Water and Beverage	Airports	Highways and Ports	Electricity	Reformation	Subtotal (1)	Non-chargeable Property	Installations and Equipment	Equipment Repairs	Subtotal (2)	National Planning (3)	Total (1) + (2) + (3)
866	—	—	—	—	21 761	720	361	920	2 001	—	23 762
22	—	—	—	—	16 351	1 029	851	—	1 880	—	17 231
2 003	—	—	—	—	22 602	579	1 686	—	2 446	—	25 047
787	—	—	—	—	14 385	714	7 903	—	8 617	—	23 002
698	—	—	—	—	14 432	650	4 230	—	4 879	—	19 302
653	—	—	—	—	17 030	764	3 714	163	3 631	—	21 279
403	—	—	—	—	10 904	570	2 536	53	3 111	—	23 018
848	—	—	—	—	8 146	575	3 131	1 200	4 103	—	12 281
440	—	—	—	—	6 787	833	13 831	1 078	17 848	—	24 636
245	—	—	—	—	14 178	667	1 873	678	3 138	—	17 314
237	—	—	—	—	8 830	031	521	833	3 735	—	11 018
247	—	—	—	25	8 505	435	767	709	1 911	—	8 716
893	—	—	—	—	8 750	363	834	730	2 037	—	10 807
686	—	—	—	—	23 493	380	1 830	2 698	4 768	—	30 251
267	—	—	—	—	53 197	1 010	1 900	1 090	4 090	—	67 206
108	—	—	74	—	33 258	845	2 374	1 606	4 824	—	39 070
12 193	—	—	—	—	34 157	335	21 423	1 540	23 288	—	57 475
22 396	—	—	—	—	76 380	402	24 771	1 583	20 737	—	102 137
2 822	—	—	—	—	80 333	368	7 077	1 460	9 831	—	78 164
1 060	—	—	—	—	64 117	726	871	1 058	3 403	—	67 612
517	—	—	—	—	109 607	1 043	1 350	1 497	3 890	—	113 587
75	—	—	16	—	118 053	480	16 846	2 284	10 630	—	138 173
1 782	—	—	—	—	158 792	835	27 677	1 645	30 197	—	188 596
1 057	—	—	—	—	154 064	501	14 030	1 047	17 101	—	171 065
—	—	—	—	—	153 340	1 048	8 488	871	10 407	—	165 747
—	—	—	—	—	130 507	—	9 365	—	9 365	—	148 873
—	—	—	—	—	120 077	—	9 337	—	9 337	—	146 434
—	—	—	—	—	159 543	702	13 056	1 120	14 907	—	174 450
—	—	—	—	—	202 620	—	10 035	1 185	11 253	—	213 843
—	—	—	—	—	225 694	—	12 000	1 000	13 060	—	239 563
—	—	—	—	—	278 944	—	16 784	—	16 784	—	295 728
—	—	—	—	—	312 148	—	18 355	—	18 355	—	330 533
—	—	—	—	—	340 753	—	20 410	—	20 410	—	367 163
—	—	—	—	—	39 717	179	11 260	11 337	23 705	—	53 422
—	—	—	—	—	87 853	—	4 823	—	4 823	—	81 550
372	—	—	—	—	110 774	—	3 090	3 651	8 741	—	122 515
—	—	—	—	—	140 334	—	4 834	—	4 834	—	151 218
—	—	—	—	—	55 072	—	16 632	3 456	20 108	—	75 180
—	—	—	—	—	66 901	20	5 978	3 870	9 671	—	100 575
—	—	—	—	—	90 208	480	8 006	—	8 486	—	105 693
—	—	—	—	—	103 014	66	733	8 166	8 965	—	112 879
—	—	—	—	—	65 061	—	523	—	522	—	65 583
—	—	—	—	—	153 254	840	—	—	840	—	154 094
1 893	14 200	3 300	—	—	235 299	10	3 215	3 786	0 003	—	247 299
32	3 802	—	—	—	63 728	—	0 800	—	0 800	—	73 528
—	1 401	—	—	—	88 063	—	3 215	—	2 216	—	89 179
100	10 004	—	—	—	185 235	—	2 970	—	1 070	—	187 101
—	389	—	—	—	34 192	200	5 610	—	5 810	—	40 902
4 863	250	—	—	—	184 026	300	8 543	—	8 843	—	190 471
3 810	818	—	—	—	257 569	170	274 046	—	274 210	—	871 785
903	478	—	—	—	592 034	—	328 661	800	330 680	—	932 374
2 283	695	—	—	—	667 751	1 500	367 324	—	368 824	—	1 036 095
13 188	—	—	104	—	952 753	76 788	410 120	538	487 447	—	1 440 230
7 361	—	—	13 341	—	1 044 921	95 010	314 128	37	409 183	—	1 451 114
2 070	—	—	—	1 500	181 129	122 808	171 485	2 145	208 528	948 807	1 428 157
—	—	—	—	—	905 876	163 102	478 397	—	663 499	—	1 540 576

Table 117  
 Federal Government: Indirect Tax Collections, 1890-1945  
 (Contos de Réis)

Year	Taxes									Charges	Total
	Import Duties	5% Gold Tariff	Taxes on External Transactions	Distribution Tax	Industrial and Professional Taxes	Stamp Tax	Mercantile Tax <sup>a</sup>	Other	Subtotal		
1890	101 027	—	—	399	5 057	9 119	—	28 043	143 635	—	143 635
1891	106 806	—	—	462	5 766	10 400	—	18 839	142 273	—	142 273
1892	111 264	—	265	667	3 627	8 396	—	51 102	175 311	—	175 311
1893	132 697	—	848	741	5	7 003	—	65 959	207 151	824	207 675
1894	136 156	—	813	801	2 142	7 472	—	66 197	213 581	556	214 137
1895	150 760	—	841	878	—	8 933	—	78 842	249 254	418	249 672
1896	263 622	—	1 570	945	2 458	8 531	—	1 962	279 086	560	279 646
1897	226 192	—	1 978	1 004	2 943	9 361	—	1 538	243 016	2 583	245 579
1898	220 440	—	13 076	4 154	3 152	9 035	—	1 680	251 537	2 332	253 869
1899	200 328	—	25 475	4 323	3 153	10 247	—	1 806	245 334	2 915	248 249
1900	164 057	1 376	26 693	4 463	2 859	14 557	—	14 673	239 878	3 288	242 963
1901	162 094	12 325	31 556	4 169	2 626	15 171	—	2 664	239 805	4 177	234 782
1902	185 603	14 436	33 960	3 910	2 578	13 960	—	2 452	256 899	3 581	260 480
1903	189 462	14 737	35 374	3 703	2 554	12 576	—	3 603	261 409	2 323	263 732
1904	197 786	15 471	35 368	3 687	2 589	13 099	—	5 216	273 216	1 552	274 768
1905	224 055	17 278	35 233	4 072	2 913	13 902	—	10 894	308 347	1 278	309 625
1906	248 169	18 709	43 406	3 972	3 245	13 759	—	10 813	342 163	846	343 009
1907	287 277	20 016	47 977	4 207	3 390	15 244	—	15 672	363 773	1 118	364 891
1908	237 086	16 268	44 591	4 170	3 484	15 632	—	2 126	323 357	1 217	324 574
1909	233 084	16 081	45 744	4 368	3 536	15 750	—	2 628	321 191	1 151	322 342
1910	288 747	19 449	54 628	3 063	3 517	18 643	—	2 619	399 666	1 719	392 385
1911	317 666	21 476	59 799	2 299	3 555	23 096	—	12 939	449 829	2 074	442 894
1912	348 242	23 570	62 639	2 621	3 856	24 799	—	15 017	469 744	2 363	463 127
1913	344 327	23 455	65 091	3 059	4 417	25 525	—	11 681	477 455	1 871	479 326
1914	195 115	14 042	52 223	4 037	4 523	20 124	—	7 687	297 776	1 478	299 254

1915	152 609	12 429	67 930	8 579	4 592	24 734	—	7 475	278 351	474	278 828
1916	184 284	14 648	83 828	6 341	4 817	28 193	—	7 689	329 700	1 476	331 236
1917	168 361	10 976	117 720	8 393	5 141	31 111	—	8 548	340 250	1 402	341 652
1918	171 431	11 803	119 719	9 195	5 586	34 128	—	4 243	356 107	3 780	359 896
1919	212 057	14 305	131 831	13 379	5 990	42 398	—	5 970	420 589	3 830	430 419
1920	348 914	24 842	175 036	15 166	6 721	59 580	—	5 936	636 795	3 812	640 607
1921	318 815	26 763	154 100	11 712	6 976	64 408	—	4 405	537 239	11 258	598 497
1922	808 613	25 070	165 227	14 837	8 100	68 251	—	5 505	595 808	13 037	603 840
1923	463 080	37 718	258 249	18 453	9 167	83 344	11 327	5 661	866 999	13 209	910 208
1924	567 497	39 609	299 135	28 659	10 453	102 091	62 350	18 233	1 123 032	13 974	1 142 006
1925	722 120	50 850	312 425	30 853	11 527	108 739	70 049	19 470	1 326 033	16 114	1 342 147
1926	577 879	44 422	303 902	29 882	12 539	116 162	80 857	15 479	1 221 192	28 975	1 250 007
1927	812 038	58 987	302 900	28 513	13 778	124 947	64 771	5 626	1 511 560	29 264	1 547 126
1928	938 920	39 701	440 308	29 436	15 372	130 704	72 400	9 646	1 676 487	25 143	1 701 630
1929	936 100	39 167	426 749	30 818	21 233	136 920	63 065	7 164	1 659 125	28 445	1 687 570
1930	626 224	26 436	352 237	24 058	16 597	110 211	50 729	2 260	1 209 702	55 832	1 268 534
1931	605 131	26 777	377 588	20 224	16 537	132 190	70 079	12 320	1 360 856	46 668	1 307 524
1932	527 275	—	388 579	19 388	17 055	114 227	74 163	41 004	1 181 761	57 120	1 238 881
1933	756 697	—	445 384	19 972	15 339	128 391	87 180	49 183	1 500 346	55 723	1 556 069
1934	837 463	—	512 258	30 574	17 671	146 436	90 670	55 574	1 609 640	87 605	1 787 251
1935	975 082	—	558 223	30 088	15 594	170 351	110 777	54 192	1 914 307	77 436	1 991 793
1936	1 012 105	—	606 204	—	16 500	192 467	29 490	43 268	1 900 024	71 563	1 971 537
1937	1 173 413	—	667 074	6 188	22 925	227 860	106	43 726	2 171 295	135 718	2 307 013
1938	1 052 513	—	853 066	—	22 362	229 265	47 206	35 978	2 240 969	153 002	2 393 901
1939	1 031 197	—	1 020 683	—	24 427	263 195	51 420	—	2 399 937	439 881	2 839 818
1940	1 977 514	—	1 053 747	—	26 039	279 001	54 062	—	2 390 363	508 069	2 898 432
1941	1 058 773	—	1 185 495	—	28 407	337 777	64 142	166	2 674 761	526 054	3 200 813
1942	674 223	—	1 253 614	—	31 813	431 946	77 956	—	2 460 357	547 107	3 016 454
1943	506 467	—	1 553 576	—	37 239	578 795	95 466 <sup>b</sup>	—	2 801 642	610 006	3 471 548
1944	962 433	—	1 947 120	—	38 163	742 659	125 200	—	3 755 589	848 255	4 603 844
1945	1 026 038	—	2 832 166	—	42 465	865 602	147 655	22 304	4 930 230	928 755	5 864 983

Source: Same as table 115.

<sup>a</sup> Transactions and consignments as of 1941.

<sup>b</sup> Estimate.

Table 118

## Federal Government: Direct Tax Collections, 1890-1945

Year	Taxes								Charges	Total
	On Wages of Civil Servants	2.3% on Corporate Dividends	On Property Transfers	On Income	2% and 5% on Maritime Insurance Premiums	Overdue Payments	Other	Subtotal		
1890	692	—	18 447	—	—	—	4 128	18 467	—	18 467
1891	1 102	—	17 570	—	—	—	4 401	23 073	—	23 073
1892	1 388	—	3 540	—	—	—	4 846	9 774	—	9 774
1893	1 374	320	1 437	—	—	—	—	2 131	—	7 131
1894	1 364	317	2 892	—	—	—	—	4 573	—	4 573
1895	1 520	777	450	—	—	—	—	2 747	—	2 747
1896	1 569	694	—	—	—	—	687	2 940	—	2 960
1897	1 499	508	—	—	—	—	749	2 756	—	2 756
1898	3 413	1 004	—	—	—	—	722	3 141	—	3 141
1899	3 372	1 540	—	—	—	—	904	5 816	—	5 816
1900	3 378	1 544	—	—	—	—	469	5 391	—	5 391
1901	3 410	1 382	—	—	—	—	523	5 347	—	5 347
1902	3 714	1 550	—	—	—	—	—	5 264	—	5 264
1903	3 177	1 388	—	—	—	—	—	4 563	—	4 563
1904	3 464	1 488	—	—	—	—	—	4 942	—	4 942
1905	3 482	1 569	—	—	—	—	—	5 051	—	5 051
1906	3 759	1 003	—	—	—	—	—	5 422	—	5 422
1907	4 183	1 860	—	—	—	—	—	6 043	—	6 043
1908	4 123	1 831	—	—	—	—	—	5 759	—	5 759
1909	694	1 705	—	—	—	—	—	2 599	—	2 599
1910	1 016	2 033	—	—	—	—	—	3 049	—	3 049
1911	1 887	2 198	—	—	—	—	—	3 785	—	3 785
1912	1 802	2 703	—	—	—	—	—	4 505	—	4 505

1913	1 914	2 669	--	--	--	--	--	4 573	--	4 573
1914	1 057	2 090	--	--	--	--	--	3 747	--	3 747
1915	13 007	3 338	--	--	--	--	144	16 389	--	16 389
1916	13 814	4 804	--	--	--	--	153	18 673	--	18 673
1917	16 248	0 700	--	--	--	--	739	23 687	--	23 687
1918	5 978	4 653	--	--	848	--	1 010	12 689	--	12 689
1919	--	6 863	--	--	1 009	--	1 504	9 370	--	9 370
1920	--	8 118	--	--	870	--	1 602	10 597	--	10 597
1921	--	9 155	--	--	1 169	--	8 517	18 841	--	18 841
1922	--	10 903	--	--	3 322	--	11 648	25 873	391	26 264
1923	7 607	13 050	--	--	4 226	--	16 116	40 795	776	41 571
1924	--	--	--	17 943	5 020	--	806	23 769	452	24 221
1925	--	--	--	27 246	5 951	--	958	34 155	70	34 225
1926	--	--	--	28 703	5 878	--	1 069	35 655	--	35 655
1927	--	--	--	53 707	5 230	--	1 305	61 342	27	61 347
1928	--	--	--	61 939	5 283	1 989	1 044	70 280	23	70 283
1929	--	--	--	67 699	7 150	1 734	902	77 935	48	77 583
1930	--	--	--	62 732	8 263	3 414	1 073	65 432	32	65 514
1931	1 525	--	--	84 584	7 772	4 716	603	99 263	48	99 311
1932	14 287	--	--	81 555	11 027	5 412	714	113 875	89	113 964
1933	774	--	--	110 005	12 779	8 521	1 589	133 668	67	133 735
1934	--	--	--	137 938	13 192	6 213	1 910	159 253	35	159 254
1935	--	--	--	151 257	14 352	12 136	1 979	179 724	80	179 804
1936	--	--	--	190 600	16 037	11 977	2 187	211 701	47	211 743
1937	--	--	--	210 915	18 884	10 428	3 116	243 343	27	243 370
1938	--	--	--	262 648	21 540	11 759	3 397	299 353	22	299 375
1939	--	--	--	298 081	23 307	15 421	2 159	338 068	28	338 996
1940	--	--	--	382 549	26 134	24 781	1 870	435 384	24	435 408
1941	--	--	--	493 420	30 715	39 495	7 946	576 576	15	576 581
1942	--	--	--	927 612	47 570	52 635	13 194	1 040 970	935	1 041 905
1943	--	--	--	1 405 046	74 306	167 886	18 886	1 665 424	1 194	1 666 628
1944	--	--	--	1 930 920	82 123	45 635	24 464	2 083 142	819	2 083 961
1945	--	--	--	2 230 034	85 001	67 850	31 810	2 421 354	720	2 422 074

Table 119  
Federal Debt, 1890-1945  
(Contos de Réis)

Year	External				Internal				Subtotal (1) + (2)	Interest on Loans from the Orphans Fund	Interest on Deposits in Federal Sav- ings Banks	Total
	Amortisa- tion	Interest	Commissions and Brokerage	Subtotal (1)	Amortisa- tion	Interest	Commissions and Brokerage	Subtotal (2)				
1890	5 294	25 152	926	31 372	—	21 062	—	21 062	52 434	639	1 481	54 554
1891	3 601	18 925	152	22 678	1 070	24 435	49	25 504	48 232	433	2 165	50 830
1892	3 278	20 321	173	23 772	19 083	4 842	134	24 159	47 081	457	3 240	51 628
1893	12 447	20 373	161	32 971	19 245	2 748	182	22 173	55 144	596	3 579	59 319
1894	2 536	20 814	120	23 470	—	21 122	667	21 789	45 250	578	2 485	48 322
1895	1 707	21 865	607	24 179	99	29 427	2 335	31 861	56 040	585	3 933	60 558
1896	2 840	24 381	237	27 458	23 834	4 943	36	28 813	56 271	565	2 624	59 460
1897	1 815	25 753	155	27 723	23 820	6 711	1 666	32 197	59 920	623	4 243	64 786
1898	1 925	25 145	277	27 347	814 186	8 459	579	823 204	350 551	626	3 933	355 110
1899	—	25 455	360	25 814	—	32 408	68	32 568	56 420	531	4 855	63 806
1900	—	47 723	835	48 558	80 207	36 045	9	125 261	173 819	521	5 241	179 581
1901	—	61 585	2 285	63 870	—	32 778	8	32 786	86 656	554	4 840	92 050
1902	—	10 991	416	11 407	6 000	61 211	8	67 219	78 626	636	5 644	84 905
1903	578	51 221	548	52 347	—	31 634	368	32 071	84 418	472	6 628	91 518
1904	—	56 630	408	57 047	6 000	37 294	8	43 302	100 349	400	7 423	108 172
1905	2 630	52 689	1 039	56 358	—	32 603	8	32 616	89 074	422	7 450	96 952
1906	1 983	57 414	624	60 026	8 000	31 522	8	37 530	97 556	496	7 729	105 781
1907	639	57 050	619	58 308	8 000	34 551	9	40 570	98 878	470	8 734	108 082
1908	1 904	62 376	640	64 920	1 904	28 566	196	30 666	95 586	364	9 614	105 564
1909	13 076	67 902	104	81 082	7 393	29 754	924	33 071	119 153	430	8 036	127 619
1910	17 170	96 764	1 527	115 461	7 063	37 239	8	44 315	159 776	324	8 891	168 991
1911	5 008	81 625	1 137	87 765	10 275	29 059	8	39 342	127 107	331	11 068	138 506
1912	20 482	76 172	805	97 519	1 235	34 700	55	35 990	133 509	322	10 186	144 017
1913	20 402	83 964	1 071	114 437	—	44 577	8	44 885	159 322	343	10 060	169 725

1914	77 413	15 445	391	93 240	10 666	26 378	8	36 952	120 201	304	8 301	138 800
1915	108 796	24 376	—	133 172	33 250	3 718	—	36 977	170 140	—	—	170 149
1916	180 025	22 611	—	202 036	56 339	2 296	—	58 635	261 271	—	—	261 271
1917	183 022	22 350	155	205 527	18 073	51 613	33	69 719	275 248	—	—	275 248
1918	123 408	20 250	148	143 896	38 678	35 006	32	78 806	217 702	—	—	217 702
1919	138 352	21 384	419	160 156	46 712	42 816	53	89 581	249 736	—	—	249 736
1920	194 124	30 005	243	224 372	39 657	66 443	59	106 159	350 531	—	—	350 531
1921	154 259	36 373	192	190 824	42 858	29 246	46	72 248	263 072	—	—	263 072
1922	171 367	40 407	214	211 988	47 720	32 493	52	80 205	292 253	—	—	292 253
1923	309 844*	16 479	279	326 602	29 842*	46 781	18	76 641	403 243	110	12 620	415 952
1924	288 738*	30 879	450	320 067	93 656*	63 858	—	157 544	477 611	—	—	477 611
1925	286 731*	30 159	374	317 264	103 433	41 384	2 672	150 439	467 753	—	—	467 753
1926	243 208*	25 582	382	269 172	116 349*	47 506	2 461	166 316	435 483	—	—	435 483
1927	398 174*	29 234	690	426 138	123 011*	52 528	1 235	189 774	615 912	—	—	615 912
1928	472 230*	29 284	457	501 973	140 162*	22 872	25	163 059	665 032	—	—	665 032
1929	471 438	29 284	457	501 179	149 384*	19 901	27	169 312	670 491	—	—	670 491
1930	218 746*	31 976	1 496	252 218	135 956	30 232	28	166 216	418 434	—	—	418 434
1931	616 690	—	444	617 134	114 876	14 446	19	129 341	746 475	—	—	746 475
1932	128 875	—	15	128 690	231 738	19 147	8	250 893	379 783	—	—	379 783
1933	727 091*	—	—	727 091	520 905	30 912	—	561 817	1 288 908	—	—	1 283 908
1934	893 254*	—	—	393 254	279 269*	38 724	—	317 963	711 247	—	—	711 247
1935	411 341*	—	—	411 341	249 294*	3 771	—	257 065	664 406	—	—	664 406
1936	298 450*	—	10 516	308 975	243 732*	86 542	—	330 275	629 350	—	—	639 250
1937	316 274*	—	34 003	351 272	240 603*	94 642	—	335 245	686 517	—	—	686 517
1938	—	—	—	—	996 188	142	—	996 330	996 330	—	—	996 330
1939	—	—	—	—	913 687	0 076	—	922 763	922 763	—	—	922 763
1940	—	—	—	—	798 907*	10 817	—	818 724	818 724	—	—	818 724
1941	—	—	—	—	977 190	8 084	—	985 274	985 274	—	—	985 274
1942	229 078*	—	269	229 347	444 082*	150 188	—	634 270	863 517	—	—	863 517
1943	221 998*	—	1 583	222 582	414 575	570 605	—	985 180	1 208 762	—	—	1 208 762
1944	128 293	242 992	14 479	385 764	846 428	283 628	—	1 130 056	1 515 820	—	—	1 515 820
1945	893 382*	—	6 756	400 138	697 789	351 316	—	1 049 115	1 449 253	—	—	1 449 253

Source: Same as table 115. Due to data limitations, the figures for the years 1915-1921 were estimated from budget data.

Note: The figures marked with asteriska cover not only amortisation, but also interest and other payments. The balance sheets for these years do not permit finer disaggregation.

Table 120

*Brazil: Price Indices and Exchange Rates, 1889-1945*

Year	Price Index (1919 = 100)	Exchange Rate (Mil-Réis/£)
1889	15.6	9.077
1890	16.8	10.638
1891	21.6	16.097
1892	30.8	19.950
1893	32.9	20.708
1894	31.9	23.736
1895	30.2	24.314
1896	28.6	26.490
1897	46.8	31.088
1898	48.3	33.380
1899	47.4	32.258
1900	41.1	25.263
1901	33.3	21.304
1902	31.2	20.237
1903	31.8	20.184
1904	23.7	19.819
1905	30.2	15.238
1906	36.8	14.971
1907	34.0	15.917
1908	35.7	15.083
1909	33.9	15.983
1910	31.5	14.927
1911	35.1	15.044
1912	37.9	16.000
1913	37.2	15.044
1914	35.1	16.375
1915	50.0	19.272
1916	52.7	20.078
1917	63.9	18.893
1918	75.0	18.641
1919	100.0	16.678
1920	109.8	16.623
1921	92.6	28.981
1922	89.2	33.464
1923	120.5	44.651
1924	148.4	40.421
1925	180.2	59.385
1926	144.7	33.611
1927	147.8	41.070
1928	148.1	40.743
1929	156.2	41.015
1930	127.7	44.329
1931	116.6	62.951
1932	113.6	48.631
1933	111.1	53.149
1934	112.0	73.423
1935	114.9	85.112
1936	138.2	86.230
1937	162.1	78.788
1938	161.2	86.387
1939	157.6	85.746
1940	166.8	79.989
1941	186.3	70.071
1942	206.8	70.660
1943	253.9	79.586
1944	288.7	79.290
1945	300.0	78.901

Sources: *Price Index, 1889-1930*: F.M.L. Lobo et. al., "Evolução dos Preços e do Padrão de Vida no Rio de Janeiro, 1820-1930: Resultados Preliminares," *Revista Brasileira de Economia* 25 (October-December 1971): 235-65. The weights used were derived from L. de Affonseca Junior, *O Custo de Vida na Cidade do Rio de Janeiro* (Rio de Janeiro: Imprensa Nacional, 1920), pp. 15-18; 1930-1938: The index was constructed from data on 14 products, presented in Instituto Brasileiro de Geografia e Estatística (IBGE), *Anuário Estatístico do Distrito Federal, 1938*, pp. 441-43; *idem*, *Anuário Estatístico do Brasil, 1938-1940*, pp. 459-60 and 1.382-83, and 1941-1945, pp. 314-19; 1939-1945: The wholesale price index used for agricultural products, excluding coffee, is that of the Centro de Estatística e Econometria, FGV.

*Exchange Rate*: *Jornal do Comércio, Retrospecto Comercial, 1906*, p. 149; IBGE, *Números Índices dos Preços e Quantidades do Comércio Exterior e do Cabotagem, Estudos de Estatística Teórica e Aplicada* (Rio de Janeiro, 1951), pp. 183-84.



Table 121  
 Agricultural Sector: Real Output (Q) and Price (P) Indices,  
 1920-1949  
 (1939 = 100)

Year	Crops										Livestock and Livestock Derivatives		Vegetable Extraction		Agricultural Sector	
	Production for Domestic Consumption		Production for Export		Raw Materials for Industrial Use		Subtotal		Q	P	Q	P	Total			
	Q	P	Q	P	Q	P	Q	P					Q	P		
1920	61.3	82.6	42.2	88.7	76.7	80.2	52.6	87.8	81.3	44.8	58.1	45.7	57.8	73.1		
1921	64.7	62.6	51.7	74.1	63.8	47.0	55.9	66.5	82.8	47.0	51.9	44.8	60.5	60.9		
1922	67.7	63.6	46.2	107.2	74.5	42.6	64.8	79.6	84.3	49.1	62.3	46.8	60.3	70.4		
1923	70.8	86.4	45.4	144.9	60.0	01.7	55.8	108.4	85.8	51.2	64.2	58.4	61.4	90.4		
1924	64.1	119.8	53.6	171.4	66.4	36.1	58.0	140.0	87.3	53.3	66.1	80.0	63.6	111.7		
1925	63.3	136.1	49.8	212.7	70.7	76.6	55.9	163.8	87.8	54.4	59.7	99.8	61.5	129.7		
1926	64.6	86.0	52.3	160.2	73.5	70.2	67.9	117.2	89.7	55.6	65.8	68.6	63.7	98.4		
1927	71.6	92.3	58.6	151.6	74.5	61.6	64.1	115.0	91.5	60.8	67.0	73.2	69.2	97.7		
1928	72.5	105.4	84.1	175.2	77.0	85.1	78.9	133.8	92.9	68.8	73.0	62.3	82.1	110.2		
1929	76.6	89.2	80.8	170.7	83.5	81.9	79.0	128.7	95.0	61.4	80.3	68.3	82.6	107.2		
1930	74.4	86.8	82.1	138.6	83.8	78.9	79.8	108.7	97.2	62.6	61.3	69.3	82.9	84.0		
1931	77.8	79.1	67.9	74.6	87.8	78.1	72.7	77.0	100.0	66.0	68.2	66.0	77.9	73.2		
1932	87.4	76.1	75.1	86.9	84.1	76.5	79.8	90.2	101.5	66.6	61.6	62.2	83.3	75.4		
1933	87.9	79.9	93.5	84.4	84.8	79.2	88.5	81.4	104.6	68.4	63.4	64.4	90.7	76.8		
1934	86.3	68.2	103.8	84.0	95.3	81.1	93.2	85.2	105.9	70.3	68.6	69.1	94.8	80.1		
1935	92.4	87.7	84.6	97.8	91.4	73.4	87.8	90.7	108.9	76.2	80.8	69.2	91.3	85.9		
1936	91.6	88.0	109.2	99.6	93.9	83.2	99.0	97.9	106.3	87.1	85.4	93.4	95.8	84.9		
1937	91.7	107.0	109.8	96.7	79.9	90.2	98.1	100.7	109.2	88.6	82.9	100.1	99.7	97.9		
1938	98.0	103.3	111.6	101.1	87.6	97.6	103.2	101.8	106.4	91.1	92.5	94.8	103.4	98.8		
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		
1940	93.1	102.6	97.3	88.3	108.4	98.7	96.8	98.2	101.7	110.7	163.3	107.4	101.1	101.7		
1941	107.6	107.9	99.2	93.9	107.7	107.8	104.2	101.9	104.5	135.8	221.8	111.9	109.8	110.7		
1942	108.4	117.8	77.2	115.8	105.3	117.7	95.6	116.7	106.2	161.2	209.2	135.7	104.1	129.0		
1943	112.8	149.2	96.0	137.9	108.5	134.9	106.0	143.1	104.9	185.6	203.6	159.9	110.1	154.3		
1944	121.2	220.9	88.4	198.1	123.8	186.6	108.5	193.1	101.7	210.9	215.1	177.6	111.3	199.1		
1945	120.4	238.2	79.4	222.2	125.7	223.7	104.5	230.8	105.0	235.1	234.6	198.6	110.2	228.8		
1946	137.8	258.2	84.4	212.0	138.0	252.2	118.3	274.9	113.7	262.7	223.9	240.7	120.4	268.7		
1947	130.8	298.0	83.7	334.6	140.2	275.8	118.7	307.3	115.6	285.6	218.2	245.8	120.3	290.7		

Sources: Calculated from data in IBGE, *Anuário Estatístico do Brasil*, 1939-1940, "Apêndice Estatístico"; *idem*, *Brasil em Números* (Rio de Janeiro, 1960).  
 Note: The methodology employed in this table is discussed in app. A.

Table 122  
*Agricultural Sector: Output of  
 Principal Export Crops, 1930-1945*  
 (Tons)

Year	Coffee	Cocoa	Cotton (Fiber)
1925-1929	1 239 251	68 114	119 090
1930	1 634 145	68 729	95 486
1931	1 301 670	76 738	112 789
1932	1 535 745	104 437	76 416
1933	1 776 600	100 074	151 253
1934	1 652 538	107 922	284 604
1935	1 135 872	127 116	297 306
1936	1 577 046	126 677	351 543
1937	1 460 959	118 900	405 024
1938	1 404 143	141 839	436 628
1939	1 157 031	134 759	428 523
1940	1 002 062	128 016	468 695
1941	961 552	132 305	503 003
1942	829 879	108 869	376 954
1943	921 934	178 300	496 247
1944	686 686	116 532	589 701
1945	834 916	119 656	

Source: Ministério da Agricultura, Serviço de Estatística da Produção (MA/SEP).

Table 123  
*Conselho Nacional do Café: Receipts and Expenditures, May 1931  
 to 30 April 1932*  
 (1 000 Contos de Réis)

Receipts		Expenditures	
Export Duties <sup>a</sup>	447.80	Price Support <sup>d</sup>	474.10
Sales of Coffee	.01	Administration	3.00
Loans from Banco do Brasil <sup>b</sup>	292.80	Purchases for Federal Stocks	221.10
Sales of Coffee Bags	1.50	Expenses for Loans from Banco do Brasil	4.50
Other <sup>c</sup>	2.00	Fees Paid in Advance on Coffee Realization Loan	39.40
		Donations to Coffee Growers	.20
<b>Total</b>	<b>744.11</b>	<b>Total</b>	<b>742.30</b>

Source: C. M. Peltez, "An Economic Analysis of the Brazilian Coffee Support Program, 1906-1945: Theory, Policy and Measurement," in *Essays on Coffee and Economic Development* (Rio de Janeiro: Instituto Brasileiro do Café, 1973), pp. 181-248.

<sup>a</sup> Net of payment of the coffee realization loan.

<sup>b</sup> Net payment.

<sup>c</sup> Interest on bank deposits, discounts, and fines.

<sup>d</sup> Purchases, destruction of stocks, etc.

<sup>e</sup> Total receipts and expenditures do not match. This is due not to rounding errors, but to discrepancies in the data.

Table 124

*Conselho Nacional do Café: Receipts and Expenditures, May 1931  
to 16 February 1935*  
(1 000 Contos de Réis)

Receipts		Expenditures	
(A) 5-Shilling Account		(A) 5-Shilling Account	
Income from 5-Shilling Tax	312	Insurance and Warehousing Costs	10
Coffee Sales of the State of São Paulo	39	Repayment of 1930 Loan	230
Other Funds Received from Coffee-Growers	27	Deferred Payments on 1930 Loan	75
Subtotal	<u>278</u>	Other	47
		Subtotal	<u>362</u>
(B) 10-Shilling Account		(B) 10-Shilling Account	
Income from 3-Shilling and 10-Shilling Tax	762	Coffee Purchases	963
Subtotal	<u>762</u>	Warehousing and Coffee-Destruction Costs	28
		Freight	63
(C) Subtotal (A) + (B)	<u>1 040</u>	Advertising and General Expenses	24
(D) Credit from the Central Bank	260	Interest Payments and Commissions	75
(E) Credit from the National Treasury	260	Other	28
Subtotal (C) + (D)	<u>500</u>	Subtotal	<u>1 181</u>
Total	1 540	Total	1 543*

Source: Peñáz, p. 136.

\* Due to rounding errors, total receipts and expenditures do not match.

Table 125

*Industrial Production: Quantum Indices, 1911-1919*  
(1929 = 100)

	1911	1912	1913	1914	1915	1916	1917	1918	1919
Textiles	74.5	79.2	76.5	82.0	91.9	86.4	100.9	91.0	105.6
Clothing and Footwear	41.7	47.3	46.8	35.4	38.9	47.2	52.2	52.1	54.0
Beverages	37.2	47.0	53.8	48.4	38.8	40.8	39.6	40.2	48.8
Tobacco	38.2	42.5	46.6	42.2	40.9	53.2	41.3	46.4	65.0
Total	60.9	65.8	65.3	53.6	70.8	70.6	78.5	73.4	83.4

Source: Calculated from data in IBGE, *Anuário Estatístico do Brasil, 1939-1940*, "Apêndice Estatístico."

Note: The indices for each group were weighted by the share of each in total industrial value added in 1919 (as indicated in the industrial census of 1920). Taken together, the four groups accounted for 49.55% of total industrial value added in 1919.

Table 126  
*Industrial Production: Quantum Indices, 1920-1939*  
 (1929 = 100)

Factor	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Mining	138.8	98.8	108.4	94.3	81.3	93.5	83.8	83.7	104.7	100.0	91.1	85.8	80.3	86.2	85.0	90.3	104.5	125.3	140.1	137.7
Manufacturing	70.9	74.6	90.7	106.7	89.1	99.3	88.6	90.1	103.4	100.0	95.3	103.6	100.0	119.3	135.1	154.2	176.6	191.4	205.7	229.4
Nonmetallic Minerals	31.0	101.6	101.0	132.0	135.0	87.6	53.7	70.6	97.5	100.0	87.8	161.2	145.4	208.9	262.3	312.0	403.5	404.8	508.9	619.5
Metalurgy	43.7	46.2	47.5	79.7	51.7	63.7	50.1	53.1	78.0	100.0	81.0	71.9	96.3	130.5	145.3	172.2	206.0	225.3	274.1	337.7
Machinery	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Communications and Electrical Equipment	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Transport Equipment	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wood	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Zeniths	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Iron and Outboard	...	...	...	...	...	...	67.7	61.3	84.1	100.0	89.4	130.7	102.2	126.8	200.9	404.1	457.7	546.9	588.6	741.9
Other	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leather Products	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chemicals and Pharmaceuticals	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Furniture, Soap, and Candles	47.6	46.5	65.6	73.6	84.0	73.0	73.1	97.1	112.9	100.0	77.9	77.0	93.6	107.8	137.0	187.0	258.9	231.0	285.9	299.2
Textiles	100.6	104.1	116.7	106.5	110.2	105.3	105.6	125.1	123.0	100.0	97.2	135.6	117.4	131.0	145.7	165.4	185.6	207.5	210.8	247.0
Clothing and Footwear	81.7	86.0	64.0	66.5	77.8	78.3	72.9	86.6	66.5	100.0	70.8	75.0	67.3	71.2	74.6	94.7	110.9	121.0	111.8	134.8
Food Products	63.2	64.7	66.2	77.8	70.2	80.7	85.3	96.2	89.4	100.0	102.9	102.3	101.3	111.6	118.9	128.4	132.4	130.9	125.5	124.0
Beverages	61.2	61.3	72.3	74.1	70.0	75.6	81.0	92.6	96.4	100.0	83.5	70.3	76.3	79.8	81.7	97.2	107.7	110.4	110.5	129.6
Tobacco	62.6	61.5	72.4	70.2	67.0	65.8	60.5	81.6	61.7	100.0	86.7	87.7	83.6	88.5	102.0	131.5	143.4	148.4	139.3	...
Printing and Publishing	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Others	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	78.0	77.1	89.1	105.5	88.9	89.6	88.6	95.0	112.5	100.0	95.2	103.1	103.4	118.6	123.9	142.3	174.8	187.1	199.4	234.6

Source: Calculated from data provided by the Ministerio de Agricultura, Comercio de Estadística de Producción (MINAGRICOMERCIO), *Anuario Estadístico de Uruguay, 1920-1940*; also, *Encuesta Industrial, 1920 and 1940*.  
 Note: The indices for such subsectors as simple quantity indices, with the weight of each product within the group being determined by its average share (1919 + 1939 = 2) in value added (as given in the industrial censuses of 1920 and 1940). Similarly, the indices for manufacturing are based on the average share (1919 + 1939 = 2) of the several subsectors in total manufacturing value added. Finally, the total index was obtained through averaging of the indices for mining and manufacturing with the weights being the relative shares of these two sectors in total industrial value added in 1939.

Table 127

*Agricultural and Industrial Output: Quantum Indices, 1920-1945*  
(1939 = 100)

Year	Agriculture	Industry	Total
1920	57.8	34.7	47.4
1921	60.5	34.3	49.0
1922	60.3	39.7	50.5
1923	61.4	47.4	53.3
1924	63.5	39.6	52.9
1925	61.5	39.9	51.7
1926	63.7	39.5	53.1
1927	69.2	42.7	57.6
1928	82.1	46.1	67.0
1929	81.2	44.5	66.9
1930	82.9	42.4	66.4
1931	77.9	45.9	64.4
1932	83.3	46.0	67.9
1933	90.7	52.8	74.9
1934	94.8	59.6	80.0
1935	91.3	68.0	81.4
1936	99.8	77.8	90.4
1937	99.7	83.3	92.5
1938	103.4	88.8	96.9
1939	100.0	100.0*	100.0
1940	101.1	105.0	102.8
1941	109.8	116.0	112.4
1942	104.1	112.0	107.5
1943	110.1	123.0	115.5
1944	111.3	128.0	118.3
1945	110.2	136.0	120.7

Sources: *Agriculture*: Data obtained from MA/SEP; IBGE, *Anuário Estatístico do Brasil, 1939-1940*, "Apêndice Estatístico"; *idem*, *Brasil em Números*. *Industry*: Data obtained from MA/SEP; Diretoria Geral de Estatística, Ministério da Agricultura, Indústria e Comércio; IBGE, *Anuário Estatístico do Brasil, 1939-1940*, "Apêndice Estatístico"; *idem*, *Censo Industrial, 1920 and 1940*.

Note: The methodology used in this table is explained in app. A.

- \* Beginning in 1939, the industrial index is that given in G. F. Loeb, "Números Índices do Desenvolvimento Físico da Produção Industrial no Brasil, 1939-1949," *Revista Brasileira de Economia* 7 (March 1953): 31-66.

Table 128  
*Structural Changes in the Manufacturing Industries, 1919-1939*  
 (% of Value Added)

Sector	1919	1939
Nonmetallic Minerals	5.7	5.2
Metallurgy	4.4	7.6
Machinery	.1	3.8
Communications and Electrical Equipment	.0	1.2
Transport Equipment	2.1	.6
Wood	4.8	3.2
Furniture	2.1	2.1
Paper and Cardboard	1.3	1.5
Rubber	.1	.7
Leather Products	1.9	1.7
Chemicals	1.7	9.8
Pharmaceuticals	1.2	
Perfume, Soap and Candles	.7	
Textiles	29.6	22.2
Clothing and Footwear	8.7	4.9
Food Products	20.6	24.2
Beverages	5.6	4.4
Tobacco	5.5	2.3
Printing and Publishing	.4	3.6
Others	3.5	1.0
Total	100.0	100.0

Sources: Calculated from data in IBGE, *Censo Industrial*, 1920 and 1940.

Table 129  
*Indicators of Industrial Capital Formation, 1901-1945*

Year	Domestic Cement Consumption (1 000 Tons)	Domestic Rolled-Steel Consumption <sup>a</sup> (1 000 Tons)	Quantum Index of Industrial Capital-Goods Imports (1939 = 100)
1901	37.3	34.9	56.8
1902	58.8	61.3	31.7
1903	63.8	61.0	38.0
1904	94.0	66.5	41.3
1905	129.6	73.6	62.3
1906	180.3	91.8	66.1
1907	179.3	147.6	93.0
1908	197.9	127.1	96.4
1909	201.8	108.4	102.9
1910	264.2	150.3	118.7
1911	268.7	171.0	153.6
1912	367.0	215.9	205.3
1913	465.3	251.2	152.6
1914	180.8	127.2	63.4
1915	144.9	82.7	25.2
1916	169.8	82.0	32.2
1917	98.6	74.4	32.0
1918	51.7	44.1	36.9
1919	198.4	126.4	64.6
1920	173.0	195.5	108.1
1921	156.9	84.4	125.8
1922	319.6	117.8	91.5
1923	223.4	147.6	119.4
1924	317.2	253.9	151.0
1925	336.5	247.1	209.2
1926	409.7	248.5	154.7
1927	496.0	285.8	124.3
1928	544.2	341.3	133.2
1929	631.5	383.3	184.7
1930	471.7	181.4	99.7
1931	281.4	119.1	33.6
1932	310.0	148.6	28.9
1933	339.4	217.0	47.4
1934	449.6	242.4	82.9
1935	480.4	271.6	123.7
1936	563.3	308.7	114.5
1937	646.3	405.2	143.2
1938	667.5	296.2	122.5
1939	732.6	336.9	100.0
1940	759.2	345.0	56.4
1941	776.8	307.7	86.5
1942	818.8	293.1	67.1
1943	753.4	249.2	176.1
1944	907.4	418.6	166.7
1945	1 025.5	364.1	82.7

Sources: *Cement*: Serviço de Estatística do Sindicato Nacional da Indústria do Cimento; *Steel*: MA/SEP; *Capital-Goods Imports*: This index was constructed using two different sources — data from MF/SEEF for 1901-1919, and data from FGV/IBRE/CCN, "Estrutura do Comércio Exterior," vol. 2, for 1920-1945.

<sup>a</sup> Less imports of rails, accessories, etc., for railroads.

**Table 130**  
**Cotton-Textile Consumption, 1911-1945**  
**(Million Meters)**

Year	National Production (A)	Imports (B)	Exports <sup>a</sup> (C)	Domestic Consumption (D) = (A) + (B) - (C)
1911	379	94.5	.0	463.5
1912	400	69.6	.0	469.6
1913	385	59.4	.0	444.4
1914	314	22.4	.0	336.4
1915	471	17.5	.0	488.5
1916	474	30.0	.0	504.0
1917	548	24.8	.1	572.7
1918	494	28.4	.7	521.7
1919	584	22.4	.7	605.7
1920	587	29.4	.8	615.6
1921	552	12.2	3.3	560.9
1922	627	19.0	4.7	641.3
1923	940 <sup>b</sup>	23.7	4.8	958.9
1924	580	35.3	.3	615.3
1925	536	44.3	.1	580.2
1926	539	44.3	.1	583.2
1927	594	43.8	.1	637.7
1928	582	50.3	.1	632.2
1929	478	29.9	.1	507.8
1930	476	8.1	.0	484.1
1931	634	2.7	1.7	635.0
1932	631	2.3	.4	632.9
1933	639	4.8	.5	643.3
1934	716	2.9	2.6	716.3
1935	753	2.1	1.3	753.8
1936	915	2.4	1.9	915.5
1937	964	2.7	4.1	962.6
1938	910	2.9	1.5	911.4
1939	894	3.3	12.0	885.3
1940	840	8.8	24.0	824.8
1941	990	4.6	56.0	938.6
1942	1 069	.9	154.0	915.9
1943	1 414	4.2	160.0	1 258.2
1944	1 383	1.2	121.0	1 263.2
1945	1 085	1.0	146.0	940.0

Sources: MF/SEEF; IBGE, *Anuário Estatístico do Brasil*, 1939-1940 and 1949.

<sup>a</sup> The export data, given in kilograms, were converted to meters by applying the relation 1 kg = 6.05 meters.

<sup>b</sup> This figure is apparently erroneous.



Table 131

## Value of Exports and Imports and the Balance of Trade, 1889-1945

Year	Contos de Réis			£ 1 000		
	Exports	Imports	Balance of Trade	Exports	Imports	Balance of Trade
1889	259 095	217 800	41 295	23 552	24 003	4 560
1890	280 665	255 520	25 145	26 382	24 019	2 363
1891	439 091	413 680	25 411	27 136	25 565	1 571
1892	618 319	527 104	91 215	30 854	26 302	4 552
1893	666 801	548 144	120 657	32 007	26 215	5 792
1894	729 455	649 402	80 053	30 491	27 145	3 345
1895	790 926	709 018	81 906	32 586	29 212	3 374
1896	755 555	743 467	12 088	28 333	27 880	453
1897	824 305	732 173	92 132	25 883	22 990	2 893
1898	840 385	792 457	49 428	25 019	23 536	1 483
1899	832 062	734 940	97 142	25 545	22 563	2 982
1900	850 339	548 938	301 400	33 163	21 409	11 754
1901	860 827	448 353	412 474	40 622	21 377	19 245
1902	735 940	471 114	264 826	36 437	23 279	13 158
1903	742 632	485 439	256 143	36 883	24 208	12 675
1904	778 367	512 588	263 779	39 430	26 915	13 515
1905	685 467	454 985	230 487	44 643	29 830	14 813
1906	799 670	499 287	300 383	53 059	33 204	19 855
1907	860 891	644 938	215 953	64 177	40 528	13 649
1908	705 791	507 272	198 519	44 155	35 491	8 664
1909	1 016 590	582 876	423 714	63 724	37 139	26 585
1910	939 413	713 863	225 550	63 092	47 872	15 220
1911	1 003 925	793 716	210 209	60 839	52 322	14 017
1912	1 119 737	951 370	168 367	74 649	63 425	11 224
1913	981 768	1 007 495	25 272	65 451	67 166	- 1 715
1914	755 747	561 853	193 894	46 803	35 473	11 330
1915	1 043 298	652 096	459 302	53 951	30 088	23 863
1916	1 136 888	810 759	326 129	56 462	40 399	16 063
1917	1 192 175	837 938	354 437	63 031	44 510	18 501
1918	1 137 100	939 404	147 696	61 168	52 817	8 351
1919	2 178 719	1 334 259	844 460	117 388	71 867	45 521
1920	1 752 411	2 090 633	338 222	82 346	88 369	- 6 023
1921	1 709 722	1 639 849	19 883	45 411	46 038	622
1922	2 332 084	1 652 630	679 454	61 317	43 609	17 708
1923	3 297 001	2 267 159	1 029 802	68 562	47 441	21 151
1924	3 863 554	2 769 567	1 073 997	86 737	62 502	24 235
1925	4 021 965	3 376 832	645 133	102 875	84 443	18 432
1926	3 190 559	2 705 553	485 005	94 254	79 676	14 578
1927	3 644 118	3 273 163	370 955	89 689	79 634	9 055
1928	3 970 273	3 694 990	275 283	97 426	80 669	6 757
1929	3 869 482	3 527 738	332 744	94 831	86 653	8 178
1930	2 907 354	2 843 705	563 649	65 746	63 619	19 127
1931	3 398 164	1 890 934	1 517 230	49 644	28 759	20 788
1932	2 536 765	1 518 694	1 018 094	36 630	21 744	14 886
1933	2 820 271	2 165 254	655 017	35 790	28 132	7 658
1934	3 459 006	2 502 785	956 221	35 240	26 407	9 773
1935	4 014 008	3 855 917	248 091	33 012	27 431	5 581
1936	4 885 435	4 268 667	616 768	39 069	30 066	9 003
1937	6 092 060	5 314 531	22 491	42 530	40 608	1 922
1938	6 096 890	5 105 570	98 680	35 945	25 916	29
1939	5 615 519	4 993 992	621 627	37 298	31 801	5 497
1940	4 960 7538	4 964 149	3 611			
1941	6 725 2640	5 524 036	1 200 660			
1942	7 409 558	4 894 873	2 504 683			
1943	8 728 569	6 229 232	2 499 337			
1944	10 726 509	8 128 471	2 598 038			
1945						

Sources: MF/SEEF, *Comércio Exterior do Brasil*, various years; IBGE, *Anuário Estatístico do Brasil*, 1939-1940, pp. 1 389-90.

Tabel 132

*Foreign Trade: Quantum and Price Indices, Terms of Trade, and  
Capacity to Import, 1901-1945*  
(1928 = 100)

Year	Quantum Index (Laspeyres)		Price Index (Paasche)		Terms of Trade	Capacity to Import
	Imports	Exports	Imports	Exports		
1901	29.8	73.4	40.8	29.6	72.3	53.1
1902	31.0	70.9	41.2	26.1	63.3	44.9
1903	31.7	69.2	41.6	27.0	64.9	44.9
1904	32.2	60.6	43.1	32.2	74.7	45.3
1905	37.8	65.5	32.6	26.4	81.0	53.1
1906	39.6	77.5	34.2	26.0	76.0	58.9
1907	45.4	82.7	38.5	26.2	68.1	53.3
1908	40.3	73.6	38.1	24.2	63.5	46.7
1909	43.1	79.8	37.2	32.1	86.3	65.9
1910	53.8	63.8	35.9	37.1	103.2	66.9
1911	59.2	66.3	36.3	33.2	105.2	69.7
1912	70.3	72.2	36.6	39.1	106.8	77.1
1913	69.2	76.6	39.4	32.5	82.5	63.2
1914	37.7	68.1	40.4	27.9	69.1	47.1
1915	28.8	90.7	54.8	28.9	52.7	47.8
1916	31.4	80.1	69.9	35.8	51.2	41.0
1917	26.0	86.2	90.9	35.3	38.8	33.1
1918	26.2	71.0	106.1	40.3	38.0	27.0
1919	36.7	95.6	98.3	57.4	58.4	55.8
1920	48.0	86.6	117.8	61.0	43.3	37.6
1921	33.2	86.7	137.9	49.7	36.0	31.2
1922	40.8	93.1	109.5	63.1	57.6	63.6
1923	54.0	102.1	111.7	81.4	72.9	74.4
1924	73.3	92.3	103.9	105.5	102.4	94.5
1925	86.8	90.8	105.3	111.5	105.9	96.2
1926	84.3	90.0	86.8	89.3	102.9	92.6
1927	84.0	99.9	105.5	91.9	87.1	87.0
1928	100.0	100.0	100.0	100.0	100.0	100.0
1929	101.3	105.2	94.2	92.4	98.1	103.2
1930	62.9	111.5	100.0	65.7	65.1	72.6
1931	45.8	124.8	111.1	68.6	61.7	77.0
1932	41.6	97.0	98.7	65.9	66.8	64.8
1933	56.9	121.7	103.1	58.4	56.6	68.9
1934	61.4	131.3	110.3	66.3	60.1	78.9
1935	61.3	139.7	170.2	74.0	43.5	60.8
1936	63.8	155.3	181.1	79.4	43.8	68.0
1937	76.0	150.9	189.2	85.0	44.8	67.8
1938	68.7	184.5	204.6	83.2	40.7	75.1
1939	65.8	196.6	205.5	72.0	35.0	68.8
1940	58.1	157.3	231.3	79.4	34.3	64.0
1941	60.9	177.4	245.5	95.5	38.9	69.0
1942	35.7	142.6	358.0	132.4	37.2	53.0
1943	45.7	154.2	368.7	142.6	38.7	59.7
1944	56.7	158.9	388.1	172.2	44.4	69.7
1945	60.2	156.5	393.4	196.3	49.9	78.1

Sources: Data were obtained from MF/SEEF for the years 1901-1920, and from FGV/IBRE/CCN, "Estrutura do Comércio Exterior," vol. 2, for the years 1920-1945.

Note: Except for slight modifications (see app. A), the methodology employed in constructing this table was the same used in the FGV/IBRE/CCN study.

Table 133

*Imports: Quantum Indices by Class of Goods, 1901-1945*  
(1939 = 100)

Year	Consumer Goods	Fuels	Raw Materials	Capital Goods	Industrial Capital Goods
1901	142.6	21.4	39.2	68.7	56.8
1902	136.7	22.9	47.2	33.9	31.7
1903	130.4	22.6	50.7	38.6	38.0
1904	126.7	24.2	52.2	42.3	41.3
1905	148.8	26.3	59.7	64.7	62.3
1906	147.8	29.7	64.9	62.5	66.1
1907	161.1	32.4	73.8	94.1	93.0
1908	141.9	33.3	61.8	99.2	96.4
1909	153.4	34.5	64.3	117.5	102.9
1910	182.7	41.3	84.7	136.6	118.7
1911	194.0	44.4	90.7	185.6	153.6
1912	222.6	64.5	102.5	271.5	205.3
1913	217.1	60.1	104.4	223.0	152.6
1914	136.4	43.1	52.0	87.7	63.4
1915	92.8	37.9	46.5	33.3	25.2
1916	89.3	36.6	54.7	43.0	32.2
1917	79.6	28.5	39.8	46.6	32.0
1918	79.5	20.8	44.9	42.9	36.9
1919	99.5	39.9	61.0	93.1	64.6
1920	163.5	41.0	72.8	148.5	108.1
1921	65.0	38.5	52.6	115.9	125.8
1922	89.8	43.2	72.0	97.4	91.5
1923	117.0	51.6	80.9	127.8	119.4
1924	172.6	62.1	100.6	182.8	151.0
1925	194.8	77.6	110.8	267.0	209.2
1926	204.0	76.2	109.7	226.1	154.7
1927	175.0	92.7	113.7	191.3	124.3
1928	231.8	98.3	130.9	234.7	133.2
1929	224.8	108.4	122.2	275.0	184.7
1930	123.3	92.9	86.4	106.3	99.7
1931	57.0	75.5	72.2	56.6	33.6
1932	62.3	59.9	67.3	49.4	28.9
1933	89.6	72.4	91.6	81.4	47.4
1934	93.3	74.4	91.2	109.2	82.9
1935	94.0	81.9	85.1	100.0	123.7
1936	96.6	88.0	89.1	98.5	114.5
1937	115.8	103.3	102.1	134.6	143.2
1938	190.2	101.1	91.1	116.0	122.5
1939	100.0	100.0	100.0	100.0	100.0
1940	90.0	94.6	82.7	73.2	56.4
1941	91.7	86.5	82.0	89.2	86.5
1942	44.0	57.9	65.4	48.8	67.1
1943	32.5	58.4	75.2	87.8	176.1
1944	37.2	59.2	99.4	97.1	166.7
1945	65.2	74.0	97.6	81.0	82.7

Sources: Same as table 132.

Table 134  
Imports: Quantum Indices by Class of Goods, 1901-1920  
(1901 = 100)

Class	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Consumer Goods	100.00	95.82	91.47	98.83	104.29	105.55	112.57	99.20	107.45	127.07	125.87	135.02	132.02	93.33	64.00	62.55	55.73	55.03	61.08	114.45
Durable	100.00	87.89	97.08	101.71	131.25	150.78	229.32	190.11	243.33	317.53	391.04	467.46	459.50	319.03	91.50	113.46	122.70	119.06	222.14	453.20
Non-durable	100.00	96.40	91.15	93.93	90.49	91.78	97.40	98.82	99.14	103.03	106.26	117.12	113.31	97.02	69.20	64.25	43.16	46.58	41.40	74.13
Fuels and Lubricants	100.00	108.77	105.41	114.07	122.07	128.62	151.22	155.26	160.76	192.38	200.63	235.66	279.79	200.61	170.59	170.31	132.47	98.32	150.59	190.40
Raw Materials	100.00	120.35	129.27	133.17	172.31	165.01	185.22	167.54	194.03	210.11	221.20	291.20	298.17	322.53	118.69	139.47	101.53	114.51	151.41	185.24
For the Metallurgical Industry	100.00	160.58	115.91	136.01	178.95	222.09	292.64	282.27	324.11	337.80	451.04	451.07	378.50	97.67	103.13	81.38	70.28	164.01	273.34	
For Other Industries	100.00	121.81	131.97	139.17	143.05	149.25	168.14	186.91	190.41	181.39	193.20	210.80	207.03	318.08	321.89	346.06	194.02	228.64	148.49	161.93
Construction Material for the Metallurgical Industry	100.00	143.11	186.53	270.88	245.03	317.85	315.63	345.72	327.88	473.88	462.27	622.68	811.77	252.41	183.03	213.43	129.61	76.04	244.05	241.27
Construction Material for Other Industries	100.00	112.05	135.37	130.65	163.42	169.02	154.27	149.16	113.13	140.24	153.83	138.70	151.61	89.85	67.70	43.85	30.27	18.30	27.45	81.48
For Agriculture	100.00	49.32	56.09	61.40	64.00	60.82	138.74	144.14	170.08	168.33	280.46	304.27	152.31	127.52	48.50	62.49	67.74	62.35	133.34	215.96
Capital Goods	100.00	56.83	60.80	72.75	100.82	116.83	160.85	109.41	181.27	209.13	270.51	301.02	259.70	111.04	44.39	36.81	76.45	65.04	113.99	180.73
For Industry	100.00	108.08	120.10	132.01	180.20	171.73	332.61	330.67	320.91	305.21	516.53	520.20	393.13	103.70	85.24	96.22	79.81	68.35	183.87	242.47
For Agriculture	100.00	23.13	23.60	21.19	40.20	60.45	121.26	140.23	169.01	175.01	228.32	248.96	511.17	143.54	34.06	46.00	37.67	43.67	160.81	347.02
Construction Material	100.00	52.04	64.50	68.94	97.36	77.15	108.54	107.36	142.20	171.81	262.10	254.05	267.63	112.10	39.90	48.73	63.91	83.04	110.46	144.19
Other	100.00	104.29	103.41	105.13	127.62	125.90	152.44	135.43	114.87	180.81	169.02	248.96	271.00	130.80	90.83	105.47	83.95	84.73	121.47	101.40
Unclassified Goods																				
Total	100.00	104.29	103.41	105.13	127.62	125.90	152.44	135.43	114.87	180.81	169.02	248.96	271.00	130.80	90.83	105.47	83.95	84.73	121.47	101.40

Source: Same as table 133.

Table 135

## Import Structure by Class of Goods, 1901-1920

(% )

Class	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Consumer Goods	40.12	40.12	37.04	36.88	37.49	34.08	31.63	30.33	31.82	31.53	30.03	30.24	30.05	33.97	27.40	24.20	22.39	23.12	22.31	26.84
Durable	2.81	4.62	4.03	5.28	5.64	6.30	6.40	6.41	8.07	7.80	7.64	8.65	9.21	10.81	3.36	4.18	60.2	5.10	6.88	9.97
Non-durable	37.31	35.50	33.01	31.60	31.86	27.79	25.13	23.92	23.75	23.84	23.29	21.69	20.74	23.16	25.30	20.02	16.37	18.02	16.78	15.87
Fuels and Lubricants	10.02	8.53	7.95	7.92	7.00	8.01	7.82	8.70	8.00	8.02	7.99	9.02	9.65	12.28	15.26	16.24	17.29	11.88	13.88	11.53
Raw Materials	38.25	45.73	47.80	48.51	47.81	49.09	50.33	47.82	46.87	47.71	47.21	44.94	45.29	42.87	52.12	63.95	53.41	58.67	53.02	51.54
For the Metallurgical Industry	5.78	7.43	7.47	8.25	9.10	11.13	13.02	11.51	11.65	10.83	11.20	11.85	11.54	7.80	5.91	7.11	8.04	7.06	6.42	11.21
For Other Industries	31.29	37.05	38.96	38.63	38.60	35.88	34.76	32.22	31.71	32.82	33.27	29.00	28.03	31.02	43.45	43.83	41.03	49.00	40.81	37.75
Construction Materials for the Metallurgical Industry	--	--	--	--	--	--	--	.93	.78	1.11	.83	1.01	1.46	.68	.27	.23	.47	.35	.61	.78
Construction Materials for Other Industries	.65	.67	1.10	1.21	1.68	2.21	1.70	2.82	2.39	2.62	2.50	2.96	3.23	3.66	2.26	2.62	2.25	1.87	3.00	1.70
For Agriculture	.30	.39	.46	.42	.47	.52	.30	.34	.36	.31	.45	.34	.37	.30	.23	.10	.12	.07	.08	.15
Capital Goods	8.65	5.38	6.17	6.64	7.50	8.17	9.88	13.01	13.16	12.85	13.71	15.75	16.03	10.84	5.04	5.50	6.84	6.32	9.88	11.54
For Industry	.25	1.28	1.48	1.52	1.45	2.61	3.01	3.56	3.43	3.06	3.55	3.83	4.18	3.34	1.05	1.88	2.21	2.87	3.50	4.24
For Agriculture	--	.10	.20	.19	.16	.14	.21	.31	.22	.22	.24	.23	.25	.17	.12	.17	.18	.16	.35	.38
Transport Equipment	.69	.00	1.09	1.10	1.63	1.94	2.96	4.55	4.76	4.30	4.00	5.80	5.82	2.83	1.33	1.43	1.80	1.00	2.31	3.27
Construction Material	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	4.70	3.18	3.40	3.77	4.32	3.48	4.00	4.58	4.75	5.04	5.92	5.80	4.68	4.43	1.94	2.11	2.62	2.50	3.03	3.67
Unclassified Goods	5.36	.05	.18	.08	.05	.04	.06	.06	.08	.06	.05	.05	.05	.84	.02	.02	.03	.03	.03	.05
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Calculated from data provided by MFPS:EF.

Table 186

*Imports: Quantum Indices by Sector, 1901-1920*  
(1901 = 100)

Sector	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
<b>Mining</b>	100.00	114.76	114.50	123.93	130.10	154.75	163.95	172.67	176.53	200.00	221.20	272.04	294.46	212.69	152.60	131.16	101.85	92.35	120.07	159.62
Manufacturing	100.00	102.58	101.03	102.99	122.06	120.76	147.40	129.64	125.76	170.45	189.74	225.43	210.41	110.20	80.35	99.53	78.05	78.77	113.67	156.32
Nonmetallic Minerals	100.00	81.91	96.14	88.40	126.36	150.61	124.41	122.35	135.08	187.40	201.85	235.95	250.08	112.20	76.57	89.14	59.40	34.28	85.01	107.52
Metallurgy	300.00	360.40	410.17	528.81	477.37	212.90	263.36	227.40	271.07	322.82	368.20	434.94	461.39	229.05	53.15	101.00	88.86	67.92	102.66	208.06
Machinery	100.00	59.08	58.07	66.30	100.37	83.37	123.99	128.25	148.04	177.05	254.25	330.20	348.13	119.08	33.00	38.31	55.69	51.61	92.76	142.36
Communications and Electrical Equipment	100.00	100.00	109.20	131.42	102.43	175.35	209.16	228.96	202.00	307.58	534.74	633.67	638.67	182.20	91.56	125.32	135.82	124.70	217.40	227.00
Transport Equipment	100.00	22.16	25.60	21.10	46.30	66.45	107.10	124.05	141.03	169.00	244.23	672.05	672.58	135.45	38.32	64.38	101.92	73.21	220.96	666.82
Wood	100.00	80.24	85.07	55.57	71.04	138.30	159.75	142.18	162.88	250.15	343.82	299.67	220.93	110.24	48.70	54.16	47.46	51.25	72.12	124.10
Furniture	100.00	144.09	95.13	158.02	216.10	263.25	331.02	303.96	328.36	426.00	568.72	739.11	683.68	369.14	79.39	51.70	68.01	39.00	88.23	164.97
Paper and Cardboard	100.00	67.25	63.05	60.14	91.04	81.63	97.07	97.75	97.01	133.19	149.52	162.23	169.08	110.60	122.36	154.72	114.08	111.41	149.22	175.25
Rubber	100.00	117.04	125.19	129.47	154.52	161.86	128.30	127.08	145.81	232.49	299.10	262.85	178.62	173.61	251.38	221.72	180.88	319.14	667.87	
Leather Products	100.00	148.78	115.20	126.97	145.63	147.62	164.22	127.70	140.13	232.20	304.17	268.30	258.12	132.63	106.16	234.04	140.79	211.56	241.00	200.72
Chemicals	100.00	92.15	70.46	78.73	67.21	56.73	26.63	93.83	98.36	116.00	121.38	152.82	156.90	103.25	108.12	141.00	127.10	101.81	210.00	107.72
Pharmaceuticals	100.00	103.73	104.41	104.25	142.415	140.63	129.86	147.67	130.56	153.63	163.18	219.07	176.56	103.50	111.26	136.33	149.69	197.71	147.63	212.06
Textiles	100.00	164.08	181.03	185.32	172.86	177.16	204.03	143.64	130.11	201.73	252.94	213.90	131.44	78.74	64.02	114.07	82.37	93.65	71.70	116.72
Clothing and Footwear	100.00	50.27	64.41	60.85	70.98	83.65	117.00	85.01	81.31	110.00	154.42	150.43	135.25	42.71	31.72	43.81	38.53	46.96	35.14	61.56
Food Products	100.00	90.05	85.47	84.33	90.12	83.18	80.35	77.70	80.53	87.62	94.82	103.00	89.67	60.84	55.12	45.62	37.31	42.95	57.33	55.59
Beverages	100.00	110.02	112.00	104.12	126.54	126.57	117.01	127.53	143.86	140.02	165.96	183.47	103.72	83.52	82.09	58.49	59.09	50.21	84.60	
Tobacco	100.00	70.46	52.88	52.18	11.44	13.53	10.30	15.29	10.31	12.85	15.81	30.56	7.24	3.22	3.62	6.86	12.71	20.64	38.73	
Printing and Publishing	100.00	84.96	56.40	104.63	127.52	162.86	322.62	317.10	425.58	507.76	473.44	708.30	233.22	268.69	394.21	290.21	108.18	233.11	346.05	
Others	100.00	87.11	92.44	101.24	139.60	138.34	60.22	135.00	152.81	188.17	220.46	237.48	319.63	235.67	162.81	97.10	11.25	51.35	111.05	214.08
<b>Nonindustrial Products</b>	100.00	124.20	133.10	144.56	164.61	170.32	178.86	177.06	207.51	233.12	252.69	300.08	374.00	220.94	220.42	267.00	136.80	150.30	236.34	238.36
<b>Total</b>	100.00	104.00	108.41	108.11	127.02	132.60	152.44	123.43	144.87	180.81	129.12	236.30	232.00	126.63	96.82	103.47	83.45	94.78	123.47	121.40

Source: Same as table 135.

Table 137

*Import Structure by Sector, 1901-1920*  
(%)

Sector	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Mining	7.46	6.55	5.81	5.70	5.10	6.14	6.28	6.36	5.99	6.32	6.63	7.37	7.40	6.44	10.49	10.37	12.19	8.60	7.50	7.51
Manufacturing	76.00	83.90	84.23	84.31	84.95	84.10	85.23	83.83	84.00	84.11	84.41	83.47	82.90	77.03	70.05	71.95	76.38	77.72	79.74	81.45
Nonmetallic Minerals	2.92	2.30	2.63	2.54	3.44	4.20	3.69	3.57	3.55	3.58	2.79	4.02	4.96	3.50	3.49	3.82	3.41	2.90	4.12	3.05
Metalurgy	6.76	6.71	8.94	9.08	10.02	10.07	10.84	14.16	15.95	16.72	14.60	15.79	17.28	14.16	6.64	9.33	11.70	9.29	13.62	16.40
Machinery	4.75	3.75	4.11	4.44	4.76	4.12	4.91	5.73	6.32	6.76	6.76	7.29	6.45	5.79	2.18	2.49	3.31	3.19	4.38	5.14
Communications and Electrical Equipment	--	.50	.53	.61	.85	.92	1.83	1.63	1.74	1.82	2.11	1.99	2.12	1.53	1.12	1.43	1.54	1.01	2.34	1.96
Transport Equipment	.69	.98	1.11	1.18	1.63	2.22	3.04	4.09	5.18	5.94	5.21	8.07	7.33	2.35	1.14	1.82	2.24	1.65	3.35	9.10
Wood	.32	.66	.69	.61	.08	.57	.82	1.26	1.33	1.01	1.51	1.25	1.37	1.28	.61	.95	.68	.80	.53	.61
Furniture	.14	.19	.12	.19	.21	.23	.25	.30	.20	.24	.24	.24	.26	.20	.68	.68	.66	.65	.65	.61
Paper and Cardboard	3.63	3.68	1.82	1.75	1.87	1.57	1.57	1.67	1.04	1.72	1.72	1.60	1.72	1.96	2.75	4.09	3.94	3.43	3.97	3.67
Rubber	.41	.44	.49	.44	.48	.36	.29	.25	.39	.31	.30	.33	.54	.52	.65	.80	.78	.61	.72	.97
Lumber Products	1.18	1.73	1.89	1.61	1.75	1.82	1.68	1.49	1.76	1.77	1.88	1.54	1.83	1.34	2.10	2.87	2.29	2.71	2.60	1.90
Chemicals	5.23	5.07	5.84	5.64	6.12	6.35	5.35	5.80	6.91	6.65	5.41	5.69	5.94	6.97	10.77	11.38	12.60	10.78	11.95	8.74
Pharmaceuticals	2.22	2.65	2.80	2.75	2.61	2.58	2.43	2.20	2.45	2.49	2.46	2.30	2.17	2.55	3.11	3.54	3.39	3.90	3.25	2.65
Textiles	31.00	17.78	19.39	18.21	18.52	15.85	15.82	12.86	10.59	12.25	13.42	10.38	9.13	7.89	6.06	12.04	11.69	14.10	1.38	14.14
Clothing and Footwear	3.66	3.17	3.04	3.05	3.00	3.16	3.28	2.64	2.30	2.87	3.14	2.54	2.31	1.73	1.50	1.67	1.43	2.00	1.20	1.83
Food Products	20.61	23.77	21.06	20.65	20.92	17.65	15.50	16.71	15.40	14.06	12.94	12.28	11.31	14.15	17.18	11.63	12.60	13.64	12.04	9.48
Beverages	8.23	8.55	6.95	6.84	6.57	6.62	5.41	4.97	5.17	6.03	5.25	4.92	4.74	4.74	4.28	2.165	3.60	2.84	2.72	
Tobacco	.04	.04	.03	.04	.03	.03	.02	.02	.01	.02	.01	.01	.01	.01	.01	.01	.01	.01	.01	.02
Printing and Publishing	.55	.63	.64	.64	.64	.64	.64	.64	.62	.64	.62	.64	.64	.71	.69	.45	.40	.40	.37	.30
Others	.23	2.40	2.01	2.77	2.65	2.65	2.67	3.19	3.09	3.09	2.62	2.74	3.76	1.74	2.09	2.02	3.94	2.01	2.92	
Nonmetallic Products	15.65	11.45	9.56	9.29	9.94	9.76	8.49	9.52	10.01	10.00	8.96	9.16	9.62	13.53	19.43	15.18	11.43	13.06	12.76	11.03
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Same as table 135.

Table 138  
*Foreign Debt and the Balance of Trade, 1889-1945*  
 (£)

Year	Foreign Debt			Balance of Trade
	New Loans (1)	Amortisations (2)	Outstanding Debt <sup>a</sup> (3)	
1889	19 837	9 028	31 104	4 550
1890	—	1 527	30 897	2 363
1891	—	1 627	30 578	1 571
1892	—	1 694	30 180	4 582
1893	3 710	2 720	33 487	5 792
1894	—	2 006	32 929	3 345
1895	7 442	3 004	39 817	3 374
1896	1 000	2 439	40 203	453
1897	2 000	3 710	40 460	2 893
1898	8 614	2 652	47 500	1 483
1899	—	1 571	46 303	2 982
1900	—	1 160	45 597	11 754
1901	18 069	1 978	63 449	19 245
1902	—	2 584	63 222	13 158
1903	8 800	3 920	71 302	12 675
1904	2 082	3 793	72 900	13 515
1905	6 800	4 807	79 043	14 812
1906	10 290	5 976	88 675	10 855
1907	5 650	7 087	92 265	13 649
1908	23 750	14 168	112 818	8 664
1909	4 300	9 617	114 704	26 585
1910	18 200	12 793	129 279	15 220
1911	9 900	14 138	133 203	14 017
1912	4 200	12 334	132 545	11 224
1913	19 620	14 997	145 252	— 1 715
1914	18 702	9 454	162 006	11 330
1915	3 630	7 594	162 919	23 863
1916	1 168	6 953	162 642	16 093
1917	—	6 619	159 564	18 521
1918	346	13 748	154 697	8 351
1919	2 019	11 110	153 442	46 521
1920	—	10 065	151 354	— 6 023
1921	20 336	10 781	170 387	— 622
1922	17 717	11 297	186 396	17 708
1923	—	11 027	184 461	21 151
1924	—	10 278	182 702	24 335
1925	3 082	10 252	184 001	18 434
1926	29 246	15 078	211 474	14 378
1927	26 622	15 955	235 206	9 055
1928	25 293	18 696	255 068	6 757
1929	2 377	19 175	253 305	8 178
1930	20 000	21 642	267 173	12 127
1931	18 369	20 590	276 985	20 788
1932	—	16 663	269 449	14 886
1933	—	5 134	267 449	7 668
1934	—	6 968	285 040	9 773
1935	—	7 752	259 802	5 581
1936	—	7 893	253 657	9 003
1937	—	8 477	243 725	1 922
1938	—	—	243 725	29
1939	—	—	243 725	5 497
1940	—	3 132	242 309	— 46
1941	—	3 981	240 668	15 014
1942	—	3 987	232 889	35 239
1943	—	3 887	227 256	31 404
1944	—	18 822	190 010	32 766
1945	—	10 685	176 407	43 731

Sources and Methodology by Column:

- (1) (2) and (3) MF/SEEF, *Finanças do Brasil*, vol. 19: *Dívida Externa, 1824-1945*, by V. F. Bouças (Rio de Janeiro: Tipografia do Jornal do Comércio, Rodrigues & Cia., 1956), p. 589, chart 3.  
 (4) IBGE, *Anuário Estatístico do Brasil, 1939-1940*, for data covering the years 1889-1939. The figures for 1940-1945 were calculated from data in *crúzeiros* and *contos* provided by MF/SEEF. These data were converted to pounds sterling using the annual average exchange rates of the Câmara Sindical dos Corretores da Bolsa de Valores do Rio de Janeiro, as published in IBGE *Números Índices de Preços e Quantidades do Comércio Exterior e de Cabotagem*, appendix. Since the exchange rate did not change during these years, the converted data are not distorted.  
<sup>a</sup> At year-end.



Table 139

*Foreign Debt and the Balance of Trade, Accumulated Totals, 1822/  
1888-1945* ( £ 1 000 )

Year	Foreign Debt		Balance of Trade
	Receipts	Amortizations	
1822/1888	49 156	63 711	45 680
1889	68 992	72 738	50 239
1890	—	74 265	52 602
1891	—	75 891	54 173
1892	—	77 585	58 725
1893	72 702	80 305	64 517
1894	—	82 311	67 862
1895	80 144	85 405	71 236
1896	81 144	87 844	71 689
1897	83 144	91 554	74 582
1898	91 758	94 206	76 065
1899	—	95 777	79 047
1900	—	96 937	90 801
1901	109 827	98 916	110 046
1902	—	101 500	123 204
1903	118 327	105 420	135 879
1904	120 288	109 213	149 394
1905	127 189	114 020	164 207
1906	137 473	119 996	184 062
1907	143 129	127 083	197 711
1908	166 879	141 251	206 375
1909	171 179	150 868	232 960
1910	189 379	163 661	248 180
1911	199 279	177 799	269 197
1912	203 479	190 133	273 421
1913	223 099	205 131	271 706
1914	241 802	214 584	263 036
1915	245 332	222 178	306 899
1916	346 490	229 132	322 992
1917	—	238 760	341 513
1918	246 836	252 223	349 864
1919	248 865	263 338	395 385
1920	—	273 402	389 362
1921	269 191	284 184	388 740
1922	286 908	295 481	406 448
1923	—	306 608	427 599
1924	—	316 785	451 834
1925	289 990	327 037	470 266
1926	319 238	342 115	485 004
1927	345 858	358 070	494 059
1928	371 150	376 767	600 816
1929	374 027	395 942	508 994
1930	394 027	417 584	521 121
1931	412 387	438 174	541 909
1932	—	454 836	556 795
1933	—	450 970	584 453
1934	—	466 938	574 226
1935	—	474 690	579 807
1936	—	482 653	588 810
1937	—	491 029	590 732
1938	—	491 029	590 761
1939	—	491 029	596 258
1940	—	494 161	596 210
1941	—	498 142	611 924
1942	—	502 130	646 463
1943	—	506 016	677 867
1944	—	524 839	710 633
1945	—	526 324	754 364

Sources: Same as table 138.

Table 140

*Real Product, Exports, Imports and Income, 1920-1946*  
(Million Contos de Réis at 1939 Prices, except as Indicated)

Year	GNP (1)	Exports (2)	Import Capacity (3)	Gross National Income (4)	Gross Income Per Capita (Cr\$) (5)
1920	21.6	2.5	3.2	22.3	.81
1921	22.3	2.6	2.6	22.3	.80
1922	23.0	2.7	4.5	24.8	.87
1923	24.3	3.0	6.3	27.6	.95
1924	24.1	2.7	7.9	29.3	.99
1925	23.6	2.7	8.1	29.0	.96
1926	24.2	2.7	7.8	29.3	.95
1927	26.3	2.9	7.3	30.7	.97
1928	30.6	2.9	8.4	36.1	1.12
1929	30.5	3.1	8.7	36.1	1.10
1930	30.3	3.3	6.1	33.1	.99
1931	29.4	3.7	6.5	32.2	.94
1932	31.0	2.9	5.5	33.6	.96
1933	34.2	3.6	5.8	36.4	1.02
1934	36.5	3.9	6.6	39.2	1.08
1935	37.1	4.1	5.1	38.1	1.03
1936	41.2	4.6	5.7	42.3	1.12
1937	42.2	4.4	5.7	43.5	1.12
1938	44.2	5.4	5.3	44.1	1.11
1939	45.6	5.8	5.8	45.6	1.13
1940	46.9	4.6	4.5	46.8	1.14
1941	51.3	5.2	5.8	51.9	1.23
1942	49.0	4.2	4.5	49.3	1.15
1943	52.7	4.5	5.0	53.2	1.21
1944	53.7	4.6	5.9	55.0	1.22
1945	55.0	4.6	6.6	57.0	1.23
1946		6.1	6.3		

## Sources and Methodology by Column:

- (1) GNP was calculated by adopting an estimate for 1939 (given in "Contas Nacionais do Brasil, Novas Estimativas," *Conjuntura Econômica* 23 [October 1969]: 53-91) and varying this in proportion to the indices of agricultural and industrial output presented in table 127 to obtain the figures for other years.
- (2) The figures on merchandise exports in 1939 (as given in MF/SEEF, *Comércio Exterior do Brasil, 1939*) were first corrected to remove services. The correction factor was obtained through analysis of balance of payments in the period 1940-1945. The export figures for other years were then determined by varying the corrected 1939 figure in proportion to the export quantum index in FGV/IBRE/CCN, "Estrutura do Comércio Exterior do Brasil, 1920-1964," 2 vols. (Rio de Janeiro, 1969), (Mimeographed). The index was adapted for use with the Laspeyres formula.
- (3) Import capacity was calculated by applying a terms-of-trade index to column (2). This index was taken from FGV/IBRE/CCN, "Estrutura do Comércio Exterior," vol. 2.
- (4) Gross national income was obtained by using the accounting relationship gross national income = GNP — exports + capacity to import = column (1) — column (2) + column (3).
- (5) These figures were obtained by dividing those in column (4) by population estimates for the corresponding years. The population estimates came from IBGE, *Séries Estatísticas Retrospectivas* (Rio de Janeiro, 1970).

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