Weine Karlsson

MANUFACTURING IN VENEZUELA

Studies on Development and Location

Akademisk avhandling

som för avläggande av ekonomie doktorsexamen vid Handelshögskolan i Stockholm framlägges till offentlig granskning måndagen den 29 september 1975 kl. 10.15 i sal 205 å högskolan, Sveavägen 65.

Stockholm 1975

MANUFACTURING IN VENEZUELA

INSTITUTE OF LATIN AMERICAN STUDIES, STOCKHOLM, SWEDEN
PUBLICATIONS SERIES A MONOGRAPHS NO. 2

MANUFACTURING IN VENEZUELA

STUDIES ON DEVELOPMENT AND LOCATION

by

WEINE KARLSSON

ALMQVIST & WIKSELL INTERNATIONAL
STOCKHOLM
1975

Skrifter utgivna av Latinamerika-institutet i Stockholm Serie A. Monografier 2

Ekenäs 1975
Ekenäs Tryckeri Aktiebolag

To Gunilla

Contents

Tables 10

Figures 13

Acknowledgements 15

Introduction 17

1 Overall Survey of Twentieth-Century Economic Structure and Development 21

The Economic Structure of Pre-Petroleum Venezuela 21

Structural Changes in the Economy of Petroleum Venezuela: the 1920's onwards 27

The proceeds of Venezuelan petroleum 28

Effects on non-oil activities 32

Income distribution 37

The Urbanization 39

2 The Rise and Spread of the Manufacturing Industry 43

The Evolution of Manufacturing in Latin America outside Venezuela 44

General observations 44

Hypotheses on locational developments 48

The Evolution in Venezuela 59

The first two decades of this century 59

The interwar period 63

The postwar period 68

3 The Petroleum Refining Industry 71

The Development of Petroleum Exploitation 71

The rise of Venezuela as the world's leading low-cost oil producer 71

The 1943—1957 expansion 77

The post-1957 stagnation 79

The Development of Petroleum Refining 81

Refining for the Venezuelan home market: the 1917—1938 period 83

Refining for export I: the Netherlands Antilles 86

Location and expansion 86

Structure and stagnation 93

Refining for export II: the mainland 96

The 1938—1941 expansion 96

The postwar expansion 99

Plant Structure and Location 102

The Paraguaná Peninsula 102

Lake Maracaibo 106

Central area 107

Eastern area 109

Significance for the National and Local Economy. Some Observations 110

Employment and national income effects 110

Linkage effects 112

Local and regional impact 114

4 The Cotton Textile Industry, 1858—1958 117

Development 117

Craft industry in colonial times 117

The beginnings of factory industry 118

The establishing period, 1908—1914 120

A decade and a half of continued expansion, 1915—1930 124

The 1930's — a decade of decline 130

World War II and its aftermath — a growth which faded out 134

The 1950's — looming and elusive growth 136

The Venezuelan Development Pattern Reconsidered in the Latin American Context 137

Foreign Financing and Ownership 141
Locational Developments. A Summary 142

5 The Food Industries. Three Cases 145

The Meat Slaughtering and Processing Industry 145
Development 145
Location 147
Cattle-breeding areas 147
Meat-slaughtering plants 148
Meat-processing plants 149

The Milk Processing Industry 150
Development 150
Structure 155
Location patterns 157

The Malt Beverage Industry 161
Development 161
Structure 163
Location 165

6 Location Patterns of the Manufacturing Industries in the Mid-1960's 169

The Location Patterns of Different Activities 170
Cartographic techniques 170
Locational grouping 170

The Overall Location Pattern of the Manufacturing Industry 171

Final Remarks 175

Appendix

A Statistical Note on the Manufacturing Industries in Venezuela, 1913—1953 193
Pre-World War I period 193
The 1920's 198
The situation in 1936 203

Abbreviations 221

References Cited 223

Index 237

Tables

1.1 Per Capita Income Estimates 1830—1970 for Venezuela Compared with Other Latin American Countries 24

1.2 Composition of Venezuela's Gross Domestic Product by Industries, 1950—1973 (per cent) 30

1.3 Distribution of Economically Active Population by Industries, 1920—1971 (thousands) 32

1.4 Percentage Distribution of Active Population by Industries, 1920—1971 34

1.5 Estimated Productivity Differential by Industries. Venezuela Compared with Latin America 37

1.6 Urban and Rural Population, 1926—1971 40

2.1 Evolution of Value Added Per Capita in Manufacturing, 1930—1970. Estimates for Eight Latin American Countries 46

2.2 Selected Indicators of Manufacturing Activity in Major Latin American Countries, 1970 58

2.3 Composition of Output by Selected Industries 1948, 1958 and 1986, and Manufacturing Employment, 1966 68

2.4 Value Added by Manufacturing in Leading states, 1953 and 1963 (per cent) 69

3.1 Venezuelan Crude Oil Extracted, At-Source-Refined and Exported. Selected Years, 1919—1974 (million tons) 78

3.2 Refining Capacity and Exports of Derivatives from Aruba and Curaçao. Selected Years, 1930—1970 92

3.3 Refining Capacity Expansion in Venezuela, 1938—1974 101

3.4 Venezuelan Oil Refineries in 1974: Types, Capacity, Throughput and Employment (1966) 103

Tables

3.5 Production Inputs and Outputs of the Venezuelan Refining Industry in 1963 113

4.1 The Venezuelan Cotton Textile Industry, 1910—1970: Some Reported Estimates and Data 122

4.2 Census Data and Estimates for Spinning and Weaving Mills, 1936 127

4.3 Imports of Textile Manufactures in Relation to Total Imports, 1935 (per cent) 130

4.4 Tariff Duties on Cotton Manufactures in Some Latin American Countries, 1929 and 1936 (pence per lb.) 133

4.5 The Evolution of Cotton Spindles in Principal Latin American Countries (thousands) 138

4.6 The Evolution of Cotton Power Looms in Selected Latin American Countries (hundreds) 140

6.1 Locational Grouping of the Manufacturing Activities in the Mid-1960's 171

6.2 Factory Industry Employment in Major Urban Agglomerations, 1966 172

A 1 Industrial Enterprises in 1913 by Industries and Major States 194

A 2 Industrial Enterprises in 1913 by States 196

A 3 Industrial Enterprises in 1913 by Size Groups 198

A 4 Major Establishments and Expansions in the War-Years and the Early Twenties 199

A 5 Estimated Capital Increase in Principal Manufacturing Industries, c. 1913—c. 1923 (Bs million) 200

A 6 Capital/Labor Ratios for Some Manufacturing Enterprises in the Early Twenties 201

A 7 Estimates of Manufacturing Capital and Employment in the Early Twenties 201

A 8 Manufacturing Plants by 1929/1930 as per US Official Estimates 202

A 9 Manufacturing in 1936 by States. Official Census Results 205

A 10 Manufacturing in 1936 by Industries. Official Census Results 206

A 11 Manufacturing Industries in 1936 by ISIC Classification 207

A 12 Seasonally Active Brown-Sugar Mills in 1936 by States 209

A 13 Manufacturing Industries with More than Twenty Employees per Enterprise, 1936 (state averages) 210

Tables

A 14 Manufacturing Industries in 1936 by Types and Size Groups 211
A 15 Manufacturing Industries in the Federal District, 1936 212
A 16 Factory Industry in 1936 by States. Some Estimates 214
A 17 Estimated Factory Industry Employment and Capital, 1913—1936 215
A 18 Manufacturing Industries in Caracas. Establishments and Employment by Size Groups 216
A 19 Manufacturing Industries in 1953 217
A 20 Venezuela's Manufacturing Industry, 1909—1966. Some Data Series and Estimates 218
A 21 Estimates of the Gross Domestic Product Composition by Industries, 1925 and 1936 (per cent) 220

Figures

(Figures 9, 10 and 12—34 show the number of persons engaged in 1966 in various manufacturing industries).

1 Relief Map and Natural Regions of Venezuela. 49
2 Urban Population in 1961 in Venezuela. 50
3 Manufacturing Employment in 1966 in Venezuelan Urban Places. 51
4 Number of Persons Engaged in Manufacturing in 1963 by States and Establishment Size. 52
5 Number of Employees in Manufacturing by States, 1953 and 1963. 53
6 Petroleum Industry in Venezuela, Aruba, Curaçao and Trinidad. Oilfields, Pipelines, Terminals and Refineries. 54
7 Crude Oil Production and Refining and Government Oil Income, 1924—1974. 55
8 The Guayana Region. 56
9 Meat and Fish Processing (201[1] and 204). 177
10 Dairy Industries (202). 177
11 The Development of the Dairy Industry, 1940—1970. 178
12 Fruit and Confectionary Industries (203 and 208). 179
13 Grain Mills (205). 179
14 Sugar Industry (207). 180
15 Other Food Processing (209). 180
16 Beverage Industries (21). 181
17 Tobacco Industries (22). 181
18 Cotton Textile and Cordage Industries (part of 23). 182

[1] Refers to the 1958 ISIC code.

Figures

19	Knitting Mills, etc. (part of 23).	182
20	Apparel Manufacturing (24).	183
21	Wood and Furniture (25 and 26).	183
22	Paper Industries (27).	184
23	Printing and Publishing (28).	184
24	Leather and Rubber Industries (29 and 30).	185
25	Chemical Industries (part of 31).	186
26	Personal Care Industry (part of 31).	186
27	Construction Materials (part of 33).	187
28	Glass, Pottery, etc (part of 33).	187
29	Petroleum Refining (32).	188
30	Primary Metals (34).	188
31	Metal Products (35).	189
32	Machinery and Electrical Goods (36 and 37).	190
33	Automobile Industry (383).	191
34	Plastic and Other Industries (39).	192

Acknowledgements

This book presents a series of studies in the geography of manufacturing developments in Venezuela. It is the product of an interest in the economic and social development of this Latin American country that goes back more than ten years. It was originally conceived during a visit I paid to Venezuela as a young student in 1964.

The help given to me by numerous individuals and institutions has made it possible for me to complete this work. To the Department of Geography at the Stockholm School of Economics and to the Institute of Latin American Studies in Stockholm the book owes its inception and its principal support. I am particularly indebted to Gunnar Alexandersson, Professor in the Department, and to Magnus Mörner, Director of the Institute. Gunnar Alexandersson, my adviser, has indefatigably and patiently sustained me with counsel and criticism throughout the preparation of the work. He also read my manuscript and improved it substantially in many ways. Magnus Mörner has given me invaluable help, putting forward ideas and suggestions and, not least important, reducing the burden of my responsibilities at the Institute during the last phase of this work.

I spent a total of seven months on field work in Venezuela in 1964 and 1968, travelling all over the country and visiting various institutions. Many persons in Venezuela, too numerous to mention by name, facilitated my field research in many ways. I owe a special debt of gratitude to Guillermo Morón, who was the first to introduce me to Venezuela's fascinating economy and society and to Mauricio Pérez Badell for generous hospitality. Many thanks also to Ramón Tovar and Marco-Aurelio Vila for discussions and help at an early stage of my research and for their inspiring writings. I have also drawn much inspiration from the works of Orlando Araujo, Federico Brito Figueroa and Domingo Alberto Rangel.

For financial aid for my field research I am indebted to the Stockholm

School of Economics, Compañía Shell de Venezuela and Carl-Bertel Nathhorst's Foundation for Science, Stockholm.

Åke Wedin has critically read most of the manuscript. To him I extend my thanks also for assistance in getting hold of some material. Several other people have read sections of the study and have provided valuable criticism. They include Enrique Ganuza, Rigoberto García, Markku Jääskeläinen, Josino Moraes, Göran Norström, Janis Rutkis, Kristin Tornes and Stacey Widdicombe. I have also profited from discussions at different stages in the research with William William-Olsson and Claes-Fredrik Claeson and other friends and colleagues in the Department of Geography, with guest researchers at the Institute, and, among others, with Gunilla Andrae, Peter Gould, Willard Miller and Gunnar Myrdal, ex-Chairman of the Board of the Institute. I am last but not least indebted to Enrique Gómez for many stimulating discussions and valuable research assistance.

The maps and diagrams were drawn by Anja González. Birgitta Jörgensen, Kristina Gynther and Anita Fogelström have coped with the seemingly endless job of typing and retyping the manuscript. Britt Johansson and the other library staff at the Institute have given me valuable bibliographical help. I would like to thank them all.

I also wish to express my gratitude to Nancy Adler, who has tackled the job of correcting and improving my English style, English not being my native language.

I have worked for so many years on this study, off and on, that I cannot hope to give adequate credit to all those who have helped me in one way or another. To all these unmentioned persons I would like to extend my thanks.

Finally, much credit goes to my wife Gunilla, who has my inestimable gratitude. She has been a continual source of encouragement and strength during the long hours of work which the study has entailed.

Rönninge, August 1975

Weine Karlsson

Introduction

This book deals with the geography of manufacturing developments in Venezuela, during particularly the early phases of the country's modernization process. Venezuela is, thanks to large oil revenues, a rather affluent nation of the Third World. She has vast natural resources and in general favorable conditions for a development on a comprehensive scale of her manufacturing industry.

As shown in detail in the book manufacturing has failed, at least until recent years, to play an important role in the economic development process. In particular it has failed to create employment. This is a common characteristic for underdeveloped countries.[1]

Geographically, modern manufacturing (that is the factory industry) like other non-primary activities was highly concentrated to the primate city, Caracas, and its vicinity. Growing regional disparity in such an important modernization component as manufacturing is a commonplace observation for developing nations. Explanations of the process generating and cumulating the regional disparity have been outlined from different angles and with different objectives by e.g. Gunnar Myrdal, Albert Hirschman, John Friedmann and Andre Gunder Frank.[2] Friedmann has also formulated a regional development strategy to overcome the imbalance, to a large extent based on the problem complex of the Venezuelan case.

Much of the discussion has been pursued in abstract terms and with highly aggregated variables. In order to better explain the locational behaviour of modern manufacturing in developing countries, e.g. a concentration to a single city or region, it is of paramount interest to know empirically how the location pattern is structured and how it has evolved

1 See e.g. Sutcliffe 1971.

2 Myrdal 1957, Hirschman 1958, Friedmann 1966 and Frank 1967.

for individual activities. This forms the background to the institutional and empirical approach adopted in this study.

There are remarkably few empirical and detailed studies of modern manufacturing in Third World countries emphasizing evolution in space. The need for such studies on Latin America is stressed by e.g. James Parsons.[3] The need in general for empirical description and analysis of economic activities in order to improve the basis for theories is underlined by e.g. Peter Odell.[4]

Chapter 1 contains an overall survey of economic and demographic changes in Venezuela during the oil era. In particular, the shifts in production and employment, the pattern of income distribution and the urbanization process are studied. As a background, the magnitude of the oil income accruing to the country and the country's economic dependence on oil is outlined. In short, the chapter shows the subordinate role of manufacturing in the modernization and urbanization process and the late occurrence of the manufacturing growth in the development stages.

The question why manufacturing developed so late in Venezuela occupies much of the interest in chapter 2, which describes the development of the factory industry. The focus is on the industry's early development and location and its magnitude during in particular the initial oil decades: when, in which branches and where the first factories were established and how they developed. Main development factors are indicated. A survey of the manufacturing developments in other countries in Latin America highlights the deviating Venezuelan pattern.

The country's dominant export activity, the oil petroleum industry, is dealt with in chapter 3. This starts with a description of how the exploitation of Venezuela's oil resources, for a period the most profitable in the world, developed into a large-scale, foreign-dominated export activity. What manufacturing activity did this primary industry entail? Where came the processing of the oil to be located? And what impact on the national and regional economy and in transmitting growth to other manufacturing did the oil processing have? Subsequent sections of the chapter try to provide materials for answering these questions. A detailed account is given how, before 1950, the Venezuelan oil gave birth to an important industrial growth in the adjacent Netherlands Antilles. The chapter also contains a functional and locational description of those domestic refineries which developed after World War II. This section forms the back-

3 See Wagley 1964:58—65. See also David Robinson 1972.

4 Odell 1967.

ground for the final, brief account of the national and local impact of the oil refineries.

Then, what about the production of goods for the domestic market? How did this develop and where? In the present work attention is focused on some industries producing basic goods. Chapter 4 deals with the manufacturing of cotton textiles: ways in which this industry developed, generally and locationwise, in the pre-1958 period. This chapter highlights the obstacles and general conditions of the early industrial development in Venezuela.

In chapter 5, the development of the domestic production of another group of basic necessities, that of food and beverages, is studied. Three cases were chosen: the meat processing industry, the dairy industry and the malt beverage industry.

Chapter 6, finally, in brief shows the amount and the spatial distribution of the development achieved by the mid-1960's in manufacturing. The location pattern for highly disaggregated manufacturing activities are shown in a series of maps. Those activities which are predominantly concentrated in Caracas and the north-central region are specially indicated.

The time covered varies. In chapter 2 attention is focused on the first four decades of this century. Chapter 4 ends with 1958 while the analyses are brought up to the early 1970's in chapter 3 and 5.

1. Overall Survey of Twentieth-Century Economic Structure and Development

The following is a synopsis of some of the major aspects of national and regional economic changes in twentieth century Venezuela. Attention is focused on the change in the productive structure and in employment. Brief surveys are made of the income distribution and regional population shifts. This is done against a background of statistical indicators presented in tables.

The survey has been based on the study of economic and historical literature and statistics. However, both these sources are meager in quantity and in quality. For the final period of pre-oil Venezuela (from the 1860's to the 1920's) and for the last five decades, there is an embarassing lack of empirical studies.[1]

The Economic Structure of Pre-Petroleum Venezuela

Until the 1920's Venezuela was almost exclusively an agricultural and livestock-raising country. Structurally her economy (and society) was based on the *latifundios*. These were large estates worked by dependent labor, which had grown up soon after the Spanish conquest and colonization in the sixteenth century. At the same time, more or less independent

[1] As regards comprehensive and interpretative studies on Venezuela's twentieth century economic history, the only notable contributions so far are the Marxian works of Brito Figueroa (1967 and 1972), although these tend to concentrate on social and rural topics, and of Rangel (1969 and 1970). In contrast there is an abundance of research literature for the colonial and early independence period, whose economic history is fairly well covered by descriptions and interpretations, e.g. Moll 1956, Arcila Farías 1946, Arellano Moreno 1960, Brito Figueroa 1963 and 1966, Polanco Martínez 1968 and D'Ascoli 1970.

of the dominating latifundia production system, there was a large sector of subsistence peasants existing on marginal terms.[2]

Except for the initial colonial phase, when a diversified, practically self-sufficient economy developed,[3] pre-twentieth century Venezuela was largely dependent on supplying a single product to a European market. The main activity creating this export trade was the cultivation of tropical crops supported by cattle ranching. The shifts in the European demand from one crop to another caused successive export production cycles, during colonial times between tobacco, indigo, sugar, cocoa and, later, coffee. These shifts constituted a potential factor for growth and structural change, but apart from minor wealth differences between regions or between landlord-producers, they left the traditional, latifundia-based structure of society unchanged. The people in general remained poor.[4]

The last and most important monoculture, that of coffee, evolved after lengthy wars of independence and civil wars in the early and mid-nineteenth century. Coffee was the country's leading export from around 1830 to 1925, and it brought about the first significant rise in per capita incomes (compare table 1.1), although this was largely confined to the wealthy landowners of the Andes, the Caracas oligarcs and the merchant class.[5] During the coffee booms — in the 1890's and in the years before World War I (when Venezuela was second only to Brazil as a world exporter),

[2] The latifundia, to which a large number of *jornaleros* (day-laborers), tenants and sharecroppers (such as the *medianeros*) were normally bound, was traditionally centered on the cultivation of the more fertile lands in the valleys of the Andes. The *conuquero*, or semi-nomadic squatter, came to occupy marginal plots on the mountain slopes. On his *conuco* he would raise subsistence crops such as corn, black beans, bananas, and tuber crops. Although seldom a proprietor, the Venezuelan conuquero would only rarely pay rent to the owner of the land. Examples of studies on the Venezuelan campesino are Powell (1971) and Mathiason (1967).

[3] In the sixteenth and seventeenth centuries, Spain's New World interest was focused on extracting precious metals. The Venezuelan colony, where no large metal deposits were found, was for a long time neglected by the Spanish authorities (for comments on the resulting effects for the craft textile industry, see chapter 4).

[4] Some wealth was attained thanks to high cocoa export incomes in the eighteenth century. Venezuela was then converted from one of Spain's poorest provinces to become the most prosperous agricultural domain (Arcila Farías 1962: 348). However, the relative wealth achieved was wholly lost during the devastating and lengthy fight for independence (1810—1821), which left the country as poor as it had been before the cocoa boom.

[5] For a study of the rise and decline of the coffee industry, and the use of the coffee-export earnings, see Rangel 1968:69—112.

in 1919, and in 1924—1929 — much capital was accumulated by the coffee growers and by the middlemen, i.e. the foreign-owned or domestic commercial houses. However, the surplus was not invested, or only to a very small extent, in manufacturing or in other development activities.[6] Most of the coffee earnings went towards financing the import of consumption goods, largely of a luxury kind, for the landlords.[7]

At the end of World War I agriculture still supported over 70 per cent of the country's population (see table 1.3). It represented a high proportion of the total production of goods, and 80 to 90 per cent of exports.[8] Coffee alone normally provided the country with two-thirds of its export earnings. The second most important export was cocoa, followed by ranching commodities: hides, live cattle, chilled meat, etc.

Although it was a country strategically situated close to one of the main crossroads of the world, the Venezuela of the pre-World War I period was not able to attract any significant European immigration, nor any substantial inflow of foreign capital. Nevertheless, some modernization did occur with foreign help, notably during the Guzmán Blanco regime (1870—1888). During that period the foundations of a modern infrastructure were laid. Railways were built in the central and western parts of the country, connecting inland economic nuclei with newly constructed ports at La Guaira and Puerto Cabello. Regular shipping services were established, a submarine cable was inaugurated, public utilities were installed in the chief cities, and a beginning was made on the construction of highways. The capital invested in this development was primarily British and German. The extractive industries did not entice investors, although a small copper mine (at Aroa), a gold mine (at Callao), and some asphalt pits in the east were opened by foreign companies. Nevertheless, foreign investments in Venezuela were not comparable with those in the countries of southern South America. Since, during the two decades around the

[6] This is in sharp contrast to the savings made in coffee in São Paulo at this time.

[7] In 1913, according to one estimate, imports of luxury consumption goods made up 15 per cent of Venezuelan imports. They increased rapidly during and after World War I, doubling in volume on an average every second year and, in 1926 when petroleum contributed much import-purchasing capacity, they represented more than one-quarter of total imports (Córdova 1963:28).

[8] For estimates of the diminishing importance of agriculture in the national economy, see Córdova 1963:7—13, Carrillo Batalla 1963:34—44 and Orta 1964:109—115. For instance, the percentage of the country's population active in agriculture at the end of World War I is estimated to between 70 and 80 per cent. The 1926 census returns, 56 per cent in agriculture and 32 per cent in industry, are less reliable (Uslar Pietri 1960:48).

Table 1.1 *Per Capita Income Estimates 1830—1970 for Venezuela Compared with Other Latin American Countries*

Year	Argentina	Brazil	Chile	Colombia	Mexico	Venezuela	Venezuela (Bs)
			(US dollars)				
1950 dollars							*1936 Bs*
c. 1830	159[a]	43[a]			90[b]	34	81
c. 1870			110[c]	100		90	215
c. 1890	345	106[d]			84	113	270
c. 1910	434		190		107	152	359[e]
c. 1930	434			121	123	176	420
c. 1940	498					234[f]	558[f]
Current dollars							*1957 Bs*
1950	496	208	268	201	211	487	1702
1960	868	289	658	336	518	809	2590
1970	1050	400	883	354	682	1085	3539[g]

a 1850. b 1803. c 1860. d 1900. e 1912—14. f 1936. g 1969.

General note: The table should be interpreted with caution. Only rough comparisons between countries and over time are possible to make. Most of the 1830—1940 estimates refer to per capita national product rather than income (as do the 1970 figures). They are based on different techniques and were originally made in a variety of currencies. Conversion to US dollar and other problems (and possibilities) of "long-range" per capita income assessments are treated by W. P. McGreevey (source below).

Sources and comments:
Non-Venezuelan Countries

1830—1940: McGreevey, "Recent Research on the Economic History of Latin America", *Latin American Research Review*, III:2 (Spring 1968), 98—99.

1950, 1960: ECLA, "The Measurement of Latin American Real Income in US Dollars", *Economic Bulletin for Latin America*,XII:2 (Oct. 1967), 108, 114.

1970: IDB, *Economic and Social Progress in Latin America. Annual Report*, 1973:346. — GDP per capita.

Venezuela — bolivar estimates

1830—1913: GDP estimates per capita were based on coffee and cocoa export earnings (in 1936 prices) under the somewhat unrealistic assumption that the performance of the domestic economy covaried perfectly with the booms and recessions of the export sector (Rangel, *Capital y Desarrollo*, vol. 1 (1969):152, 335—6, 343). Rangel's estimate for the coffee boom year 1913 (Bs 396) was replaced by the author by a more representative yearly average for 1912—1914.

Table 1.1 (*cont.*)

1930, 1936: GDP estimates made by Rangel (*Capital y Desarrollo*, II (1970):149) were divided by the author by the appropriate population census figures (for 1930 an interpolation on the basis of the 1926 and 1936 census results).

1950—1969: National income per capita (some 20—30 per cent below GDP per head) in 1957 prices, which were less than 10 per cent above the 1950 prices, which in their turn were 80 to 100 (according to various price indices by MF and BCV) per cent above the 1936 prices. Data from BCV, *La economía venezolana en los últimos treinta años*, 1971:54.

Venezuela — dollar estimates

1830—1936: The estimates given in 1936 bolivars were first converted to bolivars of the 1950 purchasing power, using the MF's wholesale price index for the Federal District as inflator. The 1950 bolivar values were then converted to dollars at the rate of Bs 4.45 for one dollar (the official exchange rate established in 1964) instead of the rate prevailing in 1950 (Bs 3.35 for one dollar) as this was considered to be overvalued with regard to the high price level in the country.

1950, 1960: ECLA (see above).

1970: IDB (see above).

turn of the century, Venezuela was almost entirely excluded, mainly for political reasons, from the main sphere of interest of international investors, the contrast with Argentina, Uruguay and Chile on the eve of World War I was striking.[9]

The country's population, 2.4 million in 1920,[10] was concentrated in the

[9] At the end of 1913 direct British investment in Venezuela amounted to less than £ 4 million, but in Uruguay, Chile and Cuba, all countries with population smaller than or equal to that of Venezuela, it was £ 21, £ 29 and £ 35 million respectively (Rippy 1959:68). The direct US investment (as of 1914) was valued at US $ 6.5 million in Venezuela but at 171 and 253 million in Chile and Cuba (ECLA 1965:15).

[10] Official census figures. Unfortunately the population censuses — the first three were taken in 1873, 1881 and 1891 but the fourth not until 1920 — appear to be highly inaccurate, as well as the official vital statistics. Uncorrected census figures imply a rapid population increase from 1873 to 1891, 1.5 per cent annually, an extremely slow growth in 1891—1920, 0.4 per cent annually, and a new acceleration of the growth rate after 1920 (cf. table 1.6). This growth pattern is unique in Latin America and would mean that Venezuela was the first Latin American country to reduce the natural increase of her population in modern times (Collver 1965). By checking the census results with each other and with

valleys and plains of a relatively narrow, temperate section of the lower Venezuelan Andes, the *tierra templada* zone, and in some coastal areas. Economic life also either had its center there, as in the case of coffee production particularly in the states of Táchira, Mérida and Trujillo in the west, or was directed from there, as in the case of the important cattle ranching in the *llanos* (the central plains). Trade and communications were largely oriented towards the seacoast, from the interior via the provincial capitals, each with its own port. This structure forestalled the centripetal pull of the capital and the other major cities.[11] Little more than half a million people lived in towns, which grew more or less in pace with the rural population. Caracas (92,000) was the only city with a population exceeding fifty thousand. The dominating urban industry was commerce, supported by handicrafts of a variety of forms and types.

Thanks largely to the flourishing coffee production, Venezuela appears to have moved ahead in the 1860—1920 period to become one of the least poor nations in Latin America south of Cuba and north of Argentina and Uruguay. This supposition is confirmed by per capita income (or output) comparisons (see table 1.1) and the available statistics on per capita foreign trade as well as by contemporary observers.[12] But, as mentioned above, only small groups of the Venezuelan population benefited from this rise in income. The masses continued to live in poverty, and the disparity in levels of living between the wealthy and the poor grew increasingly wide.

official birth and death statistics, Collver finds conclusive evidence for a great exaggeration of the census results in 1873, 1881 and 1891, an underenumeration of some ten per cent for 1920 and about three per cent for 1936, and an overenumeration of three to four per cent for the 1926 census (*ibid.*, 164—8).

The case of Valencia may be cited as an illustrative example. According to the census returns, the population of the *municipio* of Valencia should have increased from 36,145 in 1881 to 54,387 in 1891, then decreased sharply to only 29,466 in 1920, increasing again in the following six years to 45,074 (*AE* 1938:31).

A recent official estimate of the long-run population growth in Venezuela puts the 1920 population at 2.7 million (reproduced in Carrillo Batalla 1967:117).

[11] See e.g. Gómez Acosta 1971 and Galey 1971.

[12] The 1920 per capita production of "exportable products" and per capita consumption of foreign goods were estimated as considerably higher in Venezuela than in e.g. Colombia and Ecuador (Bell 1922:24). Venezuela was "termed one of the most advanced of Latin American countries" (*ibid.*, 30). See also Wythe 1949:244—5. However, it must be kept in mind that an estimated 70 per cent of the Venezuelan population "possessed a very low purchasing power", for foreign-made goods "not higher than US $ 3.60 per year" per head (Bell, 23—4).

Structural Changes in the Economy of Petroleum Venezuela: the 1920's onwards

As outlined above, traditional society and its social and economic structure, which was formed in early colonial times, remained fundamentally unchanged during the first century of the country's political independence. With beginnings towards the end of the second decade of this century, however, the situation was profoundly affected by the introduction of a new export activity, whose dynamism was entirely of exogenous origin. The new element was the petroleum industry. Huge amounts of capital, of foreign technology and organization were brought into the country, providing a great potential impulse to modernization.

By the late 1920's, after a decade of intense activity to accelerate the exploitation of large oil discoveries made, Venezuela was established as one of the world's major oil-producing and exporting countries, a position maintained into recent times.

The economic base of the country was radically transformed. In Rostowian terms the petroleum export industry became the leading sector in the Venezuelan economy after the mid-1920's. The growth rate of the non-petroleum sector of the monetary economy was decisively influenced by the growth profile of petroleum exports.[13]

The speed of the overall economic increase was remarkable, with few parallels in the world. The growth rate of the gross domestic product (GDP) was about 8 per cent annually from 1936 to 1960[14] and 6 per cent in the period 1960—1973.[15] It may have been even higher in the 1920's. Per capita income rose to become the highest in Latin America in the early 1970's, i.e. almost twice that of Mexico and three times that of Brazil. However, the growth in productivity and income levels was restricted to a slowly widening "modern" sector of the economy, which left the other "primitive" sector progressively further behind (see below).

Petroleum made the economy highly dependent on foreign markets. This also had negative aspects. Temporary disturbances in foreign demand showed the vulnerability of the Venezuelan economy. In the few cases when petroleum exports declined by volume or value — as in the early thirties, at the beginning of World War II, in the late fifties and in the

[13] For example, in 1950-1964, a period when import substitution industrialization started, annual changes in the output value of the petroleum sector were shown, not unexpectedly, to be still positively correlated with annual changes in Venezuelan gross domestic product excluding petroleum (Harris 1967).

[14] Ahumada 1967:9. See also ECLA 1964:113.

[15] IDB 1974.

early sixties — the non-oil economy also suffered from growth slowdowns or setbacks. This was true for both private and public business, and especially for commerce and construction. However, as oil was a product with a high income elasticity of demand throughout the whole period, the country was generally saved from any really deep or lengthy economic crises.

The proceeds of Venezuelan petroleum

The main characteristics of the development of the petroleum industry are treated in chapter 3. Here follows a brief complementary, quantitative account of the industry's importance for the Venezuelan economy during the period since World War I.

The amount of capital invested by foreign companies in petroleum was tremendous. In the period from 1920 until 1960 Venezuela was the host country of the largest private capital inflow in Latin America. Direct investments in Venezuela by private US firms rose from 20 million dollars in 1919 to about 240 million in 1929 (at book value).[16] They experienced another sharp increase in the forties, when prolific new oil fields were explored and developed, and the construction of large oil refineries was started. In millions of dollars, US investments rose from around 260 in 1940 to around 1,000 in 1950. By then, they represented the largest American capital engagement in Latin America, a place earlier held by the investments in Cuba. In the latter half of the fifties there was a third wave of foreign capital into the country, induced by the opening of new reserve areas for oil prospecting in conjunction with the Suez crisis. By 1960 this had brought the US private capital stock in Venezuela up to almost 2.5 billion dollars, of which about 90 per cent was related to petroleum. In addition, considerable amounts of British and Dutch capital were invested in Venezuelan oil, although these could not be compared with the US investments.

By 1926, only nine years after its first appearance in the export statistics, crude oil had replaced coffee as the nation's main export, and ever since the mid-1930's, when the traditional exports of coffee and cocoa were drastically cut down, petroleum and petroleum products have accounted for 90 to 98 per cent of the value of the country's total exports.[17] By

[16] Investment figures are drawn from ECLA 1965, BCV statistics and *Survey of Current Business.*

[17] See e.g. Baloyra (1974, table 3), who presents statistical indicators of major aspects of the Venezuelan economic dependence on oil from 1938 (or 1950) to 1968.

the late 1930's, Venezuela had attained the highest per capita export level of all the Latin American countries.[18] From the late 1950's her merchandise exports were normally — and still are, in the mid-seventies — the highest in absolute figures as well.

In exchange for oil, a steadily increasing capital flow from the outside world was channeled into Venezuela or, more properly, into the multinational oil companies operating in Venezuela. How much of this income flow actually accrued to the Venezuelan people? Since the industry was under the control of foreign companies, a substantial portion of the oil income was transferred abroad through remitted profits and capital depreciations, and the repatriated earnings of foreign employees. Another portion was used to acquire materials and equipment abroad. The net foreign exchange earnings accruing to the country, i.e. the oil companies' outlay in bolivars for taxes, labor, commodities and non-wage services, were considerably lower than the recorded petroleum export value — for a long time generally less than half. In the latest ten-year period, it represented about two-thirds of the oil export value.[19] This situation was clearly reflected in the balance of trade. Throughout the whole oil period, except for the first activity-initiating decade, merchandise imports normally amounted to only half the value of total exports.

Furthermore, as the capital-intensive petroleum industry traditionally employed relatively few people (since the mid-1960's less than one per cent of the labor force of Venezuela), and as domestic purchases of goods and services were invariably insignificant (much less than the wages paid), it is clear that the main instrument by which the country could increase its participation in the proceeds of the oil activities, was taxation.

Then, how have the country's tax incomes from oil developed? During the first two or three oil decades, when the country was ruled by military dictators, a very low share of the oil profits accrued to the Venezuelan government. Since World War II, however, the share has risen considerably. It increased from less than a quarter before 1943, to around 50 per cent in 1943—1958, 65—70 per cent in the 1960's and to over 80 per cent in the early 1970's.[20] As the value of oil exports rose rapidly in the period 1943—1957 and after 1972, fiscal oil revenues increased markedly (see chapter 3). In relation to population, they rose from about $ 5 per head in

[18] See James 1941 and Wilkie 1974:260—278.

[19] See Bennion 1944, Harris 1971 and *PODE* 1973:15.

[20] For the pre-1943 period, see estimate in Parra (1963:801). For later years, see *PODE*, various issues.

Table 1.2 *Composition of Venezuela's Gross Domestic Product by Industries, 1950—1973*[a] (per cent)

Industry	1 Cordiplan (1968 prices)		2 BCV (1957 prices)			3 BCV (current prices)	
	1960	1969	1950	1960	1969	1969	1973
Total GDP (Bs billion)	34.6	53.1	12.7	27.1	44.8	47.2	76.8
Composition							
Primary sector	*28.9*	*24.5*	*38.0*	*36.0*	*28.4*	*26.2*	*28.7*
Agriculture	7.0	6.7	8.0	7.3	6.8	7.5	6.1
Petroleum and min.[b]	21.9	17.8	30.0	28.7	21.6	18.7	22.6
Secondary sector	*21.5*	*27.4*	*17.0*	*19.8*	*20.2*	*21.5*	*24.8*
Manufacturing	14.9	20.2	10.0	12.4	13.2	15.7	18.6
Oil refining	2.1	1.8	0.9	1.6	1.2	3.6	6.9
Other factory ind.	11.6	17.3	6.2	9.7	11.2	12.1	11.7
Artisan industry	1.2	1.0	2.9	1.1	0.8	c	c
Elec., gas, water	0.8	1.6	0.5	1.4	2.6	1.6	1.3
Construction	5.8	5.6	6.5	6.1	4.4	4.2	4.9
Tertiary sector	*49.6*	*48.1*	*45.0*	*44.2*	*51.4*	*52.3*	*46.5*
Commerce	17.6	18.9	13.6	14.7	14.5	11.5	9.9
Transport[d]	3.5	3.9	5.5	3.7	3.3	8.9	9.4
Services	28.5	25.2	25.9	25.7	33.6	31.9[e]	27.2[e]

a Some estimates of the GDP formation by industries in the early petroleum era (as of 1925 and 1936) are given in appendix 1, table 21. In brief, already by 1936 the petroleum industry may have accounted for about one-third of the GDP (compared with practically nil in the mid-1910's and about 10 % in 1925).

b Mining proper normally accounted for around one per cent only (at most for 1.5 % in 1960).

c Included in "Other factory industry".

d Including storage and communication.

e Government services in 1969 and 1973 accounted for 10.8 and 10.4 per cent respectively and finance, insurance, real estate and business services for 12.8 and 10.4 per cent. Import duties (3.0 and 1.4 % resp.) are also included. The remainder (5.3 and 5.0 % resp.) is made up of non-government services.

General note:

In Venezuela systematical calculations of national accounts were initiated by the Banco Central de Venezuela in 1950. Concepts and definitions used in the BCV estimates have generally been in accordance with those recommended in the United Nations Systems of National Accounts (SNA). Cordiplan's estimates, included for comparison, also follow the UN recommendations (former SNA of 1958) but differ in hypotheses and information sources used (see BCV, *Informe Económico 1971*, p. 109, the footnote). The last two BCV accounts, for 1969 and 1973 follow the present SNA of UN and for this reason are not strictly comparable with the previous ones, especially not for the tertiary sector.

Sources (table 1.2):

1. Cordiplan, *IV Plan de la nación 1970—1974*, p. 25, 311.
2. BCV, *La economía venezolana en los últimos treinta años* (1940—1970), p. 93, 97, 141, 161 and BCV, *Informe Económico 1969*, table A-VII-2.
3. BCV, *Informe Económico 1973*, table A-IV-2.

the thirties (and in 1942) to a level of $ 50 by 1948, to around $ 100 by 1957, to $ 200 by 1972 and to no less than $ 700 in 1974.[21]

A major turningpoint was the new Hydrocarbons Law in 1943, which greatly increased the possibility for the government to control and participate in the industry. Subsequently, oil tax rates have been increased in stages, e.g. in the 1945—1948 AD period, when the 50—50 profit-sharing formula was instituted, in the early and mid-1960's and, last but not least, in 1973—1974.[22] In these two years Venezuela, like the other oil-exporting nations, raised her tax reference export prices for oil enormously. In 12 months prices were increased by 450 per cent.

The government's bargaining position vis-à-vis the large oil companies improved steadily, particularly since Venezuela joined the Organization of Petroleum Exporting Countries (OPEC) as one of the founder members in 1960. Moreover, when the government passed from military dictatorship to a democratic system with an elected president and a congress, as it did more permanently in 1958, the desire of a ruling group for personal wealth was to a certain extent replaced by consideration for the welfare of the people. This meant that there was a growing need for funds for development and welfare programs.

Petroleum taxes, including royalties, became the main source of revenue for the government in the mid-thirties. Since 1945 these taxes have normally contributed more than half, and since 1960 more than two-thirds, of the current fiscal revenues. In 1974 their share rose to 85 per cent. After World War II the public sector, measured in terms of government expenditure per capita, increased to become the largest in Latin America, thanks to the oil revenues.[23] In the late 1950's and in the early 1970's government revenues amounted to about 20 per cent, but in 1974 to practically 50 per cent of the GDP.

[21] Calculations based on data in Parra and *PODE*.

[22] For studies of oil policies and how the oil taxation escalated up to the late 1960's, see Grunwald & Musgrove 1970, Edwards 1971 and Baloyra 1974.

[23] OAS, *América en Cifras* 1972.

Table 1.3 *Distribution of Economically Active Population*[a] *by Industries, 1920—1971* (thousands)

Industry	Estimates		Census results			
	1920	1936	1941	1950	1961	1971
Agriculture	437	625	636	705	721	605
Petroleum and mining[b]	2	15	23	45	46	37
Manufacturing	56	148	176	172	247	386
Employees[c]	20	51	60	111	194[g]	...
Others	36	97	116[f]	61	97[g]	...
Construction[d]	8	24	36	96	103	179
Commerce[e]	51	64	97	150	266	366
Transport	16	25	42	52	96	120
Services	48	180	210	342	505	757
Government	13	56	58	114	178	...
Domestic	35	108	124	148	129	...
Others	—	16	28	78	198	...
Unspecified	—	—	20	37	59	378
Total	*639*	*1082*	*1240*	*1599*	*2043*	*2829*

a Excluding the unemployed.
b Includes petroleum refining.
c Wage earners and salaried employees.
d Includes electricity, gas, water and sanitary services, a group which engaged 2, 5, 21 and 33 thousand people respectively in the census years.
e Includes financial institutions.
f Includes more than 60,000 seamstresses.
g Includes 40,000 unemployed people.

Sources:

for 1920: Armando Córdova & Manuel Felipe Garaicoechea, *Inversiones extranjeras y desarrollo económico* (mimeo). Cited by José A. Silva Michelena in *The Illusion of Democracy in Dependent Nations*, 1971:55.

for 1936: Armando Córdova, "Consideraciones acerca del tipo de desarrollo alcanzado por la economía venezolana", *Economía y ciencias sociales*, V:2, 44.

for 1941—1971: National population censuses.

Effects on non-oil activities

Revenues derived from the country's petroleum resources represent, in a sense, the actual depletion of the mineral wealth of the state.[24] At an early stage, there also was an awareness among many Venezuelan politicians that the proceeds of the irretrievable oil resources should be invested in

[24] A fundamental part of Venezuelan law is that the subsoil, including subsurface minerals, is the property of the national government.

productive real capital that could yield a self-sustained development. This was expressed in the phrase of "sembrar el petróleo" (to sow the oil).[25] However, to analyse the way the oil revenues were actually used or — more broadly — to examine the profound and varied impact of the petroleum industry on traditional Venezuelan society, is beyond the scope of the present study. It has been dealt with quite extensively in Venezuelan and North American social science research literature and, of course, in the political literature.[26] Suffice it here to quote one of the scholars in this field: "... a sustained and diversified development has not been achieved from the large petroleum earnings ..." and "Venezuela has not been successful in utilizing" the oil earnings "for building a solid industrial and agricultural base for satisfactory economic progress".[27]

The comments in this section will be limited to some general observations of the effect of oil on the rest of the economy, namely the resulting interindustry changes in the structure of production and employment and, in a later section, to the resulting pattern of income distribution. The impact on the manufacturing sector will be examined in more detail in chapter 2.

The sectoral changes in output and labor force are shown in tables 1.2—1.4 and in the appendix, table 21. The other expanding sectors beside petroleum in the pre-1950 period were commerce and services. By 1950 these tertiary activities (including transportation) contributed 45 per cent of the GPD, compared with an estimated 30 per cent in 1936. Including petroleum, the "dynamic" sector accounted for three-quarters of the 1950 output. The sharp rise in the importance of petroleum and service occurred at the expense of agriculture (see further below). In 1950, as a result, the "basic" activities producing goods for the home market — i.e. agriculture and non-oil manufacturing — accounted for only 17 per cent of the GDP, which must be one of the lowest shares recorded for any country. The considerable decrease in artisan-type activities in

[25] This phrase was minted in the late 1930's by the Venezuelan author Arturo Uslar Pietri.

[26] For general works on the development of the petroleum industry, see note 1, chapter 3. On oil and Venezuelan economic dependence, see e.g. Brito Figueroa 1972, de la Plaza 1962, Malavé Mata 1962, Maza Zavala 1960, 1962 and 1964, Montiel Camacho 1967 and Rangel 1968, 1970 and 1972. Some other works treating the economic impact are Carrillo Batalla 1963, Harris 1967, Pogue 1949 and Salera 1955. On oil and state, see Odell 1964 and works listed in note 22; on AD's oil policy, see Betancourt 1967 and Pérez Alfonso 1960 and 1971. On oil and social structures, see e.g. Tornes 1974 and 1975, on the cultural impact Quintero 1968. Oil workers and oil towns are studied in Marchand 1971.

[27] Harris 1971:133.

manufacturing seems to have been only partly offset by a gain in factory-based-industry.

In the period 1950—1970 the dependence on petroleum decreased from 30 to about 20 per cent of the GDP. Again, the service sector was the one that benefited most. Together with commerce and transportation it answered for over half the Venezuelan GDP in the early 1970's. Factory industry also expanded rapidly during this period, but in GDP percentages its gain was not as large as that of the tertiary sector. Furthermore, since the artisan sector continued to contract, manufacturing (excluding oil refining) did not increase its GDP share to any considerable degree (a stable 12 per cent throughout the years 1969—1973).

Table 1.4 *Percentage Distribution of Active Population by Industries, 1920—1971*

Industry	Estimates		Census results			
	1920	1936	1941	1950	1961	1971
Agriculture	72	58	51.3	44.1	35.3	21.4
Manufacturing[a]	9	15	16.0	13.6	14.4	15.0
Construction	1	2	2.9	6.0	5.0	6.3
Commerce[b]	10	8	11.2	12.7	17.7	17.1
Services	8	17	16.9	21.3	24.7	26.8
Unspecified	—	—	1.7	2.3	2.9	13.4

a Incl. petroleum and mining. b Incl. transport.

Source: Table 1.3

The most remarkable feature of the changes in the labor force was that the high-productivity sector — the petroleum and factory industries (see table 1.5) — did not attract any considerable share of total employment. The petroleum industry contracted even in absolute numbers in the period 1950—1971. Commerce and services were the expanding sectors also in terms of employment (tables 1.3 and 1.4). Government employees and personal servants were two steadily swelling occupation groups. In 1971 the service sector engaged about 800,000 persons. By then, it was leading both in share of output and in share of labor force.

The agricultural labor force continued to increase, although at a slow rate, after the depression in the early 1930's. By 1960 it also started to contract in absolute terms. The crafts, the other traditional industry, probably experienced more or less the same development.

The rapid rise in petroleum export earnings had two basic economic

effects, which together go a long way to explain the changes in the structure of domestic production. First, and of greatest moment, was the rapid growth in per capita income (see table 1.1). Although this income growth was highly concentrated to a rather limited segment of the population (see below), the result was an increasing domestic demand for most types of goods and services.

Secondly, the large export income made possible an appreciation of the bolivar. This was originally achieved during the Great Depression, when Venezuela did not devalue its currency. When other countries, including the United States, one after the other devalued their currencies, the bolivar appreciated by about 70 per cent altogether over a period of five years.[28]

The continuing rapid increase in petroleum export earnings made it possible to maintain the overvalued rate of exchange for decades, in fact right up to the mid-sixties. This shifted the structure of production away from the goods-producing sector which competed with imports, towards the import-protected sector, especially services. Such agricultural and manufacturing production as lacked either artificial or natural protection

[28] During the twenties the national currency, the bolivar, remained close to its 1912 official par value of Bs 5.20 to the US dollar. In the early thirties scarcity of foreign exchange, brought about by a sharp drop in the agricultural exports and of the activities in the petroleum industry — in particular prospecting — caused the bolivar to depreciate. (Castillo 1939:360—5, Lieuwen 1955:68—9). Soon, however, the reverse development followed. While the dollar in 1933 was taken off the gold standard and devaluated, an evolution which by that time all Latin American currencies had experienced, the bolivar appreciated rapidly. From August, 1932, to August, 1934, it more than doubled in value: from Bs 7.75 to 3.04 (extreme rates) to the dollar (Castillo, 364—9). A major reason for this was that the petroleum industry (and exports) quickly began to recover from the Depression.

The oil investments increased again and so did the companies' dollar sales in Venezuela (Lieuwen 1955:63). However, the Venezuelan demand for foreign currencies was in the meantime reduced considerably. By 1931, the liquidation of the externally held national debt was completed after fifteen years of payments (Bennion 1944:426). In addition merchandise imports remained low: the 1930 level was not exceeded until 1936 (*AE* 1938).

For the exporters, i.e. the petroleum companies and the coffee and cocoa plantation owners, the rapid appreciation was disastrous. They received fewer bolivars for the dollars obtined from foreign sales. They exerted pressure on the government and were successful. In August, 1934, exchange control was adopted. Fixed rates, very advantageous for the oil companies, were introduced for the petroleum dollars: Bs 3.93 for dollars sold to the banks and 3.06 for dollars sold to the government. The coffee and cocoa exporters benefited even more. They could sell to the higher rate of 3.93 and, in addition, get a substantial export subsidy.

was destined to decrease in importance. Essentially, additions to the labor market and labor in eliminated lines of production were transferred not to "modern" secondary industries but to the service economy, which contained a large subsector of low productivity. This meant basically that people moved from low-yielding work in rural areas to less productive employment or overt unemployment in the cities.

More specifically, what were the effects on the main loser — agriculture? The landowners, traditionally able to meet growth in external or internal demand by cultivating idle land and hiring under-employed workers, were immediately affected in a negative way by the oil boom of the 1920's. There was an exodus of rural laborers to the oil camps, and later also to the government's public works programs. Temporary labor shortages resulted.[29] This situation constituted a potential factor of structural change in agriculture. However, it was offset by a relatively rapid decline in the demand for the products of the sector. In the early thirties coffee and cocoa exports collapsed. The crisis could only partly be resolved by the government's export subsidies and credit extentions. The rapid increase in import capacity that followed as a result of the growing oil export earnings was largely used for a rather uncontrolled import of low-cost foodstuffs. Thus agriculture rapidly lost in importance even in the domestic market.

The sector's GDP share sank from approximately one-third in the mid-twenties to less than one-tenth in 1950. In no other Latin American country did agriculture account for such a small contribution in the 1950's.[30] At the same time the proportion of the nation's labor population engaged in agricultural activities declined from about 70 per cent in the early 1920's to less than half in 1950. Thus, in the latter year, half the labor force accounted for a mere tenth of the value of the total output of goods and services. Technically, this could be wholly explained by the labor productivity of the agricultural sector. Essentially, however, agricultural products were low-valued in relation to those of other sectors. Food prices were kept down as were the incomes of the rural population. In addition, comparatively small resources were channeled into agriculture. On the whole, the campesinos were left out of the modernization drive. Many continued to live at subsistence level, benefiting very little or not at all from — or contributing to — the modern economy.

Between 1950 and 1970 agriculture more or less retained its GDP proportion despite a continuing reduction of its share of the total labor popu-

[29] Lieuwen, 53—55, 73.

[30] See ECLA reports and Wilkie 1974.

lation (to about one-fifth in 1971). In the sixties, the agricultural labor force decreased even numerically. To a great extent this increasing labor-output ratio can probably be attributed to a new agricultural policy. With a new type of government in power from 1958, greater efforts were made to develop agriculture (although still not great enough, many said) and a more vigorous price and income policy was instituted.[31]

Income distribution

As shown above, the phenomenal post-1920 economic growth was largely related to the expansion of certain sectors of the economy. A huge and persisting disparity in labor productivity between industries resulted, as illustrated by the big differences in the labor-force shares/GDP relations. We have seen that petroleum, employing less than one per cent of the active population, contributed 20 per cent to the GDP in 1973. At the other extreme, agriculture, although it employed 20 times more people, contributed only a fraction as much in production. The productivity differential is also clearly spelt out in an ECLA estimate, shown in table 1.5. For exampe, productivity in agriculture was one-fourth of that in the non-agricultural sector and 1/46th of that in the petroleum industry.

Table 1.5 *Estimated Productivity Differential by Industries. Venezuela Compared with Latin America*
(Non-agricultural average=100)

	Agri-culture	Total non-agriculture	Petroleum, mining	Manufacturing		Commerce	Services
				Factory	Artisan		
Venezuela	23	100	1060	132	12	71	68
Latin America	35	100	329	211	21	139	65

Source: ECLA, *Income Distribution in Latin America*, New York 1971, p. 135.

The differences in labor productivity, or labor reward, help to explain a highly concentrated income distribution in Venezuela. As people in the expanding part of the economy benefited most from the income growth, the big inequalities between rich and poor in pre-oil Venezuela were

[31] In Venezuela (and Israel) the share of investment allocated to agriculture is greater than its contribution to GDP. For most countries this share is less than half the GDP share (Griffin 1974:179).

further aggravated in the post-1920 period. Largely, the increasing incomes went to a privileged group of Venezuelans, who lived in a world of accelerating wants, status-seeking and conspicuous consumption.

By the late 1960's, the poorest half of the population received according to one estimate a bare 14 per cent of the total income.[32] The poorest 20 per cent got a meager 3 per cent. In relative terms the low-income groups received less in Venezuela than in most other parts of Latin America.[33]

Income distribution in Venezuela shows one of the highest concentrations in the western hemisphere. The income, by Latin American comparison, is massed not so much at the very top of the population-by-income scale as in the middle and higher-income groups in the sixth to ninth deciles. This implies that the gulf between the better-off half of the Venezuelan population — in itself a group with great income variations — and the worse-off half, or between the middle and the lower classes, is remarkably wide even by Latin American standards. The income difference between the upper classes and the fairly wide middle ranks is not, in relative terms, so very outstanding.

For the domestic manufacturing industries the implications of this distribution of the income, or purchasing power, were obvious. The only mass markets that existed were, at least until recent years, for a few low-income products. For a wide range of products the market in Venezuela was only a fraction of that in other countries with the same per capita income level. Nor were the varying income levels the only factor here. Markets were also reduced or fragmentated by variations in customs and standards. All this meant that the consumption patterns of different income groups bore little relation to one another.

Big lower and middle-income groups maintained to a considerable extent a consumption pattern based on traditional customs and goods. The expenditure pattern of the high-income brackets was greatly influenced by the standards prevailing, and the products demanded, in the advanced industrial countries.

[32] See ECLA (1971). Its estimates for Venezuela were based primarily on the data provided by a Cordiplan sample survey conducted in 1962. The conclusions by ECLA that in Venezuela the poor receive "a smaller proportion than in *any* other country" in Latin America and that the Venezuelan "coefficient of concentration is as high as *any* calculated" (p. 52, 54), seem to be exaggerations. As a matter of fact they can be rejected by ECLA:s own empirical evidences (*ibid.*, p. 7, 35, 42).

[33] In absolute terms, however, the incomes of the lower income groups in Venezuela, while very low, are somewhat higher than for corresponding strata in other countries of Latin America.

The Urbanization

This section contains a brief description of the urban development and the regional population shifts experienced under oil in Venezuela. The urban growth by city-size groups is indicated in table 1.6. The 1961 distribution of the urban population is shown in fig. 2.

Parallel to the rapidly expanding oil economy was a fast growth in population and in urbanization. After having been nearly stationary in the period prior to 1920 (compare note 10, pages 25—26), population according to the official censuses increased by some 50 per cent during the twenty interwar years. After 1940, when the mortality rate decreased further — while the natality rate remained high — and the country received a slight net inflow of immigrants, growth accelerated.[34] The growth rate was between 3 and 3 1/2 per cent per annum or a doubling every 20 years (compare table 1.6). In the mid-1970's, the population, estimated at around 12 million, was more than four times as large as half a century before. Projections based on the 1961 and 1971 census figures suggest that the population will double again in the next twenty years. However, family planning efforts may lead to substantial gaps between projected and observed curves for the future population, in Venezuela as in many other Latin American countries.

Practically all the 1920—1970 population increase took place in the urban places. A high natural increase in the rural areas (as well as in the towns) was almost wholly offset by a heavy internal migration. Venezuela's town growth and urbanization process were among the most rapid in the whole of Latin America.[35] (The urbanization process is reflected in the increase of the percentage of urban residents). In 1926, an estimated 600,000 or around 15 per cent of the total population lived in agglomerations with more than 2,500 inhabitants. The number doubled between 1926 and 1941 (table 1.6). It doubled again through 1950 and once more through 1961. It increased by an additional 67 per cent between 1961 and 1971, when almost eight million or three out of four Venezuelans lived in towns as defined above.

[34] Two studies of the Venezuelan population growth are López 1963 and Carrillo Batalla 1967. It should be noted that the population censuses appear to be inaccurate to a varying degree (cf. note 10). A Venezuelan demographer estimates the omissions made in the censuses of 1936, 1941, 1950 and 1961 to 10, 6, 7.5 and 5.8 per cent respectively (Páez Celis 1962:97). For other critical observations on Venezuelan demographic statistics, see López 1963:9—12 and Chen 1968:36.

[35] See e.g. IDB 1968:331—380 and Fox 1975.

Table 1.6 *Urban and Rural Population, 1926—1971*

	1926	1936	1941	1950	1961	1971
Thousands						
Total population	*2871*	*3364*	*3851*	*5035*	*7524*	*10722*
Urban[a]	600 ?	972	1207	2412	4704	7834
Rural[a]	2300 ?	2392	2644	2623	2820	2888
Percentages						
Urban	*21 ?*	*28.9[b]*	*31.3*	*47.9*	*62.5*	*73.1*
Caracas, M.A.[c]	6.0	7.7	9.2	13.8	17.8	20.4
Maracaibo	2.7	3.3	3.2	4.7	5.6	6.1
Following 3 cities[d]	2.5	3.4	3.7	5.1	6.6	8.9
Other towns by size groups:						
more than 20,000	—	2.5	3.1	8.5	17.2	24.3
10,000—20,000	2 ?	2.3	4.4	4.4	5.6	6.0
5,000—10,000	3 ?	4.0	3.2	5.6	5.0	4.0
2,500— 5,000	5 ?	5.7	4.5	5.9	4.7	3.8
Rural	*79 ?*	*71.1*	*68.7*	*52.1*	*37.5*	*26.9*

a The official Venezuelan definition of 'urban population' is all the people in *centros poblados* (centers of population) with more than 2,500 inhabitants. A 'centro poblado' is a place with three or more dwellings with a separation between them of not more than 500 meters.

b There is reason to believe that the 1936 census figures slightly overrate the urban population. Most likely they often refer to the inhabitants of the administrative *municipio* of the locality, in many cases including rural population, and not to those of the contiguous, built-up area. The latter concept was adopted more strictly from the 1941 census and onwards.

c The Metropolitan Area of Caracas.

d Valencia, Barquisimeto and Maracay.

Source: Regrouped data from the national population censuses.

If only cities with more than 10,000 inhabitants were included, the growth of the urbanization rate would be even more impressive. This rate was less than 20 per cent of the total population still in 1936 and 36 per cent by 1950 but no less than 65 per cent by 1971 (table 1.6). A large part of the increase, particularly up to the 1960's, accrued to Caracas, the political and administrative center of the country.

People were attracted to Caracas and other cities not so much by the manufacturing industries as by the strong increase in services and administration (treated in more detail in the preceding chapter). In addition,

the growth itself of the cities stimulated the construction industry. Last but not least cities grew as they offered hope to the "surplus" peasants and land laborers, whose conditions were extremely poor.

The regional distribution of the growth in population and in urbanization was uneven and greatly affected by migration. The main oil states, Zulia in the west and Anzoátegui and Monagas in the east, gained more than the national average in population during periods of intensive oil exploration: Zulia throughout the 1920—1961 period, Anzoátegui between 1936 and 1961 and Monagas in 1926—1950.[36]

However, between 1961 and 1971, a period when the oil companies contracted their exploration activities considerably, all oil states diminished their share of national population. Falcón and Guárico had even before seen their percentage decline. For the first time since the oil era started, also Zulia and Anzoátegui saw a reduction in their population shares.

In the west, Maracaibo, the old coffee trade outlet, profited from the commerce and demand for services generated by the oil industry. By 1971 its population stood at 650,000 in the city proper and at 720,000 including outer suburbs.[37] On the east side of Lake Maracaibo a string of new cities developed: Cabimas, Ciudad Ojeda (Lagunillas), La Victoria (Bachaquero), Mene Grande, etc. By the early 1970's the first three cities made up a contiguous urbanized area with more than 220,000 people. In the east, new towns were founded at the oilfields, such as El Tigre and El Tigrito, or on the coast, notably Puerto La Cruz, while others were expanded, like the older trade center of Maturín. The city that benefited most was Puerto La Cruz which together with Barcelona, Pozuelos and Guanta formed a conurbation of around 200,000 inhabitants by 1971.

The oil zones, that is the regions with the country's wealth-producing industry, thus were the goals for some of the migration, but only during certain periods and to a fairly limited degree. The oil states largely failed to share in the wealth extracted from their soils. Most of this was removed and invested elsewhere.[38] A special drawback for Maracaibo was the oil companies' switch of their headquarters to Caracas in the late 1930's, largely motivated by their desire for proximity to the political power center in a period when the contacts — and conflicts — with the government increased.[39]

[36] For a study of the internal migration in Venezuela, see Chen 1968.

[37] Fox, 102.

[38] Being the property of the federal state, subsoil minerals in Venezuela are not subject to taxation by the states or municipalities in the oil producing areas. Only the central government may tax and regulate the oil industry.

[39] Lieuwen, 87.

By far, the main winner in the regional distribution of population was the north-central region, comprising the states of Miranda, Aragua and Carabobo and the Federal District (compare fig. 2). Its share of the national population increased steadily; it was 22, 24, 28, 32 and 37 per cent respectively in 1926, 1941, 1950, 1961 and 1971.

A major reason for this rapid growth was the concentration of government oil revenue — and expenditure — at Caracas.

The central region's share of the country's urban population was 47 per cent in 1971. The largest urban concentrations besides Caracas (2,2 million) were the urbanized areas of Valencia (440,000), Maracay (400,000) and Catia La Mar — La Maiquetía — La Guaira (*El Litoral*, 180,000).[40] The only urban agglomeration outside the oil zones and the north-central region which could compete with the above-mentioned urban areas was Barquisimeto (350,000 incl. Cabudare) in the Lara state, which in many respects is an western extension of the central region.

Despite the oil dynamism remarkably few changes occurred at the top of the urban hierarchy, as Friedmann and others have noted.[41] In rough terms, the twentieth century urban growth was superimposed on a pattern of city settlements created during earlier centuries. Friedmann points at the influence of physiografic features on the location of urban settlements as a major reason for the relative stability in the urban hierarchy. One might add that considering the "unchanged" functional role of the majority of Venezuelan cities — places primarily for services, commerce and administration — this stability is not surprising. An account of the few manufacturing cities can be found at the end of chapter 6.

Thus, the most important feature of the demographic growth in petroleum Venezuela was the concentration to the central region. This concentration was even more accentuated in terms of production and income. The estimated per capita product was about four times as high in the Federal District and the central states (and Zulia) as in the states in the periphery, in 1953 as well as in 1960.[42] The gap was probably wider in per capita incomes. This implies that the central region constituted more than half the national consumer market for most manufactures. This regional disparity was a witness as good as any of the socially unbalanced and for large groups inequitable development attained in Venezuela despite five decades of increasing oil income.

[40] Fox, 102—3.

[41] Friedmann 1966:146—9 and Lasuén 1971:209. See also Robinson 1969 and Artle 1971.

[42] See Uslar Pietri 1960:256—7 and Chen 1967:68—74.

2. The Rise and Spread of the Manufacturing Industry

As was made clear in the foregoing chapter, the manufacturing industry in Venezuela was slower to develop than other urban industries. For a long time, it played an insignificant role in the country's transformation process. Rapid urbanization was not a concomitant of industrial development, but rather a result of other forces. Only after 1940 did manufacturing grow appreciably in importance. Its growth in the fifties and sixties was more conspicuous, but this was not accompanied by any great increase in employment, and the industry's share in the urbanization process was still limited.

The chief purpose of this chapter is to describe in quantitative terms the main phases and features of the rise of the manufacturing industry in Venezuela (i.e. the factory industry), to indicate reasons for the delayed start (and the acceleration) of this industry and, finally, to explore the location pattern of the early industry and ways in which it subsequently developed.

As official statistics are not adequate to show the growth of Venezuela's factory industry in the first four decades of this century, considerable efforts have been made to provide the necessary statistical framework for the analyses. In the appendix, data have been assembled from a variety of sources and they form the basis for some estimates of the growth of factory capital and employment.

To provide some additional background, the chapter starts with a description of some of the main features of the industrialization process in the major Latin American countries.

The Evolution of Manufacturing in Latin America outside Venezuela

General observations[1]

The industrial development of Latin America varied considerably from country to country, in time as well as in structure. However, there were some basic characteristics common to most of the countries and these did much to determine locational developments.

Several countries in Latin America began to industrialize fairly early. A good beginning was generally made during the 1880's and 1890's and, not least, in the first decade of the present century. Factory industry advanced vigorously in the three largest countries, with Argentina in the lead and Brazil lagging behind Mexico. In the last two countries the cotton textile industry in particular developed, reaching an advanced stage (see tables 4.5 and 4.6). In Argentina, where per capita income levels were higher and urban markets larger, industrial production more than doubled between 1900 and 1910. Food industries were in the forefront but the output of building materials was growing most rapidly, fostered by the rapid urbanization.[2] On the eve of World War I, when over half the population was urban, the manufacturing industries were already contributing about one-fifth of Argentina's total output.

By 1914, manufacturing of the factory type had apparently achieved a significant development in Chile too (food, clothing and wood products) and Uruguay (meat-packing, tanneries and wool textiles), despite comparatively small markets. In these two countries a good portion of the population was also urban, being concentrated mainly in the capital and a few other cities. Protectionist measures may have played a more important role than usual, and in Uruguay government action included other promotional activities as well.[3]

[1] This section is based primarily on the findings of ECLA (1966 and 1969). Additional sources and interpretations on manufacturing development in Latin America are Dorfman (1942 and 1967), Wythe (1945 and 1949), Hughlett (1946), Mörner (1960), Furtado (1970), Baer (1972), and Carnoy (1972). Noteworthy country studies using a quantitative approach are Baer 1965 (on Brazil), ECLA 1957 (on Colombia) and 1959 (on Peru), Lagos Escobar (on Chile), and Mosk (on Mexico). An outstanding regional study is W. Dean (on São Paulo). The development through the 1920's is analyzed in Carmagnani (Chile), Ospina Vásquez (Colombia) and Vilela Luz (Brazil). Uribe Ortega (Chile) is one of the few examples of studies on the national scale of the manufacturing industry's locational development.

[2] See e.g. Di Tella & Zymelman (1969) and Díaz Alejandro (1970).

[3] ECLA 1966:8.

The curtailment of supplies from overseas occasioned by World War I provided an additional, though partly artificial, impetus to the industrialization process in many countries. Brazil in particular seems to have benefited. During the twenties, industrial production continued to expand rapidly in many of the countries, doubling in Argentina as well as in Mexico. The latter country registered a sharp setback in the 1910—1920 period because of the Revolution. Highly urbanized Cuba also experienced a substantial development in the light manufacturing industries, not only in the important sugar refineries.

By the end of the twenties, substantial progress towards industrialization had thus been achieved in several Latin American countries. The industrial labor force (including artisans, who still dominated numerically) amounted to over one million persons in Brazil, nearly as many in Argentina, and almost half a million in Mexico. In all three countries domestic industry supplied about three-quarters of the national consumption of manufactured goods.[4] Domestic industrial output per capita was also comparatively high in Uruguay and Chile, probably also in Cuba (compare table 2.1).

The countries mentioned were all characterized by comparatively large urban concentrations and by comparatively large home markets for manufactures, either by virtue of a large population or of a high per capita income. Their incipient industrialization took place to a great extent against a background of free trade and in response to the expansion of domestic markets for products that could compete with imports without high tariff protection.[5] Most manufacturing growth was apparently induced by expansion in the export of primary products. Any increase in the domestic markets for manufactures was dependent on an income growth, which was brought about by exogenous variables.

The collapse of international trade during the Great Depression from 1929 marked an end to this initial phase of industrialization in Latin America. The Depression caused severe economic damage to many countries

[4] *Ibid.*, 49. Employment in factory industry was estimated at 510, 390 and 230 thousand persons for Brazil, Argentina and Mexico respectively (ECLA 1966, *Stat. Annex,* 17). These figures compare favorably with data compiled by Wythe (1937:213). See also Dorfman (1942:42).

[5] Admittedly protective tariffs were widely used then, too, in keeping with a long tradition of state intervention in the economic field. "Mercantilism in Latin America has never died" (Wythe 1949:65). However, the protection given to manufacturers during the first decades of this century as a rule covered a rather limited range of common consumption goods. In the early 1930's a new stage of protectionism began, including other import restrictions than higher tariff rates, i.e. exchange controls, quotas and currency depreciations.

Table 2.1 *Evolution of Value Added Per Capita in Manufacturing, 1930—1970. Estimates for Eight Latin American Countries*

Country	Wythe	ECLA				IDB	
	c. 1933	1930	1940	1950	1960	1960	1970
	1933 dollars	1960 dollars				1970 dollars	
Argentina	70	153	173	234	277	253	374
Brazil	13	25	33	57	102	67	103
Chile	28	44	54	98	109	151	218
Colombia		13	24	43	61	52	68
Mexico	14	34	46	76	112	110	184
Peru	6		30[b]	36	56	59	95
Uruguay		98[a]	85	131	169	189	195
Venezuela			*38*	*51*	*88*	*154*	*223*

a 1935 b 1945

Note: It is only possible to make rough comparisons between countries and between different times. Country estimates are compiled on different bases and the conversion of national currencies to US dollars involves great difficulties. The 1933 figures have been derived from estimated gross production values. These were related to population data (from the same source) by the author.
The IDB figures for 1960 and 1970 were computed by the author by dividing IDB value added totals by IDB population estimates (source below).

Sources: Wythe, "The New Industrialism in Latin America", *The Journal of Political Economy*, 45 (April 1937), p. 213; ECLA, *The Process of Industrial Development in Latin America*, Statistical Annex, Santiago 1966, p. 23, and IDB, *Economic and Social Progress in Latin America. Annual Report 1972*, Washington, p. 386, 394.

which had relied on export markets in Western Europe and Anglo-America for their production growth. In reaction, these countries enforced strong protective measures to encourage the domestic production of an increasing range of manufactures that had previously been imported. Industrialization in many Latin American countries entered a new phase of import substitution, in which the decisive incentives were domestic: strong economic nationalism, a basic component of which was a program of diversified industrialization.[6]

The pre-1930 pace of industrialization, after a temporary setback lasting a few years, was maintained or even accelerated in Mexico, Brazil and Argentina, thanks to the new protection incentives. In other countries,

[6] For early observations on the new industrialism, see Phelps (1935) and Wythe (1937).

notably Chile and Uruguay, the halt was more pronounced and persistent. The economies of these countries were more open, and were greatly dependent on imports. Industrialization also spread to other countries and gained momentum, especially in Colombia but also in Peru, in the thirties.

During World War II the severe shortage of imported manufactures from overseas accelerated the industrialization process. After the war, a short-lived recovery in the export sector encouraged this development further, but only temporarily. In the fifties, when Latin American terms of trade in general deteriorated and balance-of-payments difficulties set in, the desire for self-sufficiency and economic independence grew more intense. In Latin America, industrialization under a reasonable measure of protection was generally considered to be an inevitable feature of economic development.[7] The result was a more deliberate, import-substituting program of industrialization, involving a considerable amount of government intervention. Imports were restricted by means of various combinations of high tariffs, quotas and multiple (or overvalued) exchange rates.

A salient feature of postwar development was the diversification of industrial production: consumer durables, intermediate products and some capital goods. Another was the widespread participation and assimilation of foreign capital and advanced technology. In addition, domestic savings were increasingly allocated to investment in manufacturing. The government either embarked on ventures itself, or supported ventures in the basic industries, in particular investing large sums in steel mills and electric power stations.

As a result, during the fifties and sixties manufacturing continued to expand rapidly in many countries with strong industrial traditions and most vigorously in Mexico. Without any very high protection walls Mexico saw her manufacturing sector grow at a remarkably steady pace, around 8 per cent a year. Except for a setback in the mid-sixties, the same rate holds for Brazil. In Argentina, where the opportunities for import replacements were approaching saturation, development was more moderate. In Chile, the protection policy yielded the best results in the sixties.

A variety of new manufacturing industries were created and several

[7] Economic doctrine favoring this type of industrialization evolved within ECLA under the guidance of Raúl Prebisch and had a profound influence on the development policies adopted in postwar Latin America. For formulations of the doctrine, see Prebisch (1950 and 1964) and Macario (1964), who discusses a policy of "import substitution at any cost".

large industrial complexes were established, first in Buenos Aires and later also in São Paulo and Mexico City.

A policy of deliberate import substitution was also adopted in Colombia, Peru and Venezuela. Manufacturing in the latter country was among the fastest growing in Latin America between 1945 and 1970. The small countries in Central America saw considerable advances achieved in the sixties under the auspices of the Central American Economy Integration Program. In Uruguay, the pace slackened off and the economy became almost stagnant during the sixties.

To summarize, by 1970 manufacturing had considerably increased its importance in several Latin American countries (see table 2.2). However, in many of the major countries there were several important instances in which the import-substitution strategy failed, after a first stage of general success.[8] The net reduction in imports was less than expected as the replacement of imported final products by domestic production necessitated large imports of materials, machinery and equipment. The manufacturing sector failed to generate any substantial increase in employment, as the industries established were generally capital-intensive. Furthermore, in many cases the result was the emergence of high-cost industries, unable to achieve an efficient scale of operations. Also, the protection policy provided little incentive for product improvement and technical change.

A third phase may have followed in the 1970's. The difficulties of limited markets and a limited demand increased, also in the large countries. The direction of the countries' industrial policies was reconsidered and more attention given to the promotion of exports.[9] Particularly in Brazil and Mexico, the export of manufactures began to increase from 1968.

Hypotheses on locational developments

The nature of the development of modern manufacturing industries in Latin America, as shown in the historical survey above, differed in many respects from that experienced in the industrialized countries of Western Europe and Anglo-America. This had specific, profound implications for the location of the manufacturing industries, as well as for the locational

[8] For evaluations of the import substitution strategy in Latin America see Baer (1972), who makes a review of the studies on the subject, Hirschman (1968), Little, Scitovsky & Scott (1970), Bela Balassa (1971), and Scitovsky (1971).

[9] This reorientation is reflected in the new industrial development strategy formulated by ECLA (1969, ch. 5). Compare also Thiesenhusen 1972.

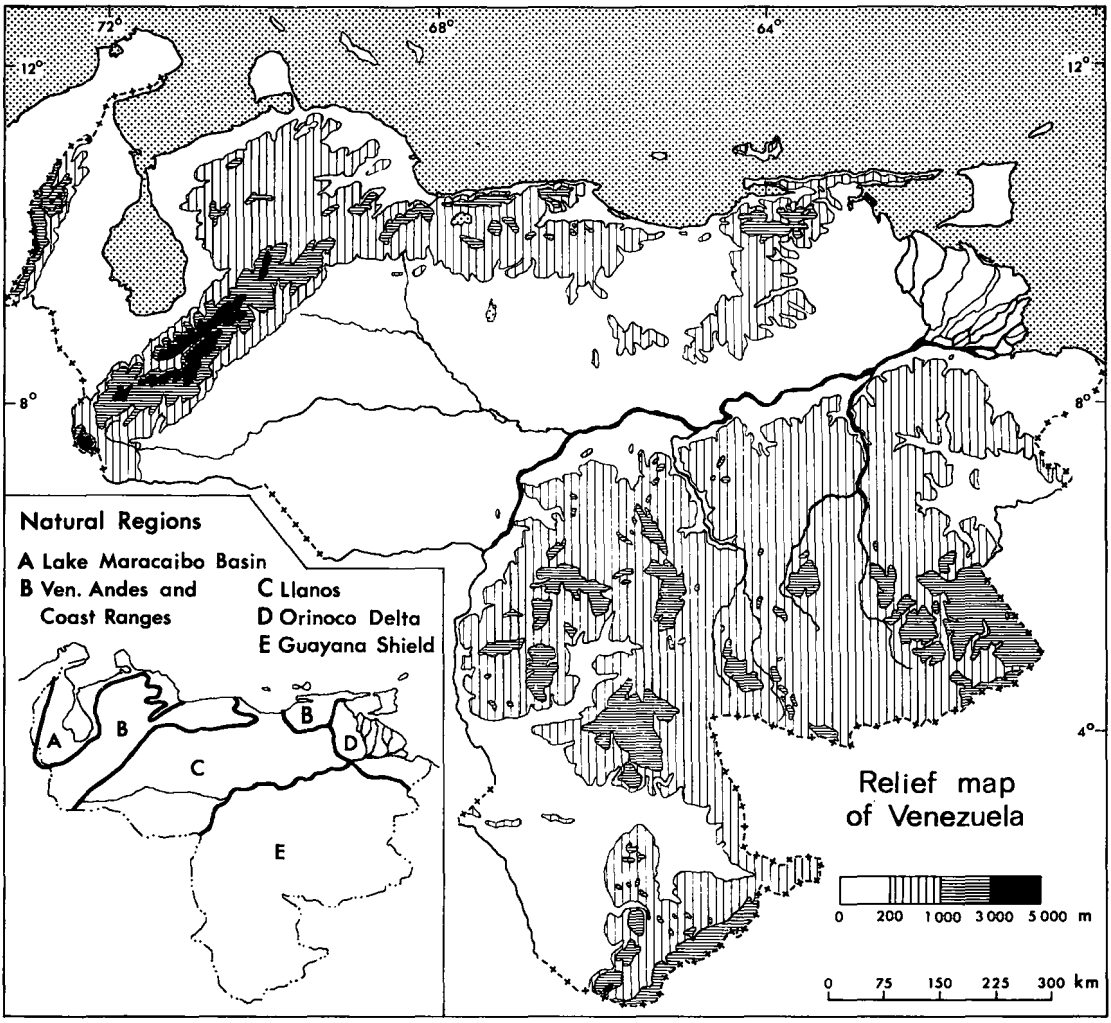
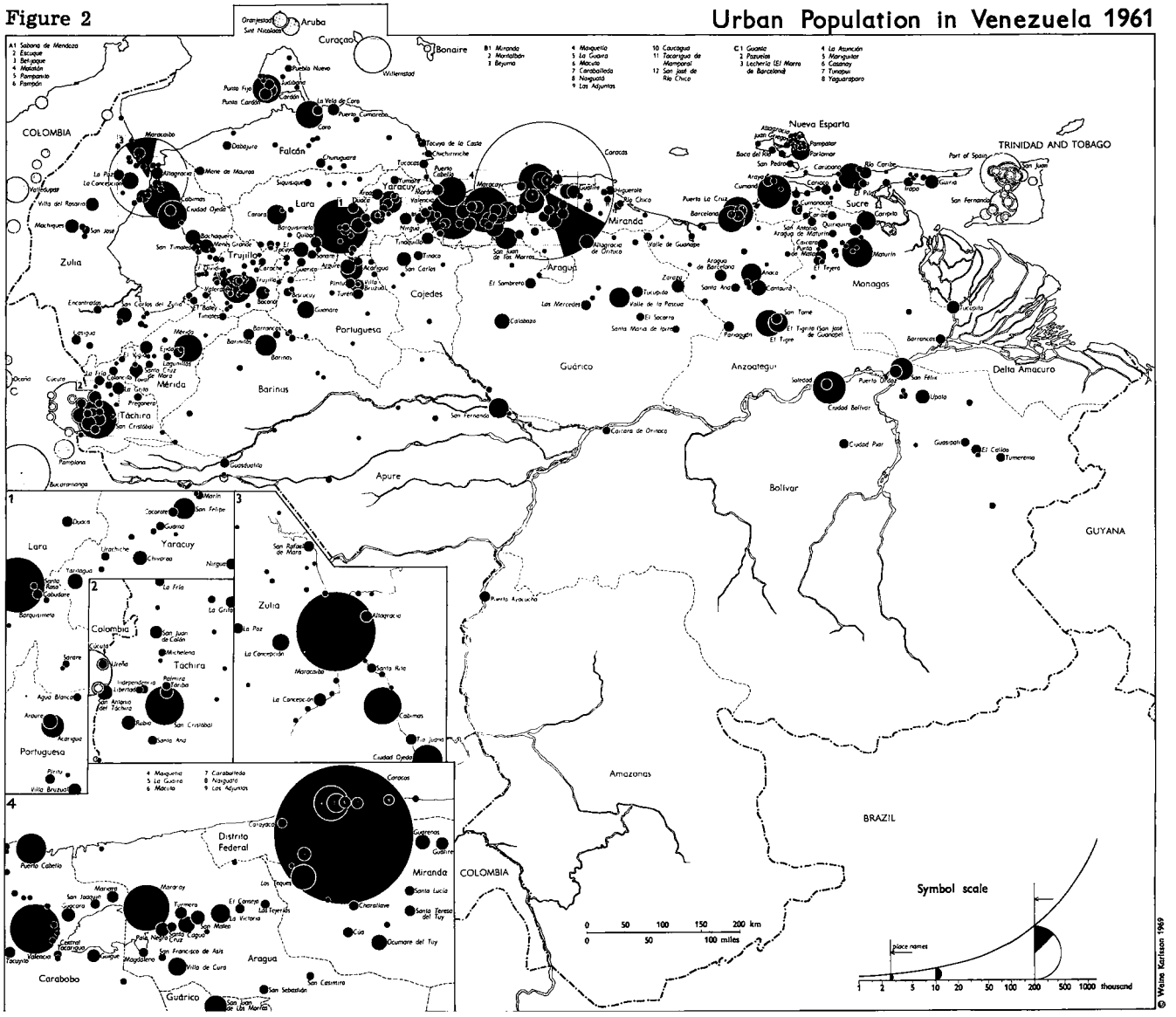


Figure 1 *Relief map and natural regions of Venezuela.*

4

Figure 2

Urban Population in Venezuela 1961



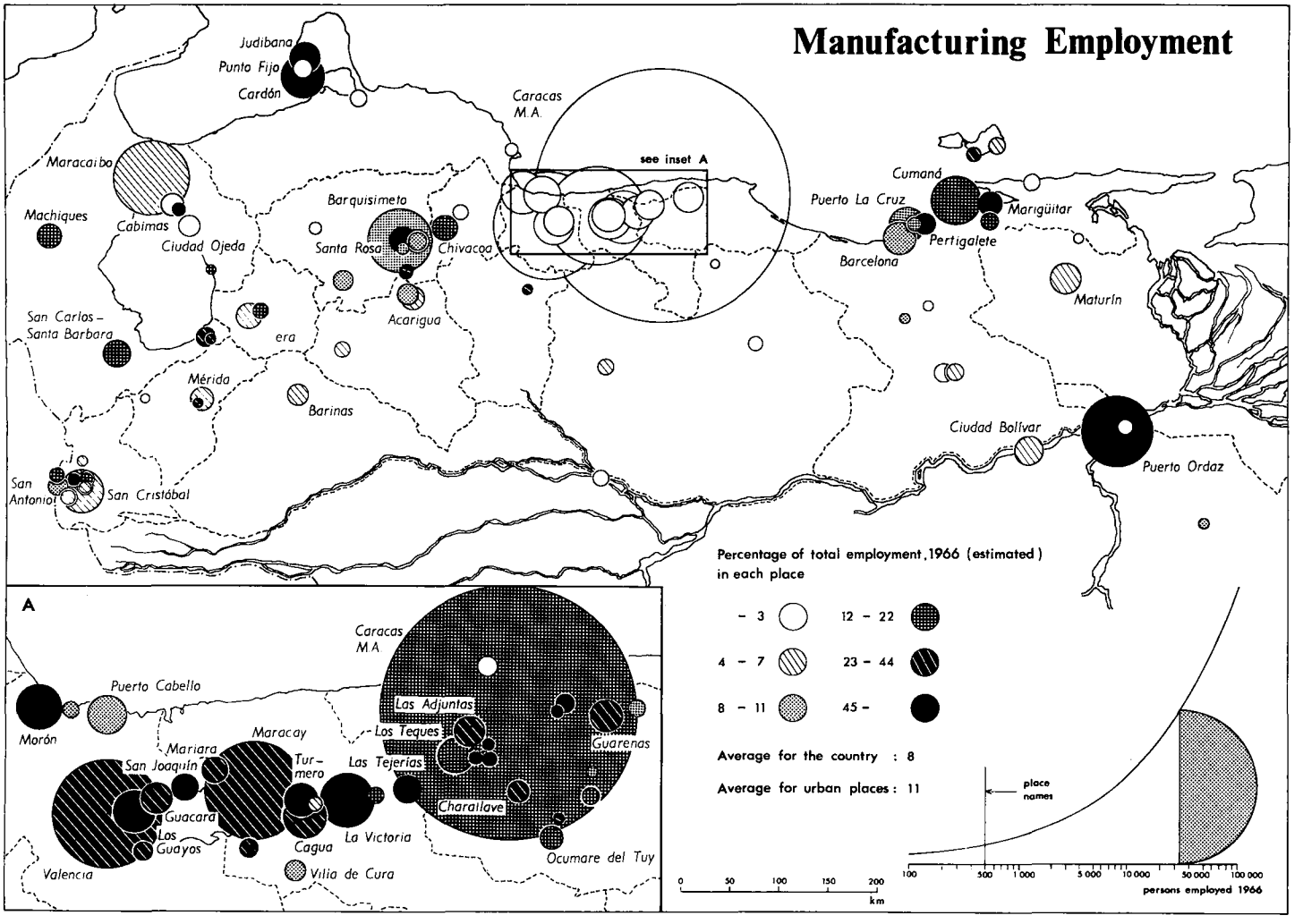


Figure 3 *Factory industry employment in 1966 in Venezuelan urban places. The most industrialized places are those in the north-central region: a belt of towns from Morón in the west to Guarenas in the east.*

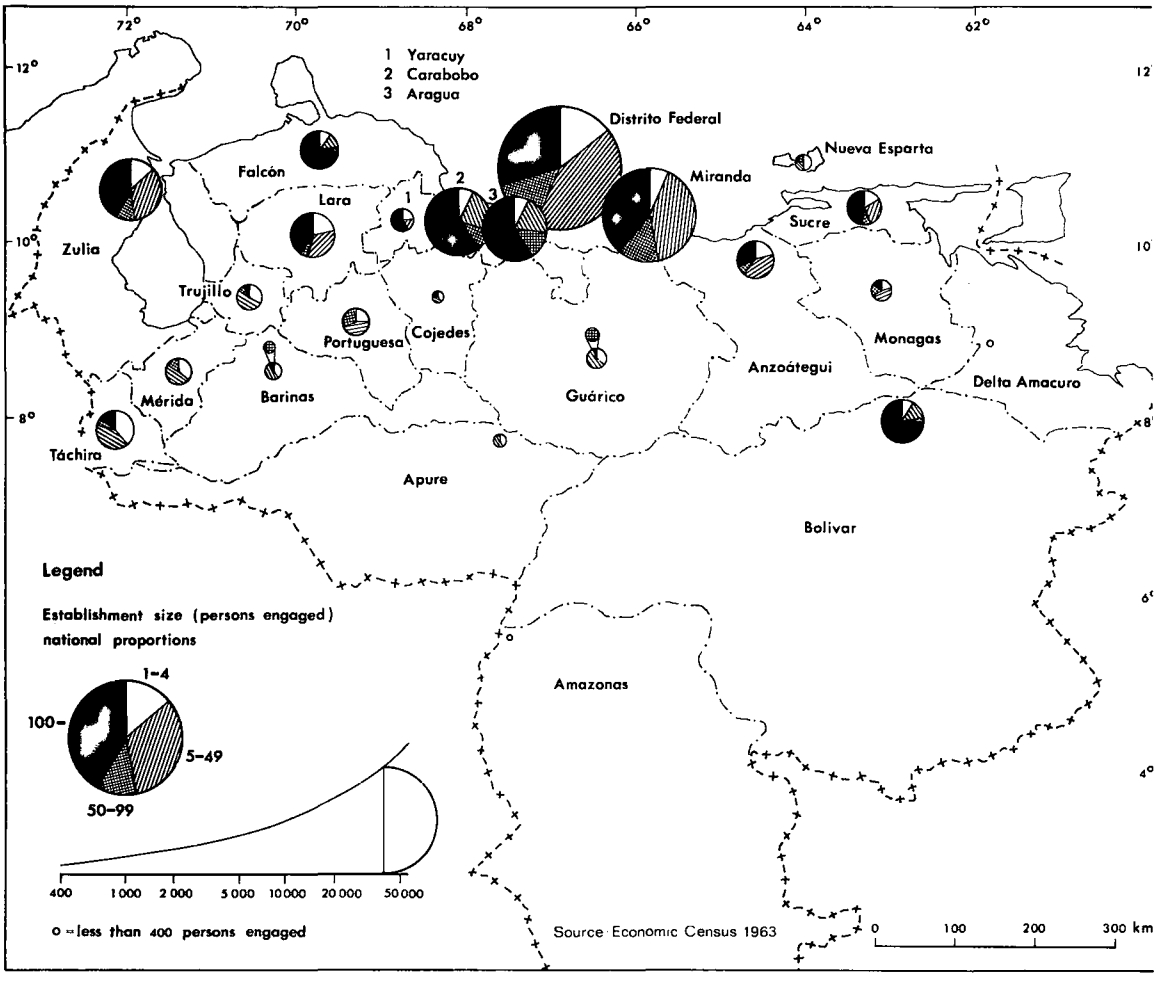


Figure 4 *Persons engaged in 1963 in Manufacturing Establishments by Size Groups. Large-scale units (> 100) dominate in Aragua-Carabobo, Bolivar and Falcón. Small-scale units (1—49) account for over half the employment in most other states, including the Federal District.*

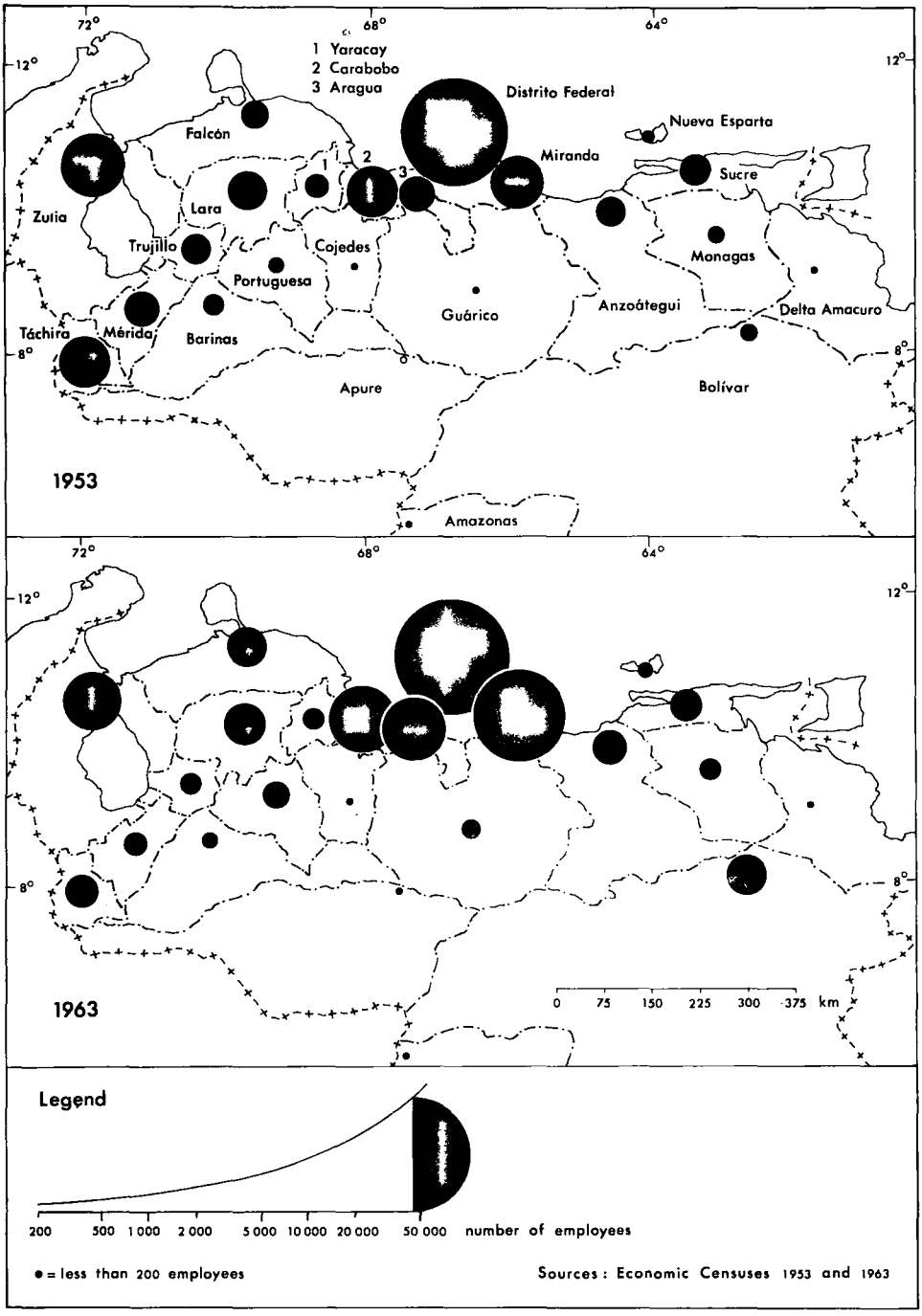


Figure 5 *Between 1953 and 1963 few changes occurred in the relative distribution of manufacturing employees by states. Most significant was the increase for Miranda, a result of the expansion of Caracas into this state. Also Aragua (textile and other mills) and Bolívar (the steel mill) increased conspicuously. (The 1953 symbols include a small number of employees in construction and electricity).*

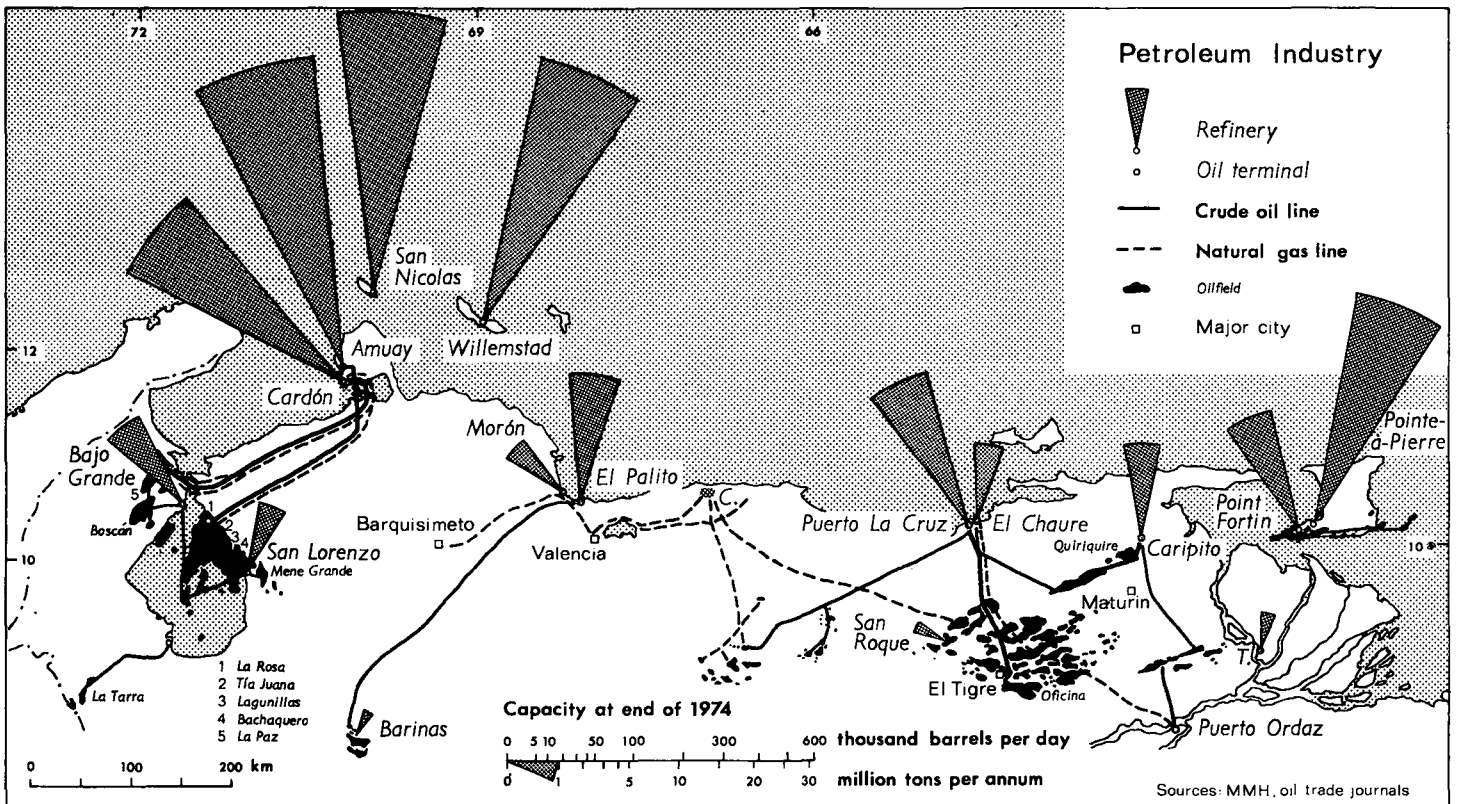


Figure 6 *The petroleum industry in Venezuela, Aruba, Curaçao, and Trinidad. Oilfields, pipelines, terminals and refineries.*

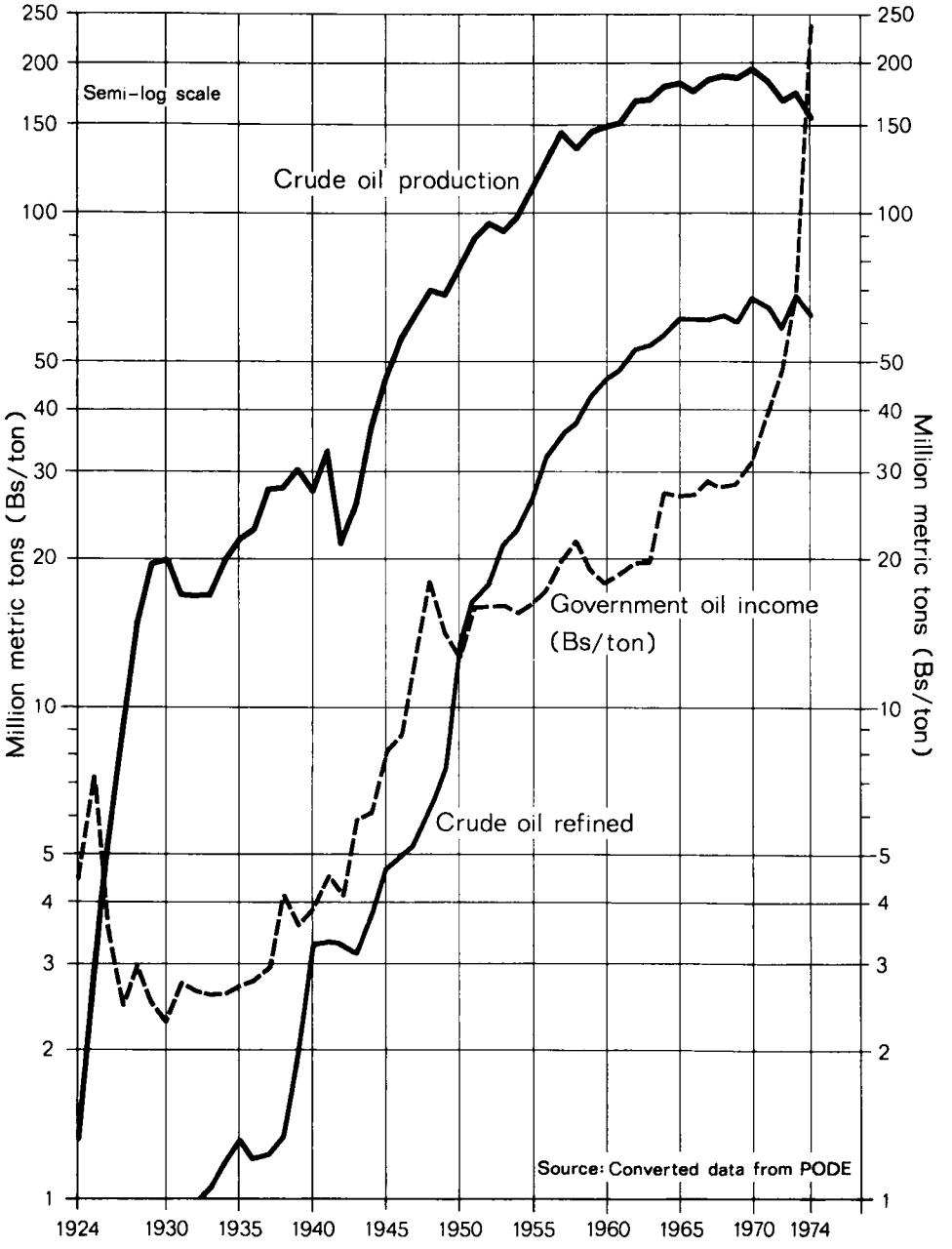


Figure 7 *Crude oil production and refining and government oil income per ton oil produced, 1924—1974.*

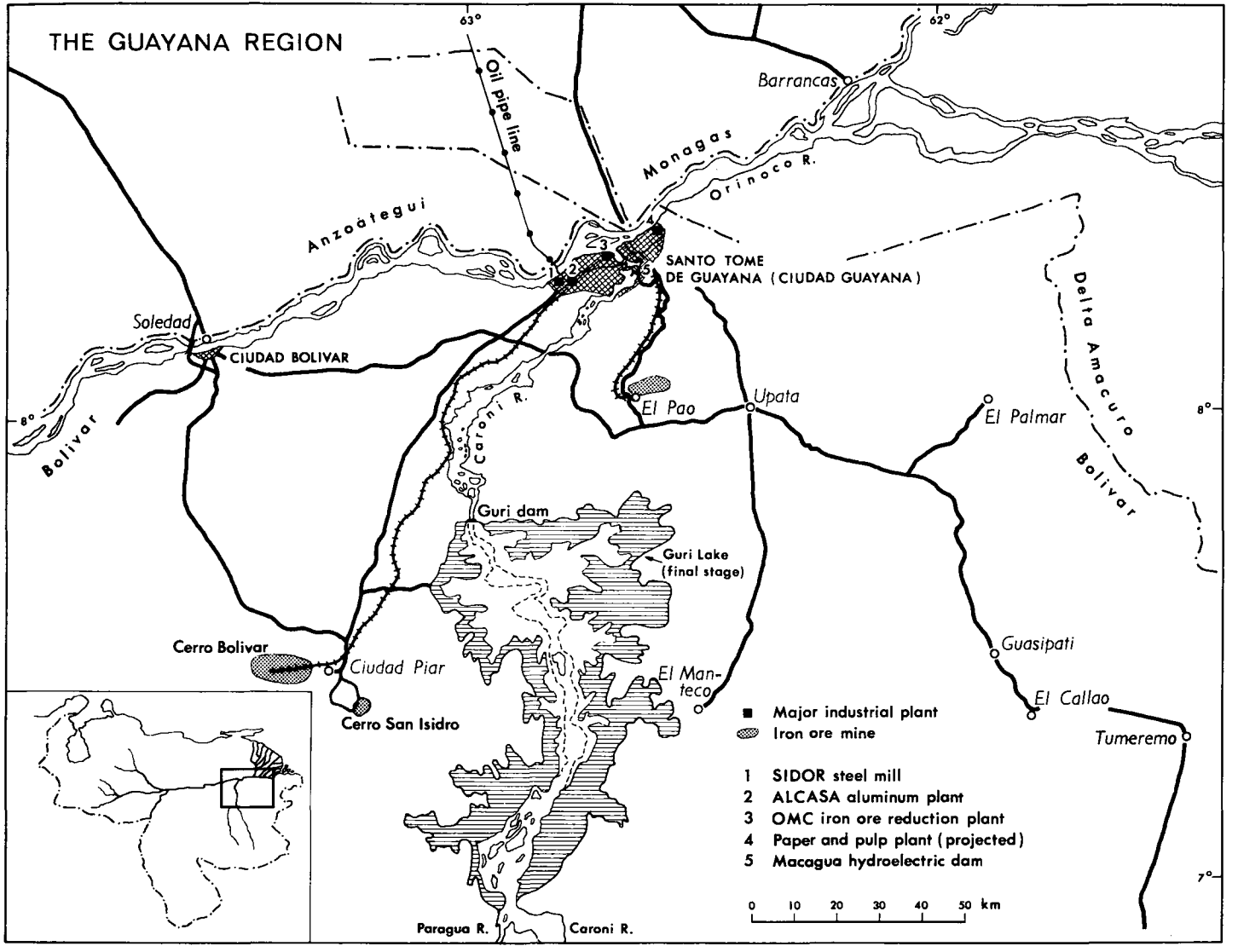


Figure 8. *Industrial development activities in Ciudad Guayana and vicinity.*

impact of manufacturing on other activities. Little research has so far been done in this field, and here only some implications will be spotlighted. These were presumably the same for Venezuela as for the rest of Latin America.

The general characteristics of the emerging modern manufacturing industries at the beginning of this century are of special interest. The first that should be borne in mind is the type of market economy which had developed by that time: an economy predominantly producing primary products for export overseas. This had created a spatial organization of the transport system in which flows converged on one or two places on or near the coast. Here goods were collected, processed and shipped, and here most of the income generated was accumulated.

Secondly, and independently of the industrial development itself, a process of rapid urbanization was under way. One or two large cities grew rapidly, creating geographically concentrated markets.

Thirdly, the principal vehicles of the early industrial development were the light industries: processing of non-durable consumer goods, such as food, beverages, tobacco, textiles and clothing. They often also included the production of heavy building materials, which were naturally protected by prohibitive transport costs against competition from the northern hemisphere. This was most pronounced in the southern countries of South America.

The industries were mainly established to serve the largest urban market. In other words, they were metropolis-oriented and, to a very high degree, built within the metropolis itself or in its neighborhood.

The primary processing of export commodities, which often involved an advanced technology, generated some manufacturing growth, e.g. meat-packing (in Argentina and Uruguay), sugar refining (Cuba and Brazil), ore-dressing (Mexico, Peru and Chile), and petroleum refining (Mexico and the Caribbean), and was in most cases located outside the largest cities. On the whole, however, such activity had small spread effects on local developments or, on a national scale, on other manufacturing industries.

Transport and other infrastructure provided only slight incentive for the emergence of heavy industries, which was contrary to the historical experience in Europe and Anglo-America. Under the prevailing openness of the Latin American economies, inputs were predominantly imported. Heavy industries based on local iron ore and coking coal resources, a potential for non-metropolitan industrial growth, remained undeveloped until more recent stages in the industrialization of Latin America.

To sum up, modern manufacturing activities were mainly established

Table 2.2 *Selected Indicators of Manufacturing Activity in Major Latin American Countries, 1970*

Country	Value added in manufacturing		Ratio of GDP[c]	Ratio of labor force
	total[a]	per capita[b]	per cent	
Argentina	8.6	374	38	27
Brazil	9.7	103	27	10
Chile	2.0	218	21	23
Colombia	1.4	68	20	13
Mexico	9.0	184	27	17
Peru	1.2	95	21	12
Uruguay	0.6	195	23	21
Venezuela	*1.9*	*223*	*18*	*18*

a In billions of US dollars. The Latin American total was estimated at 36.7 billion.

b In US dollars. The figures were taken from table 2.1, last column (which was based on 1972 IDB estimates).

c 1972.

General note: Figures of GDP percentages overestimate the manufacturing industry's contribution to total output since value added by the industry is expressed in domestic prices, inflated by protection. They indicate rather the proportion of the society's resources (or incomes) devoted to manufacturing. The sector's real contribution to GDP, with value added estimated at world prices, was substantially less around 1960, for example about 9, 7 and 2 percentage units lower in Argentina, Brazil and Mexico respectively (with corresponding gains for, in the first hand, agriculture) according to one estimate (Little, Scitovsky & Scott 1970:73, 411—422).

Source: IDB, *Economic and Social Progress in Latin America 1973*, the Statistical Appendix.

as industries serving the primate city, the innovation and contact center of the country, which, through the concentration of income constituted the major slice of the home market for manufactured goods and, in its existing economic infrastructure, provided big external economies.

The Evolution in Venezuela

The first two decades of this century

Manufacturing activities in Venezuela in the nineteenth century, and for a long time in the present century, were confined to various forms of artisan industries. Up to World War II the amount of industrialization achieved was very limited. This is the contention of nearly all the scholars in this field.[10]

The demand for manufactured goods was clearly low and of a limited range in pre-oil Venezuela. Only one-fifth or so of the population lived in cities, and the vast majority of the rural population lived at subsistence level.[11] When not met by imports, the demand for manufactures was satisfied by local craftsmen and cottage industries, using rudimentary, non-mechanized production techniques.

Mostly, the craftsman worked on his own account alone in his workshop, often trading his products for other goods. However, there were also large-scale shops, i.e. enterprises with quite a large work-force of men formerly working for themselves, and operating some sort of division of labor, but using predominantly manual methods. In 1880—1900 important craft enterprises of this type were established in Caracas and Valencia, some of them employing up to 60 workers.[12]

In the case of some manufactures based on the supply of cheap domestic raw materials, especially leather, the craft industries had achieved quite a significant export by the eve of the first World War.[13]

[10] See e.g. Arcila Farías (1962:413), Carrillo Batalla (1962:11—13), Araujo (1964:5 and 1969: 7—8), Maza Zavala (1966:59—60), Brito Figueroa (1967:65—68, 228), and D'Ascoli (1970:382).

[11] In 1920 it was estimated that about 70 per cent of the population had a negligible purchasing power for manufactured or foreign-made products (cf. chapter 1, note 11).

[12] Brito Figueroa 1966:303, 307.

[13] The export of leather products, *suela* (sole leather) and to a minor extent *alpargatas* (sandals), amounted to around a quarter million bolivars annually in 1908—1912. Subsequently it rose to more than Bs 1 million in 1919. Most of the sole leather export in these years went over Puerto Cabello and came from tanneries in Valencia. La Guaira (Caracas) and Maracaibo had smaller exports. Most of the alpargata export around 1910 came from a small establishment at La Guaira (*AE* 1911:345—6 and 1912:353—5; Butman 1910:31—38; Bell, 177, 261—2, 359).

From 1910 the export of brown sugar and frozen beef, and from 1916 also the white sugar export (far more important), each exceeded that of leather

From this artisan tradition, however, by 1920 several factory establishments had developed, as certain official statistical sources and a comprehensive and meticulous study by a North American investigator can witness.[14] Generally this particular development seems to have been underestimated by the scholars in this field.

Nevertheless, there were still very few factories in the strict sense of the word as late as about 1908.[15] The most outstanding manufacturing enterprises seem to have been a textile mill in Valencia (founded in 1879), two breweries in Caracas and Maracaibo (both founded in the 1890's), a Caracas match factory (from the early 1900's), and some cigarette and cigar factories in Caracas, but in the latter industry manual processing still dominated. Soap and candles were also among the first manufactures to be factory-produced in Venezuela, having been made by hand methods for a long time before machinery was introduced.

Subsequently, during Juan Vicente Gómez' first five years in power (1908—1913) a good many manufacturing undertakings were established. Several textile mills were erected (see chapter 4) and more breweries were constructed, one in Maiquetía (in 1912) and a couple in Maracaibo (see chapter 5). In addition, the very first enterprises, qualifying to be described as factories, appeared in a series of manufacturing activities, namely a paper mill (as early as 1905), a cement plant (in 1907), a modern cigarette factory (in 1911), a glass bottle factory, a rope and sack factory, a vegetable-oil plant (all in 1912), a meat-packing plant and a dairy (both in 1913).[16] All these pioneering enterprises were located in Caracas, except the oil plant which was at Cumaná, the dairy at Maracay, and the meat-packing plant at Puerto Cabello.

By 1913, according to an industrial directory, there were some 160 manufacturing enterprises registered in the country, including a considerable number of craft shops (see the appendix). These represented an invested capital of about Bs 55 million, which was far less than the

products. For all these manufactures peak export levels were reached in 1919 or 1920: some Bs 15 million for white and brown sugar and Bs 3 million for frozen beef. (Veloz 1945:323—343; Bell, 359). Including leather products these non-traditional exports accounted for more than 10 per cent of the 1920 total exports.

[14] P. L. Bell (1922). Unfortunately Bell did not venture to present, out of this minute observations, estimates of national aggregates, e.g. for number of plants and workers, value of output or of total investments in the manufacturing industry.

[15] Dalton 1912:250—1.

[16] Data on starting years are mainly taken from Bell.

capital invested in farming (Bs 212 million), in ranching (Bs 104 million), in transport (Bs 170 million) and in commerce (Bs 302 million). Most of the manufacturing firms were small and approximately four-fifths of the invested capital was accounted for by some 30 enterprises, each with a capital of more than Bs 250,000 (see table A 3 in the appendix). Only a dozen or so had a capital of more than one million bolivars. Equally few employed more than 100 workers. The newly founded factories listed above provided the majority of the 30 "large-scale" enterprises, the remainder being represented by nine tanneries located in Caracas and Valencia, three sugar mills in the state of Zulia, and one or two other smaller businesses.

Nevertheless, the limited amount of investment in manufacturing reveals the elementary nature of Venezuelan industry at that time, which is further underscored by the industry structure. The food, beverage and textile industries dominated. This structure also reflected the influence of the climate: the manufacture of beverages, sombreros, and ice, for example, was outstanding. The resource endowment also influenced the pattern. The relatively salient position of the leather and shoe industries was largely a result of specific Venezuelan raw-material advantages.

The prewar wave of industrial enterprise, small but rather significant, was followed by more industrial undertakings during World War I (see table A 4, the appendix). A second and larger paper mill was built in 1916 at Maracay, and a year later the first petroleum refinery was constructed at San Lorenzo on Lake Maracaibo. However, on the whole, industrial expansion was concentrated to three specific industries, to which most of the new installations belonged: sugar, cigarettes and textiles (although the latter developed mostly in the early twenties).

Industrial progress in Venezuela before and during World War I appears to have been quite considerable, although not comparable to that in the countries of southern South America. The factors generating this progress have been little studied. A few only will be suggested here.

The improvements in the economic infrastructure, especially in transport, which began in the 1870's and 1880's, were a prerequisite of the subsequent, successful investment in manufacturing. Several small hydroelectric power plants, which were constructed in the late 1890's and during the following decade in the rivers draining the Caracas valley and its mountains, solved the power problem of the machinery in the Caracas factories. Various thermoelectric plants were equally important to the factories of Maracaibo (power plant from 1889), Valencia, Puerto Cabello and Cumaná.

When the development of the infrastructure was already well under way, favorable changes occurred in two other important fields: the growth

of a domestic market for manufactures and the introduction of protection against imported products. The domestic market grew as purchasing power increased thanks to the coffee export booms of the 1890's and in the years before the war (see table 1.1). Undoubtedly, much of this increase was channeled into imports of consumer products. But for many products, such as leather, textiles and cigarettes, protective tariffs were introduced from the late 1890's onwards, and these were obviously of paramount importance to domestic entrepreneurs.[17]

The political take-over by Juan Vicente Gómez in 1908 with the political tranquility and financial order that accompanied it, seems to have provided a further impetus to manufacturing undertakings. Gómez invited foreign investors to come in and develop the resources of the country upon very favorable terms. This was in contrast to his predecessor, Cipriano Castro, who antagonized foreign interests. The new conditions attracted petroleum companies in particular, whereas foreign investment in manufacturing remained on rather a small scale.[18]

As we have seen, craft industries existed in most urban places, more or less in proportion to the population. Some of the artisan shops developed to become quite large enterprises, especially in Caracas and Valencia. But where were the first factories established, i.e. those involving appreciable amounts of capital and a large labor force?

According to the imperfect statistics of the 1913 industrial directory referred to above, Caracas dominated from the beginning (see table A 1).

[17] The original purpose of imposing import duties was to raise fiscal revenues. In the second half of last century and the two following decades duties on imports provided the government with its chief source of revenue. In the tariff act of 1896 a considerable protective element was instituted (Veloz, 237; Bell, 358). From 1905 and 1909 extraordinary *ad valorem* surtaxes on imports were added as remedies of the poor financial situation of the government (see *AE* 1908 and 1912:403). As a result, during 1905—1910 tariff revenues increased to represent almost two-thirds of the value of total imports (cf. note 21).

By the early 1910's the import duties were found to be "enormously protective on all kinds of manufactures" (Dalton, 250). The duty on boots and shoes, for example, was prohibitive, leaving no opportunity for foreign-made products to enter the Venezuelan market (Butman, 37). Thus being highly protected the domestic shoe industry, in Caracas two machinery-equipped factories only together with a large number of hand establishments, supplied all the demand for footwear that existed in the country, i.e. for those 15 per cent or so of the population who could afford to use shoes in those days.

[18] Among the few examples — or special cases — were the match factory (British), the meat-packing plant (British) and the largest shoe factory (Italian). Obviously the Venezuelan market was too small to attract the interest of foreign manufactures on any considerably scale.

By 1913 the Federal District (or, more specifically, Caracas and, second in importance, La Guaira) accounted for 46, or well over one-quarter, of the manufacturing enterprises in the country, and for two-thirds of the invested capital. The state of Carabobo (i.e. Valencia and to a minor extent Puerto Cabello) had the next largest concentration, i.e. nearly as many enterprises as the Federal District, but it accounted for no more than 12 per cent of the invested capital. Next in importance were the states of Sucre (Cumaná and, second in importance, Carúpano), where 21 enterprises answered for 9 per cent of the capital, and Zulia (Maracaibo above all), where 11 enterprises accounted for 6 per cent. These four states were in a class by themselves. The rest of the country barely matched Zulia for capital invested in manufacturing, i.e. it answered for only 7 per cent of the national total, distributed among about 50 very small enterprises (see table A 2).

The interwar period

As was described in chapter one, a major transformation of the Venezuelan economy began during the two interwar decades, under the impact of the dynamic petroleum industry. The traditional productive structure changed. Domestic agricultural production was partly replaced by imports, as was craft production. The emergence of a new "leading" industry, wholly controlled by foreign interests, was followed by a parallel expansion of commerce and services, but, evidently not, by any industrialization of appreciable amounts. Some of the reasons for this will be touched upon briefly below. This will form the background for the subsequent, and somewhat conjectural, account of the industrial development achieved during the interwar period.

The weak impetus given by the oil industry to manufacturing development is paradoxical, considering the magnitude of the oil money invested. Foreign investments and export earnings experienced a fabulous rise from 1920 to 1940, as was described in chapter one. By the late 1930's the Venezuelan per capita exports were the highest in Latin America. In theory, the ample supply of foreign exchange should have triggered off industrial development by providing basic prerequisites: the capital accumulation needed for manufacturing investments and the increased capacity to import machinery and equipment. These two conditions were also implemented in Venezuela: much capital was accumulated and the import capacity rose considerably.[19] In addition, as incomes increased for some

[19] See Rangel 1970:305—322 and table A 20, the appendix.

segments of the population, particularly during the twenties, the markets grew for many, domestically made manufactures.

Despite these favorable circumstances manufacturing showed little expansion and the sector remained unimportant. This is due to a series of reasons, not the least such related to political and social structures. Here, only a few factors in the economic field should be mentioned. Undoubtedly the appreciation in the thirties of the value of the national currency was of paramount importance, an evolution counted for in detail in chapter one (see note 28). Made possible by high oil export earnings and investments it pushed up domestic costs and in most cases resulted in the superiority of foreign competition.[20] Tariffs on imports were increased, but apparently not enough to compensate altogether for the appreciation. Existing or potential domestic manufacturers were consequently adversely affected.[21]

In addition, the improvements of the economic infrastructure made by the oil companies were for a long time exclusively restricted for the use of the companies. For instance, the roads built by the companies were not opened for the public until 1938. The oil industry was an enclave economy, which provided limited external economies for the domestic economy.

In the twenties the positive influence of the oil seems to have dominated. Stimulated by a rapidly increasing per capita income, which resulted from high coffee exports as well as from the fabulous oil boom, the manufacturing industries achieved some further advances, particularly during the second half of the decade. This conclusion cannot be confirmed by production statistics, but there is evidence of an upswing in, for in-

[20] See e.g. Peltzer 1965:147—194.

[21] The need to adjust the existing tariff system in order to protect and stimulate the incipient domestic manufacturing industry was stressed by the minister of finance in 1921 (Veloz, 335—6). From 1915 to 1936 seven tariff revisions were enacted in the Venezuelan congress, establishing successive duty rate increases. As a result tariff protection more than doubled for most products (USTC 1948:8). Big increases were effected in 1933 and 1934, probably to compensate for the appreciation of the bolivar. The country's tariff revenues more than tripled between 1915 and 1940. In relation to the value of total imports they rose from 22 per cent around 1920 to 42 per cent around 1940, as can be seen from the following table (figures calculated by the author on data compiled from Veloz, variables A and B in Bs million):

	1905/06-1910/11	1911/12-1915/16	1916/17-1920/21	1921/22-1925/26	1926/27-1930/31	1931/32-1935/36	1936/37-1940/41
A. Tariff revenues	181	204	178	264	490	320	629
B. Total imports	292	445	797	1006	1941	859	1510
C. A as a percentage of B	61.8	45.8	22.3	26.2	25.2	38.9	41.6

stance, the import of industrial machinery and equipment, which in the period 1925—1930 rose to a yearly level about four times as high as the average for the ten years 1915—1924 (see table A 20, the appendix). Likewise, the imports of raw materials and semi-manufactures increased sharply, which also suggests a growing manufacturing industry. In fact, by the late twenties the country was described as being largely dependent on foreign sources of supply for raw materials. In addition, around 1930 there was still a little export of manufactures, mainly to the West Indies. Besides the tanneries and the *alpargata* industry, which traditionally had produced a surplus for export, the cigarette factories also sold marginal quantities abroad.[22] But the main exporting, factory-based industry during World War I — the sugar mills — became increasingly geared to the home market.

Private capital, accumulated mainly in the import trade and in urban land speculation, was channeled into manufacturing, and new enterprises were established (compare table A 20). With few exceptions, however, ownership remained Venezuelan. Obviously, the country's market for manufactures was still considered too small by foreign industrialists to justify large-scale investments.

Nevertheless, the industrial development of the twenties was uneven and limited to a handful of industries, primarily textiles, cigarettes and beverages, i.e. industries which enjoyed either high tariff protection (textiles and cigarettes) or strong natural protection by virtue of high transport costs (beverages). The 1920—1930 expansion of the cotton textile industry is described in chapter four, that of beer production in chapter five. In the case of cigarettes, their use — like the use of beer and soft drinks as well — gained immensely from the oil boom of the twenties, partly at the expense of cigars, the traditional local tobacco product. The production of cigarettes was a source of fiscal revenues and cigarettes were, not unexpectedly, subject to high import duties. However, whereas the production of cigars came from households and small factories, existing in many places (Caracas, Cumaná, Puerto Cabello, Valencia and Maracay above all), that of cigarettes was based on a few large factories, nearly all of them located in Caracas. The largest, a foreign-owned one, produced over half the cigarette production in the late 1920's.[23] There are indications that this doubled between 1920 and 1928.[24]

[22] In 1928 about 31 million cigarettes, or 2 per cent of the estimated Veneuelan production, were exported to Curaçao and Trinidad (Dean 1931:20—21).

[23] Dean, 20.

[24] A doubling occurred in the government's cigarette tax income. As this tax was Bs 0.01 per each domestic cigarette in the 1915—1936 period (Veloz, 297,

The location of cigarette manufacturing, the "new" tobacco industry, was highly influenced by the government through its taxation procedure. A tax on cigarettes, significantly lower on domestic than on imported products, was instituted before 1920, whereas other items manufactured from tobacco remained tax-free. The tax was collected through the sale — a government monopoly — of special cigarette paper, with which all domestic cigarettes had to be made. Because of the heavy money outlay involved, the companies bought supplies for only a day or so at a time.[25] This circumstance evidently acted strongly towards a concentration to a rather few but large producers and to a location in the proximity of the government in Caracas.

Furthermore, the country's first, small rubber-products plants were established — also under the protection of high tariffs[26] — and these represented one of the seemingly few examples of new production lines undertaken in the country during the decade. A modest beginning was also made in metal manufacturing, when, in 1929, a small wire and nail factory started operations in Caracas.[27] In the field of the engineering industry the most important establishment was a repair shop, that of the Caracas—Valencia railway company, located in Caracas.[28]

In the early thirties the industrial development apparently came to a halt. Except for a meat-packing plant built at Maracay, with Uruguayan expertise, practically no manufacturing development took place between 1932 and 1935 according to one observer.[29] In several lines the domestic production decreased and in some cases ceased completely. The stagnation of the important cotton textile industry is treated in chapter four. A few further examples may be cited. In match manufacturing, another government monopoly, the only producer in the country was a British-owned factory which closed down in 1929, when its production concession lapsed.[30] By then it had supplied for more than 20 years the whole country with matches. Swedish and other foreign match manufacturers applied for new production concessions but the government chose to turn to im-

313 and Bell, 62, 174), it is possible to estimate the national production in rough terms: 800 million cigarettes in 1920 and over 1,600 million in 1928 as well as in 1929 (for this year, see also Dean, 20). Later, production declined and may not have exceeded the 1929 level until 1939 (*AE* 1953:203).

25 See UN 1951:70, USDC 1953:144, and Shoup 1959:258.

26 Randall & Grab 1930:286—7.

27 *Ibid.*

28 Vila 1967a:274.

29 MacGregor 1935:15—16.

30 Kirwin 1930:16.

ports of matches.[31] Not until 1951 was domestic match production established again.[32]

Also in the cigarette industry and in the sugar mills, which seasonally employed a large workforce, output levels seem to have been reduced in the period up to the final years of the thirties.[33]

In the late 1930's the government initiated a first but modest program to encourage the industrial development in the country. It was counteracted by the government's foreign trade policy. In 1939, a trade agreement was signed with the United States (revised and extended in 1952), which reduced duties on the imports from this country of a series of manufactured products.[34] This agreement, it is argued, came to substantially reduce the possibilities for further industrial progress.[35]

The limited industrial development achieved is apparent from the 1936 Industrial Census (see the appendix for a detailed account). The factory industry may have employed around 30,000 persons and represented an invested capital of around Bs 200 million. The food and textile industries employed three-quarters of the total workforce in manufacturing. The largest industries by capital were the breweries and distilleries, the cotton mills and the sugar refineries.

What changes had occurred in the regional distribution of "factory industry" between 1913 (compare page 63) and 1936? The Federal District (Caracas) still dominated, accounting for half the employment and half the capital invested (table A 16). Carabobo (Valencia) was still number two (by employment). The main changes were the increase for Zulia (breweries in Maracaibo and sugar refineries south of the lake), especially in share of capital, and for Aragua (various enterprises by Gómez in Maracay). On the other hand, Sucre (Cumaná) declined in importance. Other states had very small amount of factory industry, still by 1936.

[31] Runblom 1971:232. A delivery contract with a Swedish company expired in 1937 (USTC 1948:15). Later, the government bought matches from an Italian firm. Prior to World War II the Swedish match company had advanced plans to build a factory near Valencia (Wythe *et al.* 1953:125).

[32] *Ibid.*, 125.

[33] For sugar refining, see e.g. Luzardo 1957:20—21, 70—71, Bell, 208, 249 and Veloz, 378, 403.

[34] See e.g. USTC 1948:12—13 and USDC 1953:94—95.

[35] Araujo 1964:7 and 1969:7—9, Maza Zavala 1966:61.

Table 2.3 *Composition of Output by Selected Industries 1948, 1958 and 1968, and Manufacturing Employment, 1966*

ISIC Industry no.	Share of manufacturing output (per cent)			Employment in factory industry
	1948	1958	1968	1966
20. Food	25.7	16.7	17.0	36900
21. Beverages	17.3	12.7	9.8	8600
23. Textiles	10.1	8.1	9.0	21400
24. Clothing	2.1	4.3	2.2	19000
27. Paper	1.0	1.9	4.0	7000
31. Chemicals	6.9	8.1	9.5	13600
32. Oil refining	6.8	12.1	9.1	5300
33. Minerals	6.4	7.3	5.4	13400
34. Basic metals	—	0.5	4.9	8700
35. Metal products	1.1	5.4	5.6	10000
36. Machinery	0.7	0.3	0.8	2000
38. Transport	2.2	2.4	2.7	14700
Others	19.7	20.2	20.0	39400
Total	*100.0*	*100.0*	*100.0*	*200000*

Sources: BCV, *La economía en los últimos treinta años*, 1971, and Cordiplan, *II Encuesta Industrial*, 1968.

The postwar period

In the present study this period will be treated very briefly. Only some basic data on the development in time and space will be presented.[36]

In the 1940's the manufacturing industry in Venezuela started a vigorous development, which continued through the 1950's and 1960's. The rise in manufacturing output was rapid by any standards. Between 1940 and 1965 output doubled every 7 year on an average according to available production indices (table A 20, the appendix). The growth rate in Venezuela was highest in Latin America along with that in Brazil and Mexico. The growth was rivalled by few developing nations of other continents.

The number of employees in manufacturing activities, including small-scale industry, rose from around 60,000 in 1941, to 111,000 in 1950 and 194,000 in 1961 (population census figures). The employment in the factory industry, which in 1961 was around 157,000, in 1966 had increased to 200,000 persons, as table 2.3 shows.

[36] For studies covering this period see Dryden Witte 1971, Falcón Urbano 1969, Lollett C. 1964, Montiel Ortega 1967, Pernaut 1966 and studies listed in note 10.

Rise and Spread of Manufacturing

A considerable part of the industrial expansion between 1948 and 1958 was a result of the establishment of large oil refineries. Besides oil refining also the metal products and the non-metallic minerals industry, both prospering from the rapid urbanization and the expanded public works activity, gained in importance.

A marked shift in the growth structure occurred after 1958, when a comprehensive import-substitution program was adopted. As a result the food and textiles industries in 1958—1968 increased their shares of the manufacturing output, after having lost considerably in the pre-1958 period (table 2.3). The most important growth industries in 1958—1968 were, however, the basic metals, the chemical products and the paper industries.

Table 2.4 *Value Added by Manufacturing in Leading States, 1953 and 1963* (percentages of the Venezuelan totals)

State	1953	1963
The Central Region	*70.3*	*73.9*
Federal District	44.4	31.3
Miranda	13.6	23.3
Aragua	3.8	9.7
Carabobo	8.5	9.6
Other Venezuela	*29.7*	*26.1*
Zulia	12.7	8.1
Bolívar	0.7	4.6
Lara	3.0	3.6
Anzoátequi	3.4	2.8
Other states	9.9	7.0

Source: BCV, *Informe Económico 1966*, p. 200.

Geographically, this strong postwar expansion — like the manufacturing developments of earlier decades — took place primarily in the capital and its vicinity. The spatial distribution of the manufacturing industry in the postwar period is highlighted in tables 2.4 and 6.2 and figures 3—5. All points to the heavy concentration to the north-central region, particularly Caracas. For instance, in the mid-1960's the Caracas Metropolitan Area had more than 40 per cent and the north-central region three-quarters of the country's manufacturing employment.

3. The Petroleum Refining Industry

The Development of Petroleum Exploitation

The rise of Venezuela as the world's leading low-cost oil producer[1]

Although the existence of widely scattered petroliferous seeps had been known since early colonial times, it was not until the early twentieth century that development of these resources began on a large scale. Whilst foreign interest had for decades been concentrated on asphalt exploitation, in the 1910's it turned to oil prospecting.[2] In their global contest for oil resources, intensified during and after World War I, the large international oil companies turned their eyes towards Venezuela. Here they were granted concessions on favorable terms. In few other places did they meet such a benevolent attitude as in Venezuela under the Gómez regime.

[1] This section is based primarily on Lieuwen's outstanding work, *Petroleum in Venezuela: A History* (1955), which covers the period to 1952. However, the work is not as thorough on refining development as on other oil aspects. For detailed reports of the big oil hunt in 1911—1916 by a team of North American petroleum geologists, who carried out the pioneering, nationwide geological exploration of the country, see Arnold *et al.* (1960). Other useful sources were Martínez (1966, 1969 and 1972), Mejía Alarcón (1972), Vallenilla (1973), and Méndez-Arocha (1974).

[2] It is worth mentioning that the earliest initiatives for petroleum exploitation came from Venezuelans. The first oil concession in Venezuela was granted in 1865 only six years after the world's first oil producing well was drilled at Titusville, Pennsylvania (see Martínez, 1971:11, who corrects Lieuwen on this point). Several other oil leases followed but they all, including the first one, lapsed as unsuccessful. The only exception was one granted in 1878 in Táchira, close to the Colombian border. Here oil was exploited and refined by a local firm and sold in small quantities in the surrounding mountain villages from 1888 to 1934 (Lieuwen, 6). Its importance, however, was never more than local.

Vast oil resources were soon discovered in the Maracaibo Basin. Situated on the coast of the Caribbean Sea, these oil deposits were strategically located in relation to the main markets on both sides of the North Atlantic.

Thus, circumstances were favorable on both the demand and the resource side. Together they prepared the way for a formidable expansion of the industry. Production more or less doubled every year during the twenties. An insignificant oil producer in the early 1920's, by 1928 Venezuela was the world's leading petroleum exporter and second only to the United States as a producer.[3] This development merits a closer scrutiny.

Royal Dutch Shell was the first of the large international oil firms to realize the possibilities. It entered Venezuela early in 1913, when it bought control over Caribbean Petroleum, the subsidiary of a Philadelphian-incorporated company. This company had first, in vain, turned to North American oil companies in search of financial help.[4] The year before, it had acquired a huge concession, covering almost one-third of the Venezuelan territory, on very favorable terms. After exploring and drilling in various parts, the company soon began to concentrate around Lake Maracaibo.

In addition to Caribbean Petroleum, by 1913 two English companies had obtained important concessions in the west. These were leases originally granted to Venezuelan individuals in 1907.[5] From the beginning Royal

[3] The Venezuelan upswing succeeded the great oil boom in Mexico, which was even more spectacular. Mexican oil production rose from half a million tons in 1910 to a peak of 29 million tons in 1921. The first great Latin American oil boom ended, however, nearly as abruptly as it had started. Superseded from 1927 by Venezuela, by 1929 Mexico was turning out only one-third of the Venezuelan oil production of 20 million tons. The 1921 peak level in Mexico was not surpassed by Venezuela until 1939.

Between 1931 and 1944 and again from 1962, the Soviet Union reduced Venezuela to a third place in oil production. In 1970, Iran and, in 1971, also Saudi Arabia passed Venezuela, both in output and exports. Since, Venezuela has ranked as number five as oil producer and number three as oil exporter.

[4] See besides Lieuwen (p. 14), Arnold *et al.* (p. 77) where comments by Henry Deterding, president of the Royal Dutch Shell, are also quoted. The Venezuelan oil potential was recognized as early as the close of last century. Obviously, the country was then considered as too risky a place politically for investments.

[5] Two other large 1907 concessions, covering parts of the state of Falcón, were a decade later in the hands of another couple of English companies, both then being controlled, partly or wholly, by the British government. Despite considerable efforts — they each had 600 men at exploration work by 1922 — the companies found little oil. The least unsuccessful one, British Controlled Oilfields, managed to extract small quantities of oil from the inland field of El Mene de Mauroa from the late twenties and for two or three decades onwards. The oil was sold to Shell at the Lake Maracaibo terminal.

Dutch Shell secured an influence in these companies too. Thus, by controlling the three leading operators,[6] Shell dominated the petroleum industry in all its phases — exploitation, exports and refining — for a ten-year-period up to the mid-1920's.

In 1914 Shell's Caribbean subsidiary made the country's first major oil discovery, drilling three successful wells in the Mene Grande field, southeast of Lake Maracaibo. In the following years several more fairly large gushers were drilled here. In addition, the two other companies in which Shell had just acquired a stake found small producing wells in the inaccessible area close to the Colombian border and, by 1917, in the Rosa (Cabimas) field, which was the first of the prolific Bolívar coastal fields on the east shore of the lake. Also in 1917, the Mene Grande field began to produce constantly, although large-scale exports started first when the war was over. Oil production in the two other fields was further delayed.

The wartime oil discoveries made the North American companies interested. At the close of the war they joined the search for oil and, supported by their government, led the fight for new concessions. Such were again being granted profusely by the Gómez regime.[7] Several new petroleum laws were also drafted, but not until 1922, when they had their "own" liberal petroleum law enacted, did the companies step up activities.[8] In December that year a famous gusher — Los Barrosos no. 2 of La Rosa — flowed wild for nine days at a peak rate of some 100,000 barrels daily, and drew the attention of the world to the huge oil potential of the Maracaibo Basin. This major event was the start of the real Venezuela oil boom.

A period of feverish activities followed. Interest was concentrated to the north-eastern shore of Lake Maracaibo. Here, big new discoveries were made in rapid succession, opening up the whole of the Bolívar coastal

[6] By 1923, Shell owned two of them wholly, and controlled a majority of the stock of the third.

[7] Throughout the whole remaining period of the Gómez regime, until 1936, the concessions policy was characterized by transactions of an unparalleled corruption. Thousands of concession lots were acquired by more than a hundred companies through an intermediary system. Gómez granted leases to his favorites — probably for a "consideration" — and the favorites then sold them to the companies at exorbitant profits.

[8] "Representatives of three North American companies were called in to help make a more agreeable law" (Lieuwen, 27), when the companies had also repudiated the liberalized 1921 petroleum law. This one superseded the more restrictive and demanding laws of 1918 and 1920, prepared by Development Minister Torres (cf. notes 14 and 28).

fields.[9] They culminated with Lagunillas in 1926, Tía Juana in 1928 and Bachaquero in 1930, a trio of giant fields which for decades were to answer for the bulk of Venezuelan oil production.

The concessions granted in this area were small and narrow, which led to intense competitive drilling. Operating side-by-side, companies drilled along their common boundaries, Shell on the land, Gulf on the shore and Indiana's Lago on the lake-bed, all trying to tap the largest share of a common underground reservoir. When a new pool was discovered at a new place, the line fight quickly moved there. Drilling equipment — new or used — was swiftly transferred to Maracaibo from the companies' operations in the United States and Mexico. As the government at that time had no controls — and for that matter no theory — for the conservation or spacing of wells, excessive drilling and tremendous waste resulted. On the other hand, much of the meteoric rise in the production of oil during the twenties has its explanation in this drilling contest.

Although more than a hundred companies — most of them small North American operators — participated in the rush for Venezuelan oil, only three were really successful: Shell, Standard Oil of Indiana and Gulf. By 1929 the Big Three produced over 98 per cent of the country's oil. The group of unsuccessful ones included two more of the large US companies: Standard Oil of California and Standard Oil of New Jersey (now Exxon), the latter remaining unsuccessful despite great efforts expended on oil prospecting (see below).

A decisive reason for the remarkable boom was the highly competitive position of Venezuelan oil. The yield per well was substantially higher than in the United States (and Mexico). In addition, wells were shallower, dry wells less frequent, and drilling costs accordingly lower. As the Maracaibo oil was cheaper to transport to the refineries of the US northeastern seaboard than the oil from the Gulf Coast and mid-continent fields, differences in delivery costs were larger than those in production costs. Oil from Venezuela did not even cost half as much as oil from the mid-continent region in Philadelphia or New York in the late 1920's.[10]

[9] In early times few realized that these fields were pools of a common giant oil deposit — the Bolívar Coastal Field (BCF). By 1973 the whole field accounted for almost two-thirds of the accumulated oil production in Venezuela and was the world's most productive field after Burgan in Kuwait and Ghawar in Saudi Arabia. Despite the considerable amounts extracted, BCF in the early 1970's contained estimated ultimate (recoverable) resources equal to almost half the country's total in traditional oil basins (Martínez 1972:106—7, 111).

[10] In 1927—1930 the delivered cost at Atlantic seaboard refineries was $ 1.90 per barrel for mid-continent crude and $ 0.87 for Venezuelan according to a US Tariff Commission examination. A portion of the cost for US oil was attributable

Oil Refining

The cheaper oil exploitation in Venezuela led to reactions in the United States which, in turn, had both direct and indirect repercussions on the Venezuelan industry. In response to the domestic producers' agitation against Venezuelan oil, in 1932 the US government imposed tariffs on imported petroleum: a prohibitively high rate on gasoline and a low, less significant one on crude and fuel oil. The most important effect of the tariff was a rearrangement of world oil markets. In 1932 over half the Venezuelan oil was still being shipped to US ports. A few years later the chief market was Europe.[11] Here, oil from Venezuela replaced much of the traditional import of refined products from the United States. As refinery capacity in Europe was small, the refining of oil at its source, in or near Venezuela, was stimulated (see below).

The impact on the oil companies operating in Venezuela varied considerably. Shell was in the best position. Gulf, which brought practically all its Venezuelan oil to the United States as crude oil, was also relatively little affected. On the other hand, Standard of Indiana was hit badly. It shipped a large portion of its Maracaibo oil to the United States from its Aruba refinery in the form of gasoline and fuel oil, and had no major alternative marketing outlets abroad. As a result, in 1932 the company had to sell its Venezuelan affiliate, Lago, and the Aruba refinery, to Standard of New Jersey, which already owned an extensive distribution network in Europe and South America (Esso).

Largely thanks to the purchase of Lago's profitable operations in Lake Maracaibo, in the mid-1930's Standard of New Jersey replaced Shell as the country's leading oil company. Its dramatic rise to this position was a result of a combination of aggressive and subduing actions as well as heavy investments.[12] Besides expanding Lago's marine fields output in

to its higher quality, i.e. a higher yield of gasoline. Discounting for this, the cost difference was reduced to around 60 cents (Lieuwen, 58). Most years throughout the whole period from the late twenties to the mid-sixties, the average import price per barrel for Venezuelan crude in US harbors was one-quarter to one-third less than the average price at wellhead for Gulf Coast crude (Grunwald & Musgrove 1970, table 8:5).

[11] By 1938 half the Venezuelan oil was shipped to Europe, directly or indirectly via Aruba and Curaçao. One-quarter went to the United States and about 15 per cent to Latin America (see data in Zuloaga 1960:7; slightly differing data are given in Zuloaga 1950:50 and Balestrini 1959:155). For postwar export destinations, compare note 18.

[12] Standard Oil of New Jersey, earlier represented by a marketing subsidiary, entered Venezuela with the producer's interest in 1920. During the following decade it strove hard in nationwide oil prospecting, operating with a whole battery of affiliates. It spent over 20 million dollars in the west in fruitless

the west, the company finally obtained a production boost in the east, where it had led the development of oil from the beginning. From the late thirties Venezuela became the multinational Jersey's main source of crude oil.

In Venezuela, New Jersey became a major factor in the economy. From 1935 up to and including 1948, the corporation provided more than half of all crude oil produced in the country through its local affiliate Creole Petroleum (and predecessors). Although its share has subsequently dropped to below 40 per cent in the 1960's — but around 45 per cent in the early 1970's — it has invariably been the leader. Shell has held second place, and Gulf (Mene Grande) third place in crude oil production. Together this trio has dominated the Venezuelan oil industry. They accounted for 99 per cent of the output in 1939. Despite the priority given after World War II to independent companies for developing new oilfields, the Big Three answered for 87 per cent or more of the oil produced in 1945—1957 and 80 per cent or more during the period after 1957.[13]

To sum up: the early development of the Venezuelan petroleum industry and its basic characteristics were of paramount importance. Much of the

exploration. Yet, by the end of 1929 the concern produced no Venezuelan oil in commercial quantities. A single discovery of importance was made by one of the fifteen or more affiliates: the Quiriquire field in the far east of Venezuela. Found in 1928 it began exporting in 1931. By that time Jersey Standard had spent some $ 40 million totally in the east.

As a consequence New Jersey embarked on complementary and more fruitful inventions. First, "it bought into, or bought out, companies whose prospects were fairly well established" (Taylor & Lindeman 1955:13). In 1928 it had secured a first Venezuelan crude supply by gaining control of a concessions holding company, the Creole Syndicate, that i.a. owned a 20 per cent overriding royalty of Gulf's Bolívar coast output. Similarly, New Jersey bought itself into and developed the small Cumarebo field on the Caribbean coast, opened in 1932. The same year the most important acquisition was made, the purchase for $ 135 million of Indiana's Lago. This gave New Jersey its third and by far its most productive crude supply in the west.

Secondly, New Jersey's fight for new concessions was intensified and became more ruthless. A large proportion of the leases granted by Gómez in 1925—1935 was obtained by New Jersey. For example, the company practically got a monopoly on good oil lands in the state of Monagas. (Lieuwen, 18, 32, 43, 59—62; Taylor & Lindeman, 12—13, 87—89; Baptista 1961:15—16, 21—25).

[13] In December, 1937, the Standard of New Jersey group paid Gulf $ 100 million for a half-interest in Mene Grande. Gulf also had to surrender valuable management prerogatives. Standard then immediately sold half their share to a Shell subsidiary (Lieuwen, 84—85). Mene Grande became a joint enterprise under tripartite control. Ever since the Venezuelan petroleum industry has, in fact, been dominated by two companies only, Jersey Standard and Shell.

industry's present structural relationships were established during the two initial decades: the foreign influence, the company size structure and the size relations between the main oil-producing areas. Practically all the oil areas of to-day experienced their initial development then, and the north-eastern part of the Lake Maracaibo area was predominant right from the start. This means that if any city should have benefited from the possible direct "linkage" effects of the capital-intensive petroleum industry, it would have been Maracaibo.

Nevertheless, two major issues remained unsettled or were only solved in a way that was unrewarding for the country: first, the control and participation of the country in the industry and, second, the processing of the crude oil towards final products within the country. The latter issue is discussed in detail below. For the former, the reader is referred back to chapter one. Suffice it to mention here that in the period 1923—1930, the amount the oil companies paid to the government was less than the sum of all duty exonerations they enjoyed on imported products. "The companies exploited the petroleum and the government paid them for carrying it away".[14]

The 1943—1957 expansion

The expansion of the petroleum industry was halted only temporarily during the Great Depression. It continued during the latter half of the thirties, when the eastern oilfields in the llanos were opened up. By 1939, the 1929 output was exceeded by 50 per cent (see table 3.1). Rapidly increasing world demand for oil, and prices that more than doubled in the 3 years after World War II, provided a great additional stimulus to the industry. Crude oil production trebled during the period 1943—1948. By 1957 it had doubled again. The increased production was made possible by large, new 40-year-long concessions granted in 1944 under the 1943 Hydrocarbons Law. All old concessions were converted to fit the stipulations of the new oil law.

The 1943 law was instrumental in augmenting the government's control and participation in the foreign-owned industry and increasing domestic oil refining. In subsequent agreements between the state and operating companies, a 50-50 profit-sharing system was adopted, which further raised the country's oil incomes. In 1948, the last year of a three-year democratic interlude in the prevailing military rule, these incomes passed the billion

[14] Development Minister Gumersindo Torres, quoted by Vallenilla (p. 89).

Table 3.1 *Venezuelan Crude Oil Extracted, At-Source-Refined and Exported. Selected Years, 1919—1974* (million metric tons)

Years	Extracted	Refined in the Caribbean			Overseas exports[c]	Total exports
		Vene-zuela	Aruba-Curaçao[a]	Other Carib.[b]		
	1	2	3	4	5	6
1919	0.05	0.05	—	—	—	—
1924	1.33	0.08	0.61	—	0.50	1.21
1929	19.8	0.7	11.0	0.0	8.1	19.1
1934	20.1	1.2	13.5	0.0	5.6	19.2
1939	30.5	2.0	21.5	0.1	6.7	28.2
1941	33.3	4.7	21.8	0.1	6.9	28.8
1945	46.3	4.7	*d*	*d*	*d*	41.7
1947	62.3	5.3	35.7	0.5	20.2	56.4
1950	77.9	13.0	38.3	1.4	24.9	64.6
1952	94.7	18.2	42.5	2.2	31.5	76.2
1955	113.0	28.1	37.9	2.8	44.3	85.0
1957	145.8	36.1	37.2	4.1	67.1	108.4
1960	149.4	46.3	36.5	7.9	60.0	104.4
1962	167.1	53.6	38.7	8.9	68.0	115.6
1965	182.4	61.7	40.2	14.4	66.8	121.4
1967	185.5	61.1	40.4	19.5	66.6	126.5
1970	194.3	67.7	41.2	22.7	63.7	127.6
1972	168.4	58.9	33.0	14.6	63.9	111.5
1974	156.2	62.7	27.5	6.5	59.0	93.0

a Direct exports of crude oil from Venezuela less reexports.

b Direct crude oil exports to Caribbean refineries mainly geared towards reexporting the Venezuelan oil, namely those in Trinidad, Puerto Rico, Panama and St. Croix, Virgin Islands.

c Total direct exports from Venezuela (see col. 6), less those to the Caribbean territories included in column 3 and 4.

d For 1945 (as well as for 1942—1944) the official export data are not completely disaggregated by countries.

General note: To facilitate international comparisons an attempt was made to express oil statistics by weight. However, in Venezuela oil data are usually given by volume: by the oil companies in barrels per day, by the official authorities also in cubic meters. Official data by weight are not readily available, which necessitated some estimates (see below).

Comment to col. 2: In the source, data were given by volume only. They were converted to weight by the author by applying the varying rates for 1919—1974 used in the source for converting the Venezuelan crude output from barrels to metric tons. This procedure implies an assumption that the crude which went to the domestic refineries had the same average specific gravity as all crude produced. Actually, the crude processed in the country was normally

Table 3.1 (*cont.*)

slightly heavier than the crude exported. As the difference was small, actual values should have been only one or two decimal units higher than the figures given above.

Sources:

Col. 1,2 and 3 (for reexports):
Petróleo y Otros Datos Estadísticos (PODE), various issues.

Col. 3,4,5,6:

1919—1941:	Loohuis, "*De Aardolie-Industrie op Curaçao*" (1934), *Anuario Estadístico 1940* and USTC, *Recent Developments in the Trade of Venezuela* (1945).
1945—1955:	*Estadística Mercantil y Marítima*, various issues.
1962—1970:	*Boletín de Comercio Exterior*, various issues.
Other years:	Data given in cubic meters (in *PODE*) were converted to tons by multiplying by 0.9.

bolivars mark for the first time, reaching a level ten times as high as the yearly average for the 1936—1943 period.[15]

In the fifties, Venezuela was being replaced as the leading low-cost oil region of the world by the Middle East. Here, huge deposits of easily available petroleum were found in the late forties. The major multinational oil companies rushed into the Middle East, which became the most profitable area of operation. Production costs were less than half those in Venezuela.[16]

The post-1957 stagnation

The year 1957 marked an end to Venezuelan oil expansion. In many respects the year was a turning-point. The country then reached a peak in its share of world oil production, namely almost 16 per cent. In early

[15] In one year, 1948, the country received almost as much in the way of royalties and tax income from oil as in the whole of the pre-1943 period (see yearly data for the 1917—1961 period in Parra 1963, table D-5).

[16] The full, non-tax cost of oil production in the late 1950's was estimated at less than 40 cents per barrel in the Middle East and over 90 cents in Venezuela. Including taxes, total cost per barrel was estimated at $ 1.00—1.10 in the Middle East and $ 1.65—1.75 in Venezuela (IBRD 1961:128). According to another source the non-tax production cost, including depreciation, in Venezuela was about 50 cents per barrel in 1944—1946. From 1948 to 1961 it remained rather stable, varying between $ 0.93 and $ 1.12, but decreased somewhat from 1961 to 1964 (to $ 0.77). The government's proceeds per barrel were around 30 cents in 1944—1946, around 70 cents in 1948—1956 and between $ 0.82 and 1.00 in the period 1957—1964 (Valbuena de Lasi 1966:60).

1958, the military dictatorship was overthrown in a revolution. It was followed by democratic rule. The years of liberal state oil policy based on granting concessions, came to a definite end. Control over the companies' activities was tightened and the tax rates increased, bringing state participation in the industry's profits to around two-thirds.

After 1957, Venezuela was left markedly behind in oil production by the Middle East.[17] Up to 1957 this development had been obscured by the rapid growth in world oil demand, and by political events such as the Korean and Suez wars and the Iranian nationalization crisis. However, when conditions were "normalized" in 1958 and 1959, the competitive superiority of the Middle East oil became clear.

To protect its competitive position, Venezuela tried early to reach agreements on oil production with the exporting countries of the Middle East. Venezuela was the main instigator of the Organization of Petroleum Exporting Countries, founded late in 1960. She was to gain most from production controls.

Venezuela also tried, without success, to obtain greater access to the US markets, which in the early forties again became the chief outlet for the country's oil.[18] This was accentuated after 1950 when Middle East oil replaced much Venezuelan oil in Europe. However, production costs in the United States were still substantially higher than those in Venezuela and the Middle East. As a consequence, US domestic producers in 1959

[17] Together, the Middle East countries passed Venezuela in crude oil production as early as 1949. During the fifties the difference in production was relatively small. From 1957, when Middle East output was 27 per cent above Venezuelan, the Middle East drew far ahead. Its output more or less doubled Venezuelan output each year in the first half of the sixties, and tripled it (at least) from 1968 onwards. In cumulative oil production the Middle East surpassed Venezuela by the end of 1957 (API 1971:548—559).

[18] To this the wartime circumstances contributed as well as a 50 per cent cut in US tariffs on imported Venezuelan oil liquids in December, 1939. The United States replaced the United Kingdom as Venezuela's chief market in the 1940—1942 period. Canada, Argentina and Brazil also became important outlets for Venezuelan oil during the war (USTC 1945:20, 23). Throughout the whole postwar period the United States has ordinarily received 40—45 per cent of Venezuela's oil, either directly or indirectly via refining and transshipment in Aruba and Curaçao. Since 1951 Canada has taken a further fairly stable 10 per cent. The share for Europe has fluctuated. From a peak of 35 per cent in 1947 it was reduced to half in only six years, then climbed slowly but steadily by ten units in ten years, to 27 per cent in 1963, later to diminish again. It was less than 20 per cent in 1973. Central America has received 6—12 per cent, South America (with almost half to Brazil) 8—15 per cent in the 1946—1974 period (*PODE*, various issues).

and afterwards were further protected from imports by quotas and other restrictions.

However, Venezuelan petroleum production continued to increase for some time, mainly as a result of the development of large new oil concessions granted by the Pérez Jiménez regime in 1956 and 1957, but now at a slower rate. In 1970 a production peak of 194 million tons was reached. After 1970 output has fallen markedly.

The Development of Petroleum Refining

A brief outline of the major locational developments and the forces that have characterized the world's oil refining industry through its more than century-long history may be a useful introduction.[19] This is the background against which the development of the Venezuelan refining industry should be seen.

Early refineries employed simple heating and distillation methods and produced a few products, primarily kerosene. Much crude oil and heavier fractions were burnt or lost as waste. To minimize transport costs, plants — often simple "topping" plants — were located close to the wells, often within the oil fields. Nevertheless, in the leading petroleum nation, the United States, the largest markets attracted many refineries from the beginning.

From the early years of this century, with the widespread use of the internal combustion engine, markets developed for a widely expanded range of refined products, although demand was still heavily weighted in favor of the lighter fractions. The refining process became more complex and soon included cracking techniques for converting abundant heavier fractions into lighter ones. Economies of scale necessitated larger units, and the industry moved increasingly away from the oil fields. The typical post-World War I plant was built at a convenient breaking-point in the transport flow, preferably at a deepwater location, where crude oil was gathered from a whole field or from a group of fields. There was still rather considerable refining wastage, which made a resouce-oriented location favorable economically. The close-to-the-field site continued to be the most common refinery location, and was so still at the end of World War II.[20] The small refinery at the well head became feasible only in

[19] Principal sources for this section were Alexandersson (1967), Manners (1964), Miller (1962) and Odell (1963).

[20] Of the world's oil refining outside the United States and the Soviet Union — 84.6 million tons of crude oil in 1937 — less than 30 per cent took place in

remote fields and in fields under development. The move away from the oilfield was most evident in the United States, where the large markets tended to attract most of the now refineries.

After World War II extensive location changes occurred. Most significant was the building of large and medium-sized refineries in the main oil-consuming areas, especially in Europe. A number of factors together explain this development. The demand for fuel oil and other fractions developed rapidly in Europe and made for a more balanced demand structure. More and more markets grew large enough to be capable of absorbing all, or practically all, the yields of a large refinery of economic size. Considerable scale economies in tanker transportation benefited importing countries, as crude oil was normally shipped in far larger quantities than products. In addition, crude rates were lower for equivalent volumes. In recent decades, 'dirty' oil has enjoyed a rate some ten per cent lower than 'clean' oil.

Furthermore, refining operations were made increasingly more efficient and oil losses were reduced.

Last but not least, geopolitical factors also played their part. Compared with many other industries, petroleum refining has in a sense been "footloose", especially since World War II. Transportation costs did not decisively favor a particular type of location. It could be argued that economic factors benefiting a market location certainly matched those favoring a resource location, but economic reasons alone did not command a market location. Under such circumstances, oil refining became highly susceptible to government pressure. The heavy influx of foreign capital and advanced technology, and the possibility of saving foreign exchange, added to government interest. Thus, the location of new refineries after World War II became increasingly influenced by government action and political conditions. This was apparent in both oil-exporting and oil-importing countries, but mostly in the latter. Even in small importing countries, refineries were built as a result of political considerations.[21]

In Venezuela, refining started almost simultaneusly with crude oil pro-

oil-poor countries (mainly France and Canada with over 6 million tons each, Germany, United Kingdom and Japan). Aruba and Curaçao in 1937 processed 21.2 million tons of crude oil, or 25 per cent of the non-US, non-USSR world oil refining. Brazil and other oil-poor areas in Latin America possessed little refining facilities (see USDS 1949, table 24, and Grunwald & Musgrove, 253).

[21] The trend in building refineries near the market also became predominant in post-World War II Latin America (*idem*). Of the independent nations of the western hemisphere, only Guyana and Haiti were without refineries of their own by 1973!

duction. The first refineries were built in the oil field or at its nearby terminal outlet, but they were small and designed to produce for the oil company's own needs and for the limited Venezuelan market. Large export refineries, handling the bulk of the extracted crude, were also constructed at the same time in the proximity of the source but outside Venezuelan territory, or on the Netherlands Antilles.

Only after World War II, when the swing from oil field to market location was in full force in the world at large, did Venezuela acquire large export refineries on the mainland. This development is examined more closely below.

Refining for the Venezuelan home market: the 1917—1938 period

Two main features distinguished domestic refining in its initial stage. First, in order to meet its own operational needs for fuels, each company lucky enough to find oil, directly undertook refining, usually at the first field exploited. This was almost a necessity, given the transport difficulties and the dispersion of the fields. The result was that a variety of small refineries grew up rather quickly, more or less simultaneously with oil production. In addition, refining capacity was early established for supplying the domestic market.

The early developments received a certain amount of encouragement from the government. Lease contracts of the 1909 Gómez concessions already granted a 50 per cent tax reduction on petroleum products made and sold within the country.[22] The first company to take advantage of this was Shell's Caribbean subsidiary. Making preparations to exploit its inland Mene Grande field, this operator built the country's first commercial refinery of importance at San Lorenzo on Lake Maracaibo in 1916—1917. The plant, fed by a 16 km pipeline, was given an initial capacity of 2,000 barrels per day (bpd) and was to supply the domestic market.[23] For a few years until large-scale exports started from Mene Grande in 1922 it processed most of the Mene Grande output — in other words — most of the crude oil produced in the country.

In 1925, Standard Oil of Indiana's Lago, one of the Big Three at the time, completed a refinery at La Salina on the north-eastern shore of the lake, in the center of its Rosa Field, which had been opened for

[22] Reduction in relation to duties on imported oil products (see Lieuwen, 12, 17). Compare note 84.

[23] *Ibid.*, 14, 17, 31; van der Hoeven *et al.* 1963:658—9.

production shortly before. This refinery competed for decades with the San Lorenzo plant in supplying gasoline to the Venezuelan market. With a rapidly growing demand during the twenties, due to the increasing stock of imported motor-cars, both refineries were soon enlarged. Capacity was raised to 10,000 bpd at San Lorenzo in 1926 and from an initial 1,700 to 4,000 bpd at La Salina in 1927.[24] In a third round it was increased to 17,000 bpd at San Lorenzo by 1931 and close to 10,000 bpd at La Salina.[25]

In early 1929, Gulf's Venezuelan subsidiary, a predecessor to Mene Grande and the third company of the Big Three, completed a small plant at Cabimas (capacity 1,800 bpd), in the northern part of La Rosa and not far from the Salina plant. This was built primarily to satisfy the company's own needs. Its products were also sold within the country but it never underwent any major expansion.[26]

In addition to the Big Three's close-to-the-field refineries a small plant (capacity 2,500 bpd) was erected in 1929 on the opposite side of the lake at La Arriaga on the outskirts of Maracaibo. The owner was a subsidiary of Standard Oil of New Jersey. It was only operated for a decade and received its crude by boat from the Bolívar coastal fields.[27]

By early 1930, in eastern Venezuela another New Jersey affiliate began to tap the large Quiriquire field. The company evidently considered refining its Quiriquire crude in Trinidad, the British colony, but chose to build a mainland refinery at Caripito on the San Juan river some 50 km from the open sea, where the company already had its deepwater terminal. This plant started production in 1931 with a capacity of 1,500 bpd.[28] It supplied the company's operational needs and the limited market for

[24] *Idem.*

[25] Dean 1931:28. The capacity figure of the La Salina plant is an estimate based on the plant's actual 1937 throughput (*AE* 1938:157, see also note 79). La Salina passed under the control of New Jersey in 1932 (compare above). It was expanded further in the years around 1940 but was closed in 1950, when New Jersey's new large export refinery went on stream.

[26] Van der Hoeven, 660. Operations ceased completely in 1952, after Gulf had constructed a large export refinery.

[27] *Ibid.*, 659, 661. During the first years the plant apparently received crude as a one-fifth overriding royalty from Gulf's production, mainly in the Rosa and Lagunillas fields (Lieuwen, 43, 60). It was closed in the late thirties, when New Jersey's two other plants were expanded.

[28] Baptista, 24, 25. The nationalistic Gumersindo Torres, Minister of Development in 1918—1922 and again in 1929—1931 (Vallenilla, 78), in 1930 threatened to establish a national refinery and was supported by Caracas newspapers (Lieuwen, 67). This may have influenced the company's decision to build its refinery within the country.

gasoline in the eastern part of the country. From the beginning most of the distillation residuals were exported.

Around 1930 the Colón Development Co., another Shell subsidiary, built three tiny distilleries close to the fields in the swampy Colombian border area in south-western Zulia.[29] Small topping plants were also erected by other companies on other remote oilfields such as El Mene de Mauroa and El Mene de Acosta, both small fields in the state of Falcón.[30]

The depression period of the early thirties marked the end of the first evolutional phase — a refining industry developing a home market. No more large installations were made until 1938.[31] By 1932 the country's refining industry comprised one medium-sized refinery, four small refineries and a handful of topping plants, representing in all an estimated capacity of around 30,000 bpd. All plants but San Lorenzo employed simple refining techniques, the smallest ones using incomplete top distillation by means of which a few light fractions of the crude were skimmed off.

San Lorenzo in 1937 and 1938 accounted for around half the national output of refined products, La Salina for one-quarter, Caripito, La Arriaga and Cabimas for all the rest except for 1 or 2 per cent.[32] The refineries processed 5 to 6 per cent of the crude oil produced in the country. Only one-quarter or so of the refinery output (for Cabimas one-half and for Caripito less than one-tenth) was actually consumed within the country, the bulk being exported.[33] This can be explained by the imbalance between the demands of the national market and the fractional composition of the Venezuelan crude. The main domestic market was for gasoline whereas the market for diesel and fuel oils was limited on account of

[29] At Casigua (in 1929, the main plant), El Calvario (in 1931) and La Rivera (in 1932), all at inland sites. With a combined initial capacity of only 700 bpd, later in the thirties increased to 1,600 bpd, the three plants, known collectively as El Cubo, were operated only to supply company needs and a narrow local area. Thanks to the difficult access to the area, they managed to survive the competition from large-scale refineries until the mid-1960's. Although small, the plants are said to have played an important role in local industry, especially the sugar mills and the dairies of the Colón district (van der Hoeven, 660).

[30] Dean, 28, Maby 1951:68.

[31] Yet, output continued to rise, although at a slower rate than in the twenties. It increased steadily from 1929 to 1935 — over 100 per cent in six years — but remained at the 1935 level through 1938. The volume of crude oil refined in the country was about 1.5 million cubic meters annually in 1935 and 1938, equivalent to roughly 25,000 bpd (see data in *PODE* 1966:15).

[32] *AE* 1940:184—193.

[33] *Idem.*

the slow industrial development.[34] On the other hand, the heavy Venezuelan crude yielded comparatively small amounts of light distillates. Producing sufficient quantities of gasoline, without cracking or reforming techniques, implied large surpluses of residual heavy fuel oils for the small Venezuelan refineries. These surpluses were exported, mainly to the Netherlands Antilles for further refining.

By international comparison, in the late 1930's Venezuela was the world's leading low-cost oil producer, providing more than one-third of all net oil exports generated in the world. Yet the country was the only major oil producer, apart from the much less important Irak, that lacked a domestic export refining industry. The background to this phenomenon will be explored in the following pages.[34b]

Refining for export I: the Netherlands Antilles

Location and expansion

When it became evident to Shell that very large deposits of petroleum had been discovered in the Maracaibo Basin by one of its Venezuelan affiliates, the task at once arose of building large refining facilities. To minimize transport costs these had to be located near the source. Refining the heavy Mene Grande crude yielded considerable amounts of unsellable

[34] Gasoline represented over half the domestic sales of the Venezuelan refineries in 1936 as well as 1938 and 1940 (*idem*; MF 1940:41—48). Throughout the whole period after 1940 gasoline has held this market share, if deliveries of bunker oils are excluded. The consumption of kerosene has invariably been of minor importance in Venezuela, contrary to the general oil-use pattern in developing countries (cf. Fryer 1965:301—3). Domestic sales of heavy fuels — between 1943 and 1968 exceeding that of gasoline by volyme (*PODE* 1962:62 and *PODE* 1973:84) — mainly concerned bunker oils to vessels in international traffic, flying a domestic of foreign flag. Already at an early stage considerable quantities were also used in local cargo transportation. In the twenties fuel oil was used by the coastal steamers of the Compañía de Navegación Venezolana and by the locomotives of the La Guaira-Caracas railway (Bell 1922:97, Lieuwen, 31). For comparative data on oil and other fuel consumption in interwar Latin America, see Bradley 1931 and USDS 1949:55, 78, 86, 96—100.

[34b] For 1937, data on world net exports and refining, see USDS 1949, tables 24 and 29. Gross export data are found in Bjering 1967:265—293 and (for 1938) in Pratt & Good 1950:406—8. They show almost the same share (one-third) for Venezuela.

heavy residues as well as processing losses.[35] However, a twelve-foot sand bar at the entrance to the shallow Lake Maracaibo made the whole bay inaccessible to large ocean-going tankers. The bay area was consequently unsuitable for the location of a large export refinery as long as the bar was not dredged — and this would be a costly venture, calling for joint action.

Under these circumstances it was quite logical for Royal Dutch Shell to choose the adjacent Dutch island of Curaçao for its transshipment and refining.[36] Inside Willemstad the island had an excellent deepwater harbor. It was not much further away from the oil source than alternative deepwater locations along the Caribbean coast of western Venezuela. The Dutch government, which had long been worried about the depressed economy of the Netherlands Antilles, which it had to subsidize,[37] welcomed the installation of a large industrial plant there. The Gómez regime in Venezuela did nothing to encourage a mainland location. In fact, it was discouraging such a venture.[38]

Easily accessible in the Caribbean Sea, Curaçao was favorably located to receive crude from a variety of sources. Mexico and Colombia were considered additional important sources of supply. Still other considerations may have influenced the location decision. Willemstad had a drier and healthier climate than the malaria-infested Maracaibo Basin and provided a superior infrastructure, better urban services and an ample supply of labor.[39]

[35] In the early twenties San Lorenzo residual fuel oil was quoted at a nominal price (Bell, 97). Nevertheless the company found it difficult to sell all of the heavy oil. Another example: in Aruba around 1940 huge quantities of unmarketable asphalt pitch, derived from heavy residuals of Maracaibo Basin oil, had to be stored in lakes and pits (Tucker 1946:283—4).

[36] The Shell group first surveyed the Venezuelan coast for the possibility of selecting a suitable site for an export terminal and a large refinery. No such natural place was found and the study concluded that the construction of a satisfactory man-made harbor was impracticable (Loohuis 1934:324, repeated by Nordlohne 1951:102). Once this became clear, their eyes fell upon Willemstad on Curaçao late in 1914. The decision to build a refinery there followed in 1915 (Hoetink 1969:506). Construction work started in January, 1916 (Loohuis, 325).

[37] *Ibid.*, 323—4; Nordlohne, 43, 78—80; Hiss 1943:118—9.

[38] Lieuwen, 17. Gómez' aversion for refineries had various grounds. He did not want "industrialization in the Maracaibo Basin for fear it might become too powerful economically and difficult to control politically" (*idem*). He prohibited "the establishing of oil refineries in the national territory in order to avoid large concentrations of workers" (de Armas Chitty 1967, I:222, citing Carlos Emilio Fernández).

[39] Lieuwen, 17; Nordlohne, 103.

The Curaçao refinery was built during World War I on a small peninsula of the Schottegat, the inside bay within Willemstad, with excellent deep-water wharfs on three sides.[40] The refinery went on stream in mid-1918 but due to war-restrictions in obtaining tankers to haul the crude from the source, full production did not start until 1922.[41]

The most impressive growth accompanied the Venezuelan oil boom of the latter half of the twenties. A series of major additions was made, e.g. several cracking units, which considerably increased capacity. The quantity of crude oil processed increased from 0.6 million tons in 1924 to more than 7 million in 1929 and 1930, when full capacity (rated at 140,000 bpd) was in use.[42] Four-fifths of Shell's Maracaibo Basin crude was now being refined in Curaçao. The refinery, which in 1929 employed almost 8,600 persons on an average, i.e. half the labor force of Curaçao,[42b] became one of the largest industrial plants in Latin America. Much of the growth of that time was for export to the United States and England. The US market took a particularly large portion of the gasoline yields.[43] Being strategically located close to the main shipping routes in the Caribbean Sea, which had become much more frequented since the completion of the Panama Canal in 1914, the refinery also sold a comparatively large share of its residual oil as cheap bunker fuel to passing vessels.[44]

[40] Bell, 446—7.

[41] Initially, three tank barges (before 1920 a single one) towed by tug-boats were used but, being very slow, they were all replaced by the end of 1922 by rebuilt, outranged war monitors (Loohuis, 328; Redfield 1938:5—10). This was a temporary solution, while the company waited for specially-built, larger shallow-draft tankers from Dutch shipyards. The two first of these were put into operation in 1922 and 1923 (see also Hoetink, 501; Lieuwen, 31). By late 1924 the company had a fleet of 15, and by 1928 no less than 35 tankers in service, thus increasing transport capacity many times over (Loohuis, 328).

[42] Loohuis, 327.

[42b] *Ibid.*, 334.

[43] See data in Redfield and Bjering 1967:74. The British market was of minor importance in 1929. The Great Depression hit the refinery hard, not so much in production, which fell by about 20 per cent in two years, as in employment. Of the 9,339 persons employed at the peak in 1929 (Loohuis, 334) more than two-thirds were dismissed by the end of 1931, when only 2,648 were employed (Hoetink, 506). Evidently, this was due primarily to drastic reductions in construction work.

[44] These sales were important to the refinery from the beginning (see e.g. Bell, 103, 447). In 1927 a new bunkering and fuel-oil port was installed at Caracas Bay, 10 km south-east of Willemstad. A few years later a special gasoline port was completed at Bullen Bay, 11 km north-west of Willemstad. The two ter-

Oil Refining

By 1925 two North American companies — Standard Oil of Indiana (through Lago) and Gulf — were in full swing exploiting the rich Bolívar coastal fields. To allow ocean tankers to load at the lake terminals, the companies planned a project to dig and dredge a deepwater channel from the lake through the sand banks out to Golfo de Venezuela and the Caribbean Sea. As Gómez condemned this for political reasons, the companies had to choose other alternatives.[45]

Gulf built a deepwater outlet at Las Piedras on the west coast of the Paraguaná Peninsula. Here Maracaibo Basin crude was transferred from lake to ocean vessels and carried to the company's refineries in the New York-Philadelphia region.[46]

The Standard of Indiana subsidiary decided to install an ocean loading terminal at San Nicolas (St. Nicolaas) on the nearby Dutch island of Aruba. The first shipments of crude from here to the United States were made in 1925. The special oil terminal went into operation in 1927.[47] But, when the US market became saturated for fuel oils later that year, as a seller primarily of fuel oil the company found it difficult to dispose of all its oil. Consequently, it laid plans to increase its production of gasoline, which was in much greater demand, and to develop market outlets elsewhere.[48] However, in many parts, such as Europe where demand was largely concentrated at that time to a few light fractions and where the refining capacity was limited, oil had to be sold in the form of refined products.

Shell's success with its Willemstad plant also contributed to Indiana's decision in 1927 to build a large export refinery for its Venezuelan oil, designed largely for gasoline production. It chose to build at its existing

minals were fed by the refinery through product lines (Hiss, 124; Hoetink, 284). In the 1930's the Netherlands Antilles were the world's largest supplier of bunker oils, which were largely delivered to bunker depots along the North Atlantic coasts (Bjering, 74).

45 Gómez "still feared that a too prosperous, isolated, western Venezuela might revolt and declare independence or that Britain and United States might bring their navies into the lake to protect their oil" (Lieuwen, 48).

46 *Ibid.*, 43.

47 Hiss, 125. The company which managed the transport and refinery operations in Aruba, the Lago Oil and Transport Company, was, like the Lago Petroleum Corporation in Venezuela, a subsidiary to the Pan American Petroleum and Transport Company. From 1925 to 1932 this holding company in turn was controlled by Standard Oil of Indiana (Lieuwen, 42; Hoetink, 352).

48 *Petroleum Times*, 1 June, 1929, 99. In 1927 and 1928 the company temporarily shipped crude oil, non-marketable in the United States, to Shell's refinery at Willemstad and to its own plant in Tampico (Lieuwen, 48).

transshipment terminal of San Nicolas in southern Aruba, a place closer to Maracaibo than Willemstad in Curaçao.[49]

The refinery took short time to build. Work began in March, 1928;[50] the plant started operations in January, 1929; the first cracking units were completed in the autumn of that year. In 1930, when its first stage was finished, the plant was capable of handling nearly 200,000 bpd of crude (some 10 million tons yearly).[51] It became the largest refinery establishment in the world, in terms of distillation capacity. From 1934, when it reached almost full capacity, it also succeeded the Shell refinery in Curaçao as the world's largest producer.[52]

Nor this time did Gómez or any of the men around him, show any interest in having a large industrial plant and employer established in the country. To Standard of Indiana the Dutch colony of Aruba must have appeared as a much safer place politically for big investments than Venezuela, which under the calm surface, was simply an unstable Latin American republic, ruled by an aging dictator. The reassuring Dutch government, on the other hand, evidently did its best to get the prospective refiner to establish in the poverty-stricken Aruba,[52b] whose traditional small export industries were in a state of deep crisis by the mid-1920's.

A third Antillean export refinery was established during the Venezuelan oil boom. In 1927—1928 a small plant (capacity 20,000 bpd) was built by a Mexican Shell subsidiary at Druif, a place north of Oranjestad in northwestern Aruba. It was to handle Mexican crude and the reason for its construction was political: fear of trouble with the Mexican government.[53] Soon Venezuelan crude was the leading input.[54] The plant was run in close connection with Shell's Curaçao refinery. In time its refinery operations were reduced and its storage and transshipment activities became more important.[55]

[49] San Nicolas, in contrast to Willemstad, was a small village in an area lacking all modern facilities. These had to be provided by the company. The place became a boom town or a frontier town, surrounded by shanty-towns.

[50] Lieuwen, 48.

[51] Hoetink, 352 and *Petroleum Times*, 1 June, 1929, 100.
1 June 1929, 100.

[52] Hiss, 125. Crude oil input was approximately 5.2, 9 and 12.5 million tons in 1930, 1935 and 1937 (Redfield).

[52b] See Zuloaga 1950:50.

[53] Hiss, 124; Nordlohne, 103—4. See also Redfield (13—14), a thourough source, kindly made available to the author by K. B. Bjering.

[54] Nordlohne, 104.

[55] Refining ceased completely in 1950, the other activities in 1953 (Hoetink, 47).

The factors favoring Curaçao and Aruba more than compensated for their disadvantages. Lying within the trade wind belt, the islands receive very little rain. For many years fresh water for the refinery operations had to be imported in barges from Venezuela. Later several large plants were installed for the evaporation of sea water, the first ones in the early thirties.[56] Another problem was that nearly all food also had to be imported, as arable land was scarce and offered little opportunity for agriculture.

The location decisions accounted for above fit into the general policy pattern of the major multinational oil companies. A feature of their investment policy has invariably been to disperse their engagements.[57] To minimize the risk of having much property lost by a sudden political event, the companies have tried to spread investments to as many countries as possible, instead of concentrating them. In the Venezuelan case, it meant that the 'refining eggs' were to be kept in a separate basket from the 'producing eggs'. Having completely free hands to decide, that was the way it was solved.

Once established, the refineries in Aruba and Curaçao were long able to meet the demand for additional refining capacity that went along with the ever expanding Venezuelan crude output, thus further precluding the development of a mainland refining industry. The Curaçao refinery was, as shown above, enlarged in the late twenties to match Shell's boosting of its output from the Maracaibo fields. In the latter half of the thirties the 50 per cent increase in Venezuelan crude output was paralleled by an almost equivalent increase in capacity of both Lago's Aruba and Shell's Curaçao plants.[58] Especially at Curaçao the expansion also included units for processing the fractions further towards high-value products such as gasoline and lubricants. Aruba remained the world's largest refinery, measured in terms of distillation capacity, until the 1940's, when it was superseded by the Abadan plant of Iran.

During World War II the two refineries became primary sources of fuel supplied to the Allies. When Middle East oil supplies to Europe were temporarily disrupted in 1941, their importance grew apace. Both plants suffered from the hardships of the war, but additions and reconstructions carried out after 1942 increased the yield particularly of high octane avia-

[56] Nordlohne, 60—63; Hoetink, 594—7.

[57] See e.g. Penrose 1968 and Odell 1974.

[58] The capacity increased from 140,000 bpd in 1929 (Lieuwen, 48) to 200,000 bpd in the early 1940's (USTC 1949b:24; Hiss, 125) at the Curaçao plant and from 200,000 bpd in 1930 to 285,000 bpd at the Aruba refinery (same sources).

tion gasoline. By 1945 combined crude distillation capacity was some 20 per cent above the prewar level.[59]

The substantial increase of Venezuelan output during the 5 years immediately after World War II was partly offset by an expansion of the Antillean refining. As table 3.2 shows, exports of refined products from Aruba and Curaçao increased by about 80 per cent between 1938 (and 1944) and 1952. Employment grew at about the same rate. At the peak some 12,500 were employed at the Curaçao plant (in 1952) and some 8,300 at San Nicolas (in 1949). The latter plant employed three-quarters of Aruba's 11,000 economically active persons.[60]

Table 3.2 *Refining Capacity and Exports of Derivatives from Aruba and Curaçao. Selected Years, 1930—1970*

	1930	1938	1944	1952	1960	1970
Capacity, thousand bpd[e]	340[a]	505[b]	580[c]	640[d]	680	790
Exports, million tons[e]	14.6	23.6	24.7	44.0	34.1	41.7

a See text. b 1941 c 1947 d 1955. e See table 3.3, note b, for conversion.

Sources: API, *Petroleum Facts and Figures 1971*, *Petróleo y Otros Datos Estadísticos*, various years, and P. H. Hiss, *Netherlands America* (for 1930 and 1938).

The refineries brought economic salvation to the islands, making them self-supporting and prosperous. The way of life and the economy changed fundamentally. People from all over the Caribbean area, but especially from other Dutch colonies, migrated to the two islands to share in the employment generated by the refineries. Until the 1950's the population increased by leaps and bounds. In thirty years it tripled in Curaçao and increased five-fold in Aruba.[61] Living standards improved substantially.

59 Hoetink, 352; Betancourt 1967:318.

60 Hoetink, 450—1.

61 After a continuous rise in the population of both islands through the nineteenth century, population remained rather stable between 1900 and 1920 in Curaçao and actually declined in Aruba. From 1920 to 1950, however, population increased from 32,700 to 102,200 in Curaçao and from 8,300 to 51,000 in Aruba (Hoetink, 82).

Per capita incomes reached the highest level in the western hemisphere, not counting the United States and Canada.[62]

Economic life became extremely dependent on the oil refining industry. When, as is shown below, this industry lost its growth momentum and even in the early 1950's started to contract, the whole economy of the islands was afflicted. (The main features of this development and its Venezuelan links will be described briefly below. Any more penetrating analysis of the effects on the rest of the economy, however, would take us outside the scope of this study.)

Structure and stagnation

From the point of view of economic geography, the refining industry of the Netherlands Antilles was from its beginning an integral part of the Venezuelan petroleum industry. This was clearly reflected in its organization structure. The whole industry, representing the world's largest oil exporter in the period 1930—1960, was controlled by two multinational corporations, Standard of New Jersey and Shell. They were the owners of the large export refineries and they dominated the Venezuelan oil exploitation. In addition, all their crude from the Maracaibo Basin for Aruba and Curaçao, was carried in their own specialized tanker fleets.

Accordingly, tied closely to operations in Venezuela, the giant Antillean refineries operated almost entirely with Venezuelan crude. For various reasons, earlier hopes of further big supply bases in Mexico and Colombia were frustrated. This heavy reliance on a single source was to prove fatal to the two islands in the postwar period (see below).

Colombian crude and other crudes and distillates had only a marginal, complementary importance, being used primarily for increasing the quality of the final products. In Aruba the heavy, low-quality crude from Lagunillas, which answered for 60 per cent of the plant's intake in the late thirties, and from other Bolívar coastal fields (20 %), was blended with high-quality crudes from Jersey Standard's fields at Cumarebo (exceptionally light crude) and Quiriquire and from the middle Magdalena valley in Colombia (rich in lubricants and high-octane gasoline). The Maracaibo Basin was Curaçao's source base to an even greater extent, but the crude was taken from a variety of Shell fields around Lake Maracaibo. To compensate for the low quality of the Bolívar coastal crude, both companies had to import fairly large quantities of distillates (by weight

[62] In Netherlands Antilles guilders, the estimated per capita national income rose from 50 in 1917 to 930 in 1946 and to 2,019 (appr. US $ 1,074) in 1957 but then fell to 1,660 (US $ 833) in 1965 (Andic 1971:130—1, 139).

only a few per cent of total intake, however), such as casing-head spirit, kerosene and gas oil, from refineries on the US Gulf Coast, California, Mexico and Peru (Talara).[63]

Conversely, up to the late 1940's Venezuelan oil production was mainly oriented towards supplying Aruba and Curaçao. From 1929, by which time both refineries were operating on a large scale, about four-fifths of the crude oil extracted in the Maracaibo Basin was ordinarily delivered to the Dutch islands. A growing fleet of small shallow-draft lake tankers ran a busy service, carrying the crude across the bars out of the lake.[64] This system was in operation until, in the mid-1950's, a deepwater channel was cut through the bar at the entrance of the lake allowing the use of large ocean-going tankers.

From Aruba and Curaçao the Venezuelan oil was shipped as products to practically all countries on both sides of the Atlantic, as well as to many parts of western Latin America. Before World War II, competition came primarily from the US Gulf Coast, which had one of the world's largest concentrations of refining capacity and a considerable export of crude as well as refined products.[65] After the war, competition from Middle East oil, most of it refined in Western Europe and other oil-importing areas, became keen. The Caribbean oil had the important advantage of being located closer to the main markets in north-eastern United States and Western Europe than either the Gulf Coast or the Middle East oil. As freight rates were drastically reduced in the postwar period, this factor was of less importance.

[63] Crude from Colombia made up 4 per cent of the total oil supply in 1937 and 6 per cent in 1938 (Hiss, 203). Normally the Aruba refinery used some Colombian crude to mix with Venezuelan oil to make possible a wider range of products.

[64] The lake tankers, of 3,000—4,000 tons average size in the 1930's, went day and night in shuttle service through the one-way channel to Lake Maracaibo and made the Maracaibo pilot station "the busiest in the world" (Lieuwen, 48).

[65] However, great market changes took place during the 1930's. The competitive Caribbean oil derivatives to a large extent displaced Gulf Coast products in Western Europe. Simultaneously, the Aruba and Curaçao export to the United States was drastically reduced — it was halved in volume between 1929 and 1935 (Hiss, 203) — since after 1932 this market became more protected from imports, especially of refined products. As a result, Western Europe became the chief market of the islands. In 1929 the United States took about 40 per cent of their exports; in 1937 and 1938 the figure was less than 20 per cent; in the same years Great Britain received nearly one quarter and Holland almost 10 per cent (*idem*). Before 1932, United States oil supplied 27 and Venezuelan oil 14 per cent of Europe's requirements. In 1933, Venezuela supplied 21 and the United States 18 per cent (Lieuwen, 60).

Oil Refining

The expansion of the Antillean refining industry came to a complete stop in the early 1950's.[66] Some years earlier the Venezuelan government had decided, as a basic part of its new refining policy, that no oil from new oil fields could be processed in the Caribbean area outside Venezuela (see further below). This political decision was directed particularly against the refineries in Aruba and Curaçao, which had long been an irritant to Venezuelan oil politicians.

Postwar developments in the world oil market also affected the stagnation. Aruba and Curaçao were hit hard by the global surplus in refining capacity which arose in the late 1950's as a result of the postwar drive to build new refineries in oil-importing countries. The over-supply of oil and the downward pressure on oil prices forced the refineries to modernize and rationalize to maintain their competitiveness.

Accordingly, after 1950 the situation was characterized by stagnating production,[67] and large investments in the replacement of old equipment and the improvement of refining techniques. This resulted in an advanced automation of processes and some reorganization of activities in and outside the refineries. As, at the same time limited endeavors were made to elaborate products further,[68] these measures made it possible for the companies to reduce their manpower substantially. During the period 1952—1967 the number of refinery employees fell from 12,500 to 4,500 in Curaçao and from 7,400 to 1,700 in Aruba.[69]

[66] The primary distillation capacity of the two refineries remained practically unchanged from 1945 to 1965, but increased during the following decade from 670 to 945 thousand bpd (*PODE* 1963, 1973; cf. table 3.2). In accordance with agreements between Shell and the Dutch and Venezuelan governments, Shell undertook in 1965 to build a large, 130,000-bpd unit, which increased the plant's crude refining capacity by about 40 per cent (Hoetink, 507).

[67] In both refineries output reached a peak level in 1951 and 1952 during the Korean crisis, when they almost doubled the 1938 production (compare table 3.2). Exports of refined products have since invariably been lower than at the 1952 peak (*PODE* 1966 and 1973).

[68] However, in 1957 Shell installed a 35,000-bpd catalytic cracking unit for obtaining high quality gasoline. In 1967 a hydrodesulfurizer unit was completed to enable production of low sulfur content fuel oil.

[69] Hoetink, 452. A further 2,000 became jobless between 1950 and 1957 as the new Lake Maracaibo channel rendered the old lake tanker system and the supporting maintenance facilities obsolete (Mitchell 1967:280).

Shell's refinery on Curaçao has invariably been a larger industrial complex, manufacturing a wider range of products, than New Jersey's plant on Aruba, where operations have been confined basically to the production of main fractions. This explains why the Aruba plant, although it has a larger primary distillation capacity than the Curaçao plant (520 and 425 thousand bpd respectively in 1974), only has half the latter's labor force.

The local economy was badly hit. Unemployment rose to more than 20 per cent and per capita income decreased, despite great efforts to develop tourism and to attract other manufacturing industries.[70]

Refining for export II: the mainland

The 1938—1941 expansion

After Gómez' death late in 1935, General López Contreras took over the government of the country, and a more nationalistic oil policy resulted.[71] The official refining policy changed drastically. From now on domestic refining was promoted hard. Thus, in exchange for new concessions granted during 1936 and 1937, the companies — newcomers as well as the Big Three — had to pledge to process a portion of their crude within the country.[72]

Already before World War II some positive results were also achieved. Quite big extensions, geared to exports, were made at three plants. Shell's refinery at San Lorenzo was more than doubled, reaching a capacity of some 38,000 bpd. New Jersey's Lago refinery at La Salina increased considerably[73] and the same company's small topping plant at Caripito was converted into a refinery of almost the same size as San Lorenzo.[74] A particular economic rationale lay behind this plant's expansion.[75]

[70] Andic, 131; Mitchell, 277—80. To fill the gap generated in Aruba by Lago's retrenching, concerted efforts were made to attract new industrial plants. By 1963, two petrochemical plants, one of them an affiliate of New Jersey, had located on the island, both specializing in the production of fertilizer (ammonia, nitric acid, and urea) (Giacottino 1972:48).

[71] The change in Venezuela was in harmony with a common Latin American trend in the 1930's towards increasing national control of petroleum resources. The oil industry had been nationalized and foreign oil companies' properties expropriated in Bolivia by 1935 and in Mexico by 1938. In Venezuela the solution of full nationalization had few advocates at that time. The issue was restricted to the practicability of establishing a state oil company and refinery to compete with the foreign firms. The main target, according to an almost unanimous opinion, was to increase as far as possible the country's share in the proceeds of the industry.

[72] See Moll 1956:355—6, Lieuwen, 74, and Vallenilla, 135.

[73] Capacity at La Salina increased by about 10,000 bpd in 1939 (van der Hoeven, 660—1). In 1941, an additional 15,000- to 20,000-bpd unit was installed for obtaining heavy fuels. It operated only during periods of extraordinary fuel demands.

[74] Capacity was about 30,000 bpd by 1939 (*idem.*, Vallenilla, 135).

[75] Export refining at Caripito instead of Aruba was preferred by New Jersey on the grounds of pure transportation economics. The oil from Jersey's eastern fields — by 1939 another large field, Jusepín, entered production — was largely shipped to southern South America, to marketing affiliates in Brazil, Argentina,

In general, the decisions to expand do not seem to have been difficult for the companies to make. Factors on the demand side coincided well with the new government's policy. The change (described above) in the main market orientation for Venezuelan oil after 1932 from the United States to Europe, with its shortage of refining capacity, made expansion of the Caribbean refining industry almost a necessity. In the late thirties major extensions were also carried out at the refineries in Aruba and Curaçao (see above), but New Jersey and Shell also chose to locate some of their capacity increase in Venezuela, in accordance with the domestic political wishes.

Nevertheless the increase in Venezuela was comparatively small. Even after the enlargements, the crude distillation capacity of the country's refining industry, about 100,000 bpd, was only half that of the Curaçao plant and only one-third of that in Aruba.[76]

The expansion was most timely. In the early years of World War II, before tanker transport was disrupted, the enlarged refineries were run at close to maximum capacity to meet the rapidly growing world demand for fuels.[77] By 1940, the volume of crude oil refined in the country had almost tripled its 1938 pre-expansion level.[78] In 1941, throughput grew by

Uruguay and Chile. Caripito was the company's main loading terminal in the east, and it made more sense to refine the crude there than in Aruba, which would have involved a considerable amount of back-hauling (Taylor & Lindeman, 18).

[76] Estimates of the Venezuelan wartime refining capacity vary widely: e.g. 54,000 (ECLA 1968:13) or 100,000 bpd (USTC 1949b:25) in 1940, 76,300 bpd in 1941 (API 1971:566), 131,000 bpd in 1943 (Maby, 68), and 120,000 bpd in 1945 (Tucker, 276). By 1941, Venezuela was second only to Mexico on the Latin American mainland in production of oil derivatives (*UNSY* 1948:218—225).

[77] No less than three-quarters of the refineries' output were made up of heavy fuel oils. A large portion, especially prior to 1940, was taken to the Netherlands Antilles for transshipment or further refining (see data in EMM 1938 and Wythe 1953:56). In 1940 and 1941 the United States bought as much, or more, residual fuel oil (USTC 1945, table 13); from 1950, in any case, they bought considerably more than Aruba and Curaçao (Wythe, 56).

[78] The increase for refineries and companies was as follows (table based on data for companies in *AE* 1940:184—193, throughput in thousand tons).

	1938	*1940*
San Lorenzo (Shell)	686	1,078
La Salina (Lago)	410	882
Caripito (New Jersey)	214[a]	1,919
Cabimas (Mene Grande)	104	93
Others	22	21
Total	*1,436*	*3,993*

a Includes the Arriaga plant.

an additional 20 per cent. As a result, a larger proportion of the oil left the country after processing. In 1939, 1940 and 1941, around 15 per cent of Venezuelan crude oil was refined at home. Later, for various reasons, refinery output decreased both numerically and relatively. It did not significantly exceed the 1941 level until the late 1940's.[79]

After 1940 no major refinery installations were made during the war, mainly because of restrictions on obtaining equipment. Nevertheless, the emergence of prolific new oil areas increased the potential for domestic refining further. In the east, important oilfields were discovered and developed in the years around 1940 in the central llanos area (state of Anzoátegui)[80] and, not unexpectedly, two tiny topping plants were directly built at well-head locations: one by Mene Grande at the Oficina field and one by Socony Vacuum at Guario.[81] Long trunk pipelines were laid from these fields down to the Caribbean coast; the first line made it possible to begin large-scale export in 1940. All the pipelines terminated at or near Puerto La Cruz. Plans by several companies to erect large export refineries there had to be postponed until after the war.[82]

The 1938—1941 expansion phase was the first one to be geared to exports. From this time onwards four-fifths or more of the refinery output was exported. This expansion, it should be noted, was restricted to existing refineries only. However, as a result of the new additions these had almost reached optimal size. They offered little opportunities for accomodating any further large Venezuelan refining expansions and this for two main reasons: firstly, the refineries, especially San Lorenzo and La Salina, were located at shallow-water places accessible only to very small tankers; secondly, and paradoxically, the local crude oil base for the two largest plants was limited. San Lorenzo handled practically all the crude that the Mene Grande field could yield, and Caripito much of the crude extracted from Quiriquire and other smaller fields in eastern llanos. These two oilfields, the very first to be commercially exploited and to attract refineries, Mene Grande in the west and Quiriquire in the east, were both soon superseded by more important fields located away from their refineries. In the east these new fields also got a new outlet, namely Puerto La Cruz

[79] *PODE* 1970:19. In 1942 and, to a less degree, in 1943, submarine warfare and shortage of shipping led to a reduction in the export of refined and of crude petroleum.

[80] For short descriptions of the 1930—1945 oil development in the east, see e.g. Baptista, 25—26 and Corfield 1948:114—8.

[81] Van der Hoeven, 661.

[82] Lieuwen, 99; Tucker, 282.

on the northern coast, situated far away from the former outlet at Caripito.

To conclude, from developments in the Venezuelan petroleum industry in the late 1930's, it was clear that any further expansion of refining on the mainland would have to be centered upon the building of large units at new deepwater locations.

The postwar expansion

The policy initiated by López Contreras to promote domestic oil refining was effectively developed by succeeding Venezuelan governments, in time backed by an increasingly demanding congress and public opinion. The establishment of a large-scale domestic refining industry was felt to be justified on several grounds. It was seen as a basic means for increasing the country's participation in the proceeds of the foreign-owned petroleum industry which was the main concern of the government. Further, profit-earning oil activities should provide the treasury with higher revenues. Refinery construction and operation should offer increased employment opportunities and enhance the national status.[83] The building of large refineries became, in other words, a cornerstone of the official policy of encouraging industrialization.

Fundamental policy elements were introduced by the government of General Isaías Medina Angarita (1941—1945). The important 1943 Hydrocarbons Law contained clauses for promoting domestic refining, e.g. regarding exemptions from import duties and reduction of taxes.[84] At the time the law came into force, the government announced that the granting of new concessions would in future be linked to refining obligations. A minimum of 10 per cent of the petroleum extracted from new leases should be refined within the country. Furthermore, the crude from new leases leaving the country unprocessed, or an equivalent volume from older concessions, must not be refined in the Caribbean area outside Venezuela.[85]

[83] See e.g. Mejía Alarcón 1966:87 and Betancourt, 284—302; 317—323.

[84] Lieuwen, 97—8. Under the 1943 law, domestic refiners continued to be subject to a tax equal to 50 per cent of the import duties on their sales for domestic consumption. They were thus provided with protection for safety's sake against foreign petroleum products. However, this factor decreased in importance after the war, as the import duties were lowered considerably (see data in Shoup 1959:260, USTC 1948:14 and Balestrini, 183). The duty (and the consumption tax) was highest on gasoline, lubricants and solvents, insignificant on kerosene, fuel and diesel oil: a structure that applied to most European countries by the early 1940's (USDS 1949:15).

[85] Mejía Alarcón 1966:87—89.

These refining obligations did not discourage the oil companies from applying for new concessions. On the contrary, applicants offered refining undertakings above the minimum conditions, along with high royalties and exploration taxes.[86] Most important in this context were the special agreements that were signed at an early stage between the government and the large companies. In 1943 in return for being granted concessions under the new oil law, Jersey Standard and Shell promised to expand their Venezuelan refining capacities by 40,000 bpd within a five-year period from the end of the war. Similarly, in 1944 Mene Grande and Sinclair agreed to construct 20,000- and 35,000- bpd refineries at Puerto La Cruz in the east.[87]

The main reason for this willingness (or eagerness) to refine was the very strong growth, both in the United States and Europe, of the demand for Venezuelan oil in the final war years. As this growth continued during the immediate postwar period, many companies revised their refining plans upwards. Consequently, most operators came to refine considerably more than the ten per cent originally required.

During the last auctioning of concessions in 1956—1957 the refining requirements of 1943 were escalated further. The minimum share to be refined in the country was raised to 15 per cent. Crude from new leases processed elsewhere in the Caribbean was subject to an exploitation surtax of, as a rule, 8 per cent.[88]

As a result of the government pressure and, indirectly, of the unprecedented, 1943—1948 rise in the demand for Venezuelan oil, a series of export refineries was constructed in the years through 1950. Most of them were expanded vigorously later in the fifties, particularly during 1956—1959 (see table 3.3). Venezuela's refining capacity increased tenfold between 1945 and 1960; it rose from 5 to 52 million tons per annum (same table). As a result, by 1960 the domestic refineries were able to refine more than 30 per cent of the oil extracted in the country.

This expansion was effected at the same time that a strong trend was in full force in the outside world to build large refineries in the oil-importing countries. However, some developments favorable to Venezuela occurred on the demand side, which contributed to her expansion. In the chief market, North America, the import demand for fuel oil expanded rapidly when cheap fuel oil made inroads in the traditional markets of domestically produced coal. US domestic refiners, maximizing returns on their invest-

[86] Lieuwen, 98.

[87] *Ibid.*, 99.

[88] Mejía Alarcón 1966:91.

Table 3.3 *Refining Capacity Expansion in Venezuela, 1938—1974*

	At end of:							
	1938	1945	1950	1955	1960	1965	1970	1974
1. Capacity[a] in thousand barrels per day (bpd)	26	100	258	521	1004	1200	1364	1555
in million metric tons per annum[b]	1.4	5.2	13.4	27.1	52.2	62.4	70.9	80.9
	Periods[c]:							
	1947—50		1951—55	1956—59		1960—67		1968—74
2. Capacity[a] increase (thousand bpd)	151		263	425		392		217
3. New investments (yearly averages in Bs million)	279		68	199		38		173

a Primary crude distillation capacity per day of operation.

b The bpd figures were approximately converted to tons by using the rate of 52 tons per annum for one barrel per day (this assumes a specific crude oil gravity of 0.9).

c The periods were delimited on the basis of the development of refinery investments (see var. 3).

Sources:

1,2: BCV, *La economía venezolana durante los últimos 25 años* (for pre-1950 figures).
Petróleo y Otros Datos Estadísticos (PODE), various issues (for 1950 onward).

3: Series of annual data in *PODE,* various issues.

ments, chose to produce greater quantities of the more profitable gasoline.[89] In Venezuela by 1960, more than two-thirds of the output was exported as fuel oil, chiefly to the United States.

There was also another development which favored domestic refining in Venezuela. In the 1940's and 1950's large deposits of light and medium-gravity oil were found in the llanos, in the center of Lake Maracaibo and to the west of the lake, in addition to the enormous reserves of heavy oil that were already known about. As a result, Venezuela was eventually

[89] In pace with the increasing import flow of cheap Venezuelan fuel oils, US Atlantic seabord refiners reduced their yield of residual oil from 22 per cent of total output in 1946 to 11 per cent in 1958 and 6 per cent in 1970 (Odell 1963b:54, API 1971).

producing a greater variety of crudes than any other large exporting country.[90]

In the years after 1960, the expansion of the Venezuelan refining industry slowed down. When import restrictions were imposed on fuel oil in the United States in 1959, for a time more or less freezing import quantities at a constant level, the possibilities for further capacity expansion in the Caribbean area were drastically reduced. Yet, refining in Venezuela continued to expand, albeit at a slower rate. Between 1960 and 1970 capacity grew by one-third (table 3.3). It increased by an additional 15 per cent to around 80 million tons a year in 1974. In that year over 40 per cent of the crude produced, or 62 million tons, went to the domestic refineries for processing.

Plant Structure and Location

The present Venezuelan oil-processing industry is dominated by two refineries, Amuay and Cardón, both located in the same area. They account for two-thirds of the oil refined and for two-thirds of the employment (table 3.4). Together with a third plant (Puerto La Cruz), their share amounts to almost 80 per cent. Heavy fuel is invariably the leading fraction, gasoline and middle distillates accounting for much smaller shares — small, too, in comparison with average yields in the US and West European refineries.

The Paraguaná Peninsula

In the west, the construction of two large export refineries and terminals was started after the war, in line with Shell's and Creole's 1943 government agreements. Both companies chose sites on the southwestern coast of the Paraguaná Peninsula, namely at Punta Cardón and Amuay Bay. These harbors were the closest ones at deepwater to the Maracaibo oil districts; in addition they were protected against the strong northeastern trade

[90] See e.g. Grunwald & Musgrove, 264.

Table 3.4 *Venezuelan Oil Refineries in 1974. Types, Capacity, Throughput, and Employment (1966)*

Location	Company	Type of refinery[a]	Capacity[b] '000 bpd end 1974	Throughput, million tons 1974	Throughput, million tons peak year	Persons employed 1966
Paraguaná						
Amuay	Creole	LS,L,A	670	27.8	31.4 (73)	1137
Cardón	Shell	C,LS,L	369	16.2	19.3 (70)	2373
Lake Maracaibo						
Bajo Grande	Chevron	S,A	61	1.5	3.3 (66)	133
San Lorenzo	Shell	S	35	1.2	2.4 (54)	105
Central area						
El Palito	Mobil	C	106	4.8	5.5 (70)	224
Morón	CVP	C	25	0.8	1.1 (71)	159
Barinas	Sinclair	S	5	0.2	0.3 (71)	—
Eastern area						
Puerto La C.	Ven. Gulf	C	159	6.8	8.4 (70)	501
El Chaure	Sinclair	C	40	1.7	2.0 (71)	183
Caripito	Creole	S	70	0.9	4.0 (56)	56
San Roque	Phillips	S,P	5	0.3	0.3 (73)	120[c]
Tucupita	Texaco	S	10	0.2	0.4 (51)	10
Total			*1555*	*62.5*	*67.7 (73)*	*5001*

a S: Skimming plant (primary distillation only), yields heavy fuels to 70 % or more;

C: additional cracking or reforming processes, yields comparatively high shares of light and middle distillates;

A: asphalt; L: lubes; LS: low sulfur content fuel oil; P: paraffin wax.

b Primary distillation capacity in barrels per day of operation (approximately, for Venezuelan crude 1 bpd corresponds to 52 tons per annum).

c May include people employed in non-refining activities.

Sources: MMH, *Memoria*, 1973 and 1974; *Petróleo y Otros Datos Estadísticos*, various issues; *Petroleum Times*, 24 Jan., 1975 (additional source for type classification); direct information from Cordiplan (for employment data); *Aspectos de la industria petrolera en Venezuela* (1963).

winds. Furthermore, the government influenced the location decision in favor of Paraguaná.[91]

The whole of Paraguaná, however, was a desolate and sparsely populated semi-desert, poor in water and scanty in resources. Building a refinery in such an undeveloped area became extraordinarily expensive. The companies had to import practically everything, including food and fresh water, and to provide all the infrastructure needed — housing, roads and social services.[92] The main problem, the lack of fresh water for the refineries and the adjoining communities, was solved permanently when the two companies and the government jointly laid a 196 km, 30-inch aqueduct from the San Luís hills, south-east of Coro.[93]

The first refinery units went on stream at Cardón in 1949 and at Amuay the following year, both with an initial maximum capacity of about 60,000 bpd.[94] During the fifties the two plants were frequently enlarged. A second construction stage was completed at Cardón in 1952, and at Amuay in 1954; a third in 1956—1958 (at both plants) in connection with Shell's and Creole's acquisition and development of new oil concessions. Throughput rose from some 8 million tons annually at each plant in the mid-1950's to around 15 million tons each in 1960. The Amuay-Cardón constellation then began to compete with the Aruba-Curaçao refineries in importance.

[91] Other coastal sites in the central and western parts of the country were also evaluated by Creole. Not the least the Turiamo Creek, east of Puerto Cabello, commanded Creole's interest. However, according to fragmentary sources external reasons impeded the company planning for a Turiamo refinery, as the government was reluctant to the idea. In this situation, Creole chose the bay of Amuay (Taylor & Lindeman, 19; Betancourt, 320; Rengifo Lleras 1975:44—45). The rationale of preferring Turiamo is unclear. A location at Turiamo should have been ideal for a refinery geared to the domestic market but definitely not for a plant, built for the refining and exporting of the oil from the Maracaibo Basin.

As early as in the late twenties the bay of Amuay was considered by Standard Oil of New Jersey, Creole's parent company, as site for a (small) refinery. A French-Venezuelan oil company at this time also planned a small plant on the western coast of Paraguaná (*Petroleum Times*, 1929).

[92] Taylor & Lindeman, 18—19. Of Shell's total investments for the Cardón plant through 1958 — about Bs 900 million — one-third concerned the building of the residential zone, including supporting services (Shell 1958:21).

[93] In addition, Shell built a salt-water distillation plant in 1961 to meet variations in refinery demand. Large quantities of undistilled sea water were also used in the refineries.

[94] Data used on this and following pages regarding capacity, output and employment have been gathered from, in first hand, official MMH statistics. Annual reports and booklets of the companies were also useful.

Oil Refining

Since 1960 little new capacity has been added to the Cardón plant. Amuay, on the other hand, continued to expand. The addition of a fifth giant distillation plant, completed in mid-1972, increased capacity at Amuay to 630,000 bpd (some 32 million tons annually) and made it the largest in the world, ranking before the Hess plant on St. Croix and before Aruba, now number two of Exxon's refineries by size.[95]

Both Amuay and Cardón are geared to export, particularly of heavy fuel oil, but still together dominate as suppliers to the domestic market, to which they have contributed several new products. For example, after the addition in 1952 of a complete lubricant plant at Cardón the country became self-sufficient in various types of lubricating oils.

By and large, the difference in production is, or has been, as large between the Amuay and Cardón refineries as it is between the Aruba and Curaçao plants. Cardón, like Curaçao, is a larger industrial complex and turns out a wider range of products than the less complete Amuay and Aruba. Heavy fuel constitutes no less than three-quarters of the output at Amuay but only half at Cardón. At Amuay the non-heavy fuel output consists mostly of gasoline, naptha, diesel oils, asphalt and lubricants. High-octane auto diesel is a speciality. Cardón on the other hand turns out considerable quantities of aviation gasoline, jet fuels, and gas oil, as well as specialty products, in addition to the common gasoline, naptha, lubes, and fuel oil.

Because of its more comprehensive activities, Cardón has had about twice the labor force of Amuay despite a much smaller primary distillation capacity: 3,900 persons in 1958 and 2,370 in 1966 against 1,900 (1962) and 1,140 (1966) at Amuay. While Amuay in 1966 had a larger production by volume, Cardón had a production that was slightly larger in terms of value and very much larger in terms of value added. Together the two plants accounted for 3.5 per cent of the total employment, for 7 per cent of the value added, for 15 per cent of the production value, and for one quarter of the invested capital in Venezuelan factory industry of 1966.

The difference in production could be partly explained by the variations in quality of the crude supply. The Amuay refinery operates basically on heavy crude from the Bolívar coastal fields, carried to the plant by two parallel, 233 km, 26-inch pipelines. Cardón blends heavy crude from the Bolívar coast shipped to the plant, with light crude from lake fields and from the Mara-Concepción-La Paz fields, west of the city of Maracaibo. The latter deposits were opportunely discovered by Shell in 1944, as a result of drilling deeper into the Cretaceous strata of the fields. The light

[95] *Petroleum Times*, 24 January, 1975.

oil is pumped in a 260 km, 30-inch line, extending from Palmarejo de Mara on the western shore of Lake Maracaibo. Natural gas piped in a 285 km 20-inch pipeline from the Paz field, is used as refinery fuel.

A major drawback of the low-quality Bolívar coast crude is its high sulfur content (about 2.5 per cent) compared with other world export crudes, especially those from North and West Africa. To comply with the restrictions on sulfur content imposed by the state and municipal authorities in the northeastern United States in the mid-1960's and by other parts of the US and Europe a little later, Shell and Creole negotiated with the Venezuelan government and agreed to construct large desulfurizing plants at Cardón and Amuay during 1968—1970.[96] The Amuay plant was recently enlarged so that it is now able to desulfurize one-third of the crude distilled in the refinery. In addition, a natural gas line was built from the Bolívar coast to Amuay to supply fuel to the refinery. In 1974, nearly as much low-sulfur fuel-oil, with a maximum sulfur content of 0.3 per cent, was produced as undesulfurized fuel oil.

Lake Maracaibo

In the mid-1950's, when the Paraguaná plants were being enlarged so radically, a deepwater channel (32 feet) was cut through the bar at the entrance of Lake Maracaibo. By 1962 it had been taken down to a depth of 43 feet and extended southwards through the bay of El Tablazo into the lake. The oil districts now became accessible to supertankers. Several large terminals were built on Lake Maracaibo, at Miranda (Shell) and La Salina (Creole) on the Bolívar coast and at Punta de Palmas (Venezuelan Sun) and Bajo Grande (Richmond) on the opposite shore. Thus the conditions for locating large oil refineries in this area had undergone a radical change.

Nevertheless, only one refinery was built. In 1956, when the first channel was finished, a plant was completed by Richmond (now Chevron) at Bajo Grande on the southern outskirts of Greater Maracaibo. A major reason for building this plant was the nature of the crude processed, namely the oil from the westland Boscán field, discovered in 1946. It is an extremely heavy oil (specific gravity close to 1.0) that yields large amounts of asphalt of excellent quality.[97]

During its first decade Bajo Grande was basically an asphalt manufacturing plant. Asphalt answered for over half its output; the remainder,

[96] For a thorough discussion of this question, see Mayobre & Losada 1970.

[97] Nelson *et al.* 1959:197, 231.

except for a few per cent, consisted of heavy fuel. Until the early 1970's when Creole's Amuay began to challenge its position, this plant was the leading asphalt producer in the country. It furnished most of what was needed for the government's comprehensive highway building program. But exports, primarily to the United States, of both asphalt and heavy fuel oil exceeded domestic sales.

Big expansions in 1964 and 1967 brought the capacity of the refinery up to about 3.5 million tons annually (60,000 bpd). The additions were made to allow for the handling of other crudes and for obtaining non-asphalt fractions. About half the capacity of the refinery was by 1974 used by Venezuelan Sun for extracting gasoline, diesel and fuel oil from the medium-gravity crude from the company's mid-lake fields. The plant is fuelled by gas from La Paz and from fields in the lake.

On the east side of Lake Maracaibo, San Lorenzo has been the only refinery operating since the early 1950's, when the plants at La Salina and Cabimas were both dismantled. Even at San Lorenzo operations began to contract during the fifties. This plant has undergone no major expansion since World War II; it reached a peak in the period 1951—1955, when about 2.4 million tons a year were processed (approx. 45,000 bpd). Since then output has gradually declined, reaching half its peak level in the early 1970's. Related to this contraction was the sharp decline in the output of the Mene Grande field, which is now approaching depletion.[98] This decline was only partly offset by an increasing supply of crude from Shell's new large oilfields in the central part of the lake.

A state-owned 100,000-bpd plant is planned at El Tablazo in the north, primarily to supply feedstocks to the major petrochemical complex now under construction there.

Central area

Several of the large concessions granted in 1944 and 1956 concerned exploration in the Apure Basin east of the Andes. Many companies took part in the search for oil there, and large amounts were spent to begin with. Some promising discoveries were made but in the end only two operators — first Mobil and later Sinclair — turned out to be reasonably successful. Both companies encountered small deposits in the state of Barinas. Crude oil exports started late in 1957 with the completion of a 337

[98] Output from the Mene Grande field reached a peak level already in 1928—1930. During the following three decades output normally varied between 2 and 3 million tons annually. However, by 1973 it had decreased to 0.6 million (see barrels data in Dean, 29; *AE* 1938:137—8; *PODE* 1970:67 and 1973:68.

km, 20-inch pipeline, the longest in the country, which terminated at El Palito on the Caribbean coast.

In the same year a small topping plant was erected by Mobil on the oilfield for supplying company needs for oil products. Soon, Mobil started construction of an export refinery at El Palito, 15 km west of Puerto Cabello. This plant went on stream in 1960 with a capacity of 55,000 bpd. It has undergone continual expansion to 80,000 bpd in 1956 and 106,000 bpd by 1970, despite the inadequacy of the falling output of crude at Barinas (around 4.5 million tons a year in the mid-1960's, only 3 million by 1970). The balance is carried to the plant from Mobil's central llanos fields.[99] The Barinas crude is light to medium in gravity, and El Palito turns out a comparatively high proportion of gasoline and, even more, of diesel oil in addition to heavy fuel.

The second refinery in this area, the CVP-owned plant at Morón, also in part operates on Barinas crude. It was originally built in the late fifties to furnish feedstocks to the state petrochemical plant there. The small plant (initial capacity 3,000 bpd) from the mid-1960's was greatly enlarged with Japanese assistance, until it could produce a wide range of products for the domestic market. Its actual capacity, 1.5 million tons a year (25,000 bpd), does not altogether reflect its importance. Because of its rather complex operations, it employs a labor force almost as large as the Palito refinery.

CVP's Morón plant operates almost exclusively to supply the domestic market. In the case of Mobil's El Palito, the domestic market currently takes only a minor share of the output. Both have decisive advantages in supplying the Valencia-Caracas region, the chief market for oil products. Of all the plants they are the two which are by far the closest to this market. In addition, El Palito in particular receives fairly light crudes which are well suited to the Venezuelan demand. It seems likely that in future El Palito and Morón will compete with Amuay and Cardón as the leading suppliers to the central market.

Caracas has no refinery despite its concentration of demand for petroleum products. In fact, Caracas is the only metropolitan region in Latin America, besides Bogotá, which lacks a refinery. And it is the only large OPEC capital to be without one. This is largely explained by history. Shell and Creole invested at an early stage in an oil terminal at Catia La Mar on the coast north of Caracas. In the late 1940's, a product pipeline was laid from the battery of product storage tanks there, and across the coastal mountains to terminals in north-central Caracas.

[99] *PODE* 1973.

Oil Refining

Eastern area

Puerto La Cruz in eastern Venezuela has the second largest concentration of refining capacity. Its main attraction for refineries, in comparison with Barcelona, is the presence of deepwater close to the shore to accommodate supertankers. Since the early forties Puerto La Cruz has been the main outlet for the llanos oil. Its excellent natural harbors are shielded from surf and strong winds by a series of barren islands.

Two export refineries were in operation by 1950 here, one built by Venezuelan Gulf (closely affiliated to Mene Grande) in Puerto La Cruz proper (capacity 30,000 bpd) and one by Sinclair at nearby El Chaure (capacity 35,000 bpd). Gulf's plant doubled its capacity in 1953 and again in 1959. The present level of 8 million tons annually (158,000 bpd) was reached in 1964. Sinclair's plant has undergone only minor expansion.

Gulf's plant turns out almost the whole range of oil distillates, but heavy fuel, gasoline and diesel oil are the most important. The refinery normally accounts for 12—15 per cent of the national production of these three products. The much smaller Chaure plant turns out a high percentage of naphta.

Both plants receive crude from various fields scattered over the central llanos. A net of laterals collects the oil into a handful of large trunk lines, leading down to Puerto La Cruz. The plants normally process crude for a variety of operators. Of the crude refined at Gulf's plant, one-quarter or so usually comes from Texaco's fields, the bulk from Mene Grande. At El Chaure a minor part of the treated crude comes from Mobil's fields. In addition, small deliveries are processed for other companies. And conversely, Mobil refines roughly the same quantities of Sinclair's Barinas crude at its Palito refinery (see above).

Phillips operates a small plant (capacity 5,000 bpd) at San Roque in the central Anzoátegui state. It was built in 1952, primarily to take advantage of the unique crude from the small San Roque field. This is an unexceptionally light, high-quality oil, yielding a very high percentage of gasoline.[100] In addition to gasoline, the plant turns out large quantities of paraffin, which is mainly used in domestic candle manufacturing.

At Tucupita in the Orinoco delta, Texaco built a simple plant in the late 1940's (capacity 10,000 bpd) to treat the heavy crude from small local oilfields exploited by Texaco and Creole. Operations are limited to skimming off small amounts of gasoline, 1 or 2 per cent of the crude received, before the oil is exported.

[100] Nelson, 400.

Creole's refinery at Caripito was expanded considerably in the late 1940's. For more than two decades it had a throughput, varying between 3 and 4 million tons a year (55,000—75,000 bpd). However, in the early 1970's production decreased considerably, largely because of machinery breakdowns.

Significance for the National and Local Economy. Some Observations

Some major aspects of the economic impact of the refining industry will be discussed here in the light of the data presented in tables 3.3—3.5; (a) the industry's ability to increase industrial employment, to earn more foreign exchange and to provide more fiscal receipts — explicit or implicit goals of the official policy to promote domestic refining, (b) the relationship between oil refining and other industrial development, or the industry's ability to attract other manufacturing, and (c) direct local and regional effects.

Employment and national income effects

The insistence of the Venezuelan government on the oil companies building domestic refineries brought substantial results. An export refining industry was established on a scale far exceeding the minimum requirements. Instead of the 15 per cent required, no less than 40 per cent of the crude produced was being processed within the country by 1974. Nevertheless, several major objectives that were more or less explicit in the government's refining policy were not fulfilled to the extent desired.

The refining industry never employed a large labor force in Venezuela. As a processing industry, refining generally demands little manpower. This is particularly true of the industry in Venezuela, as also in Aruba and Curaçao. During the 1950's these refineries came under pressure to cut costs in order to maintain their competitiveness vis-à-vis refineries operating on cheaper Middle East crude. As a result, a considerable degree of automation was introduced. In the Venezuelan refineries, peak employment figures were reached in 1957, when just over 7,000 were employed.[101] By 1973 this amount had been cut by almost half. Even if people in-

[101] By contrast, the refinery at Abadan in Iran, the largest one in the Middle East, in 1959 alone employed 27,000 people (Odell 1963:194—5).

directly employed by the refineries are included — those in ancillary and contracting jobs in transport, construction and commerce — the contribution to the country's total employment is small.

Nor did the refining industry become important as a means of increasing the export value of oil. It is true that refined products made up an increasing proportion of total oil exports — in 1960 one-quarter, in 1974 about 40 per cent. However, a comparison of prices suggests that exporting the oil as unprocessed crude instead of as products would not have implied much less export earnings. Up to 1970 the average export price realized for oil products was not much higher than the realized average export price for crude oil.[102] In the 1958—1969 oil-recession period it was mostly less than 5 per cent higher, sometimes on a par or even lower. (The crude that went to the domestic refineries may have been of an inferior average quality than the crude oil exported. However, differences in average gravity seem to have been small according to available statistics,[103] which suggest small differences also in quality.)

To put it simply, this paradox can be explained as follows. First, the plants were not extended to cope with much more than the simple separation of the hydrocarbon components of the crude. Heavy residues constituted almost without exception the bulk of the output. Only to a very limited extent were they transformed into derivatives of higher value. Essentially, the Venezuelan refineries continued to be fuel oil plants. It is true that several installations were made for obtaining lighter distillates, but these were largely intended for the home market.

Secondly, the international prices for heavy fuel oil remained low until the 1970's. As heavy fuel was a residual in the distillation process — a by-product in the production of gasoline and middle distillates — its price was generally considerably lower than that of the original crude. This was the situation also in Venezuela.[104] It has been argued, however, that the multinational firms deliberately kept this price low, in order to reduce income taxes in the fuel oil producing countries and to secure a cheap supply of heavy fuels in the United States, which was by far the world's largest importer of such derivatives.[105]

To this should be added that the prices of oil products for the home

[102] See e.g. *PODE* 1966:173 and 1973:169.

[103] See MMH, *Memoria* (e.g. 1967:IV:143—9 and 1974:IX:31, 381).

[104] In Venezuela, the posted price for heavy fuels was 5—8 per cent lower than that for crude oil in the 1958—1966 period and 15—20 per cent lower in 1967—1969 (Mejía Alarcón 1972:178).

[105] On this issue, see Montiel Ortega 1962:63—71 and Mejía Alarcón 1966:100—7 (also 1972:178—185).

market were also kept down, as they were controlled by the government.[106] In fact, they were considerably lower than prices posted at the refineries for sales overseas. Consequently refining in Venezuela was a moderately profitable activity only. It failed to help in considerably increasing the country's share in the profits of the oil industry by providing more export earnings and more fiscal receipts, which was what many oil politicians in Venezuela in the 1940's and 1950's had anticipated.

Linkage effects

As shown in preceding sections, a considerable petroleum-processing export activity developed alongside the crude oil export industry after World War II. By 1974 oil derivatives by value accounted for 38 per cent of the country's total export, compared with 58 per cent for crude oil.[107] Petroleum refining was the only manufacturing industry in Venezuela geared chiefly to export. What impact has this export activity had on other manufacturing industries, in transmitting development impulses? This question could most appropriately be discussed in terms of backward and forward linkage effects or, in other words, of the industry's input-output relations with other sectors.

The question has been dealt with by Harris, who found the effects to be rather small.[108] Here, some data will be presented (and commented), which pin-point the insignificance of oil refining in this context.

Neither the backward nor forward linkage effects of the refining industry have been strong, as is clearly indicated by the 1963 economic census data (the latest available) of industry's intersectoral production relations (table 3.5).

The only noteworthy manufacturing subcontractor to the domestic refineries in 1963 was a producer of metal containers for lubricants near Valencia. This company had been founded in 1958 as a subsidiary of the large Dutch company, Van Leer. The only oil product in use as a raw material was paraffin, which had largely replaced the use of soap and other raw materials in the domestic candle-manufacturing industry.[109]

Undoubtedly, the refining industry made its greatest impact on other manufacturing industries by providing cheap fuel. Large quantities of diesel and fuel oils were consumed e.g. in the sugar mills and the brewe-

106 See Taylor & Lindeman, 21.

107 MMH, *Memoria* 1974.

108 Harris 1971.

109 USDS 1965:16.

Table 3.5 *Production Inputs and Outputs of the Venezuelan Refining Industry in 1963* (Bs million)

From/to	Inputs			Outputs		
					used as	
	product	national	imported	product	raw mat.	fuel[a]
Non-manufacturing sector						
	crude oil	1974.0	0.0	derivat.	—	2574.6[b]
	others	0.1	0.0			
Other manufacturing						
	chemicals	2.2	16.6	paraffin	9.6	
	lubricants	4.9	0.1	diesel oil	—	20.1
	others	0.1	0.0	others	0.2	27.2
Other refineries						
	derivatives	22.9	17.6	derivat.	22.9	15.1
Total		*2004.2*	*34.3*		*32.7*	*2637.0*

a Includes lubricants, etc.

b Includes all exports.

Source: Derived from data in the 1963 Economic Census (*Manufactura IV. Resúmen Nacional*, tables 12, 17, 17A and 19).

ries.[110] The latter purchased more than one-third of the total used in manufacturing. However, oil distillates were by 1963 surpassed in importance by natural gas, used above all in cement plants and paper mills as well as, to a dominating degree, in the oil refineries themselves. During the latest fifteen years natural gas has been made available to the leading industrial areas in the central, western and eastern parts of the country by means of an extensive network of gas lines (see map).

Indirectly, domestic oil refining has had some effect on the development of the automobile industry. By making very cheap gasoline available, it has contributed to the increase in the use of motor cars in the country.

Most remarkable in 1963 was the lack of any link between refineries and the petrochemical industry, potentially an important consumer of oil derivatives. Early expansion phases in this latter industry were based solely upon natural gas. The development of petrochemicals was promoted by the government independently of its plans for the refineries.

110 According to the 1963 Economic Census.

In the case of backward linkages, primary petroleum activities have been far more important than refineries to the Venezuelan manufacturing industries. Purchases of domestically produced manufactured goods have increased in recent years despite the drastically reduced investment activity in petroleum, but they are still small in relation to import purchases. They now include e.g. cement, additives, wood products, oil casing, line pipe, oil-well tubing, chemicals, reinforcing bars, fabricated metal products, cable, storage batteries, tires and tubes.[111]

A potentially important backward link of the refining industry is the purchase of capital goods for investment in new installations or replacements. However, not unexpectedly, highly specialized capital equipment has invariably been purchased abroad. As further expansion of the refining industry is apparently to be on rather a moderate scale, the possibility of this link increasing in importance in the future is fairly remote.

To sum up, both via inputs — of the production as well as the investment — and outputs, the petroleum refining industry has been marginally related to other domestic manufacturing industries.

Local and regional impact

In view of the very limited linkage effects of the refining industry on other manufacturing industries, and of its nature as a processing activity using highly automated techniques but employing little manpower, it could be assumed that the postwar expansion in the refining industry has made only a slight impact on local and regional economies.

This is true in most cases. At San Lorenzo a small twin community developed around the oil terminal and the refinery (San Timoteo—San Lorenzo, 3,600 inh. by 1971). The greater part of the population growth resulting from the oil operations in this district accrued to Mene Grande at the inland oilfield (about 11,500 in 1961 as well as 1971).

At Caripito a small town developed, depending on the oil refining and shipping activities. This town almost tripled in size between 1936 and 1941, and has doubled again between 1941 (11,800) and 1961 (21,600). However, when the oil operations there stagnated in the 1960's, the population increase was replaced by a slight decrease.

From its start the Bajo Grande refinery always formed part of the Greater Maracaibo economy, and did not itself give rise to any major urban place. This also holds in part for the refineries at El Palito and

[111] Harris 1971:141.

Morón. To a great extent these two plants draw upon the labor force and resources of nearby Puerto Cabello and — to a lesser extent — of Valencia.

In one case, on Paraguaná, the establishment of large refineries did have a profound effect, not only because of the size of the investments involved but for several other reasons as well. The refineries were located in a desolate and little developed area, and could not therefore do other than improve the infrastructure.

In the mid-1940's the Paraguaná Peninsula was inhabited by less than 40,000 people, who gained a livelihood from fishing along the coast and from such agriculture as was possible in view of the meager rainfall. The inhabitants lived in several small villages, scattered along the coast and over the peninsula. The population of the two largest barely exceeded 1,000. Semi-isolated from the rest of the Falcón state — and from the country as a whole — the peninsula looked mainly towards Aruba and Curaçao for trade and communications.

When construction on the refineries started in 1947 a radical transformation began. In thirty years the population of Paraguaná more than tripled, reaching about 135,000 by 1971. In south-western Paraguaná an urban agglomeration[112] with around 100,000 inhabitants (1971) emerged, covering a belt along the coast 30 km long and 10 km wide. Here several fishing villages (Los Taques, Amuay, Las Piedras and Carirubana) together with the refinery staff camps (Judibana, Punta Cardón), the workers' residential areas and the commercial and administrative centers (Punto Fijo), originally far apart, have come in time to be united in a single large conurbation.

The growth of the Punto Fijo urban area was largely due to the increase, induced by the oil, in commerce, transport and service activities, which in 1961 each employed more people than the refineries. Falcón became a bipolar state with Punto Fijo challenging Coro, the traditional commercial and administrative center, as the main growth pole.[113]

The crisis, when in the 1960's the oil refineries more than halfed their workforce (compare page 105), was partly offset by the growth in other primary and secondary activities, which benefited from the improved infrastructure of the region thanks to the oil. Fishing, in particular, grew rapidly, employing more than 4,000 people by 1968. Fishing of shrimps

[112] For an excellent study of the physical and functional structure of the Punto Fijo complex see Marchand 1971.

[113] See Santos 1970.

developed to an export industry with a processing and freezing plant located at Caripubana.[114]

The Puerto La Cruz refineries, finally, contributed to triggering off a strong regional population and economic growth. In this case the refinery location was close to the traditional center of the state, Barcelona (in contrast to the case of Amuay-Cardón). Barcelona-Puerto La Cruz became the leading center and growth area in the northeastern part of the country. The population of its urbanized area (including Pozuelos) doubled in the 1950's and almost doubled again in the 1960's, reaching around 200,000 in 1971.

[114] Vila 1970:25—34.

4. The Cotton Textile Industry, 1858—1958

The purpose here is to describe in more detail than was possible in the general treatment of chapter 2, the phases and determinants of the early development of manufacturing in Venezuela. As a case was chosen the cotton textile industry, traditionally a forerunner in a country's industrialization process. An effort was made throughout the study to place this industry in a Latin American context and to focus on locational developments. Hopefully, the findings in this respect should help to increase our understanding of the locational structure of Venezuela's early industry.

This study has been based on an examination of some of the printed material available: general literature and statistical sources, domestic as well as international. Research in the archives was outside the scope and basic approach of this book.

Development

Craft industry in colonial times[1]

The crafts of spinning and weawing, typically among the first industries to evolve, were well advanced in the New World before the arrival of the conquistadors. Within half a century or so the Spanish settlers in Venezuela founded a notable — although never very prosperous — craft industry, producing cotton textiles based on the spinning and weaving by the natives of locally grown cotton. However, this was never of such a high standard in Venezuela as in Mexico and Peru, for example. The

[1] The findings in this section are based primarily on Arcila Farías' thorough and well documented study *Economía colonial de Venezuela,* Mexico D.F. 1946. For colonial manufacture of textiles, see e.g. p. 69—70.

Venezuelans were practically forced to follow this course, since the Venezuelan colony, lacking any known resources of precious metals, was largely abandoned to self-sufficiency by the mother country.

In the early seventeenth century, the craft establishments of El Tocuyo and other newly founded *pueblos* not only supplied local needs for coarse cotton cloth but also gave rise to some export to neighboring colonies. From this time on they gradually lost in importance. Trade with Spain was intensified, as was contraband traffic with other European countries. The Venezuelan colony became increasingly subject to the mercantilistic trade policy of its metropolitan country, which endeavored to monopolize the supply of manufactured goods. As a result, the indigenous cotton industry was soon limited to pure homecraft activities, while commercial production vanished almost completely. For this reason the colonial craft industry played a limited part in the industrialization efforts of later centuries in Venezuela. In this respect Venezuela deviated from the tradition-based development experienced in some other Latin American countries (Mexico, Peru and Ecuador).

The beginnings of factory industry

The production of textiles on a factory scale was initiated in Venezuela in 1858, when the first mechanical looms were installed in a water-wheel driven mill near Macarao, just outside the present metropolitan area of Caracas.[2] The company's invested capital amounted to Bs 250,000. Founded at a time when free-trade principles prevailed, the mill had to struggle against superior foreign competition. Another obstacle to start with was consumer resistance to its products. Presumably its activities were never more than very limited.[3]

[2] A majority of sources hold this undertaking to be the first mechanical cotton mill in Venezuela: Landaeta Rosales (1889:213), Clark (1910:II:95), Bell (1922: 251, 262), Lairet (1945:85), Wythe (1945:300, referring to Clark), Pérez P. & Castillo B. (1961:14), Carrillo Batalla (1962:85) and Vila (1965a:92). Landaeta R. as well as Carrillo B. gives 1856 instead of 1858 as its inception year (as does Bell on p. 174). Differences of opinions exist, however. Marrero (1964:524) dates the first mill in the early 1880's (in Valencia), Cobos (1953:164) before 1900 and Romero & Zealand (1946:434) after 1900 (in Caracas). Lieuwen (1961:129) states that a few small factories were set up toward the end of the last century.

The Macarao enterpreneur is claimed to be a Venezuelan (a Spanish-named person) by Landaeta Rosales and Lairet but a Philadelphian by Clark, Bell and Wythe. Lairet states that the machinery of the mill was of North American provenance.

[3] The mill is said to have stimulated the domestic cultivation of cotton (Lairet, 85). The revival in the 1860's of cotton cultivation in Venezuela — important at

Cotton Textile Industry

In 1879 a cotton mill was founded in Valencia with a share capital of half a million bolivars.[4] It was located in the middle of the country's most important cotton-growing area.[5] The mill was a larger and more integrated textile enterprise than the Macarao mill. It had sections, directed by four contracted Catalonians, for spinning, weaving and knitting.[6] Like its share capital, its initial machinery and output were on roughly twice the scale of the Macarao mill. The additional competition was too much for Macarao, which was taken over by the Valencia company and soon afterwards closed down.[7]

The Valencia mill seems to have developed slowly to begin with. After the turn of the century, however, it expanded its activities considerably. Its intake of raw cotton delivered by the Caracas-Valencia inland railway — its main means of supply after the completion of the railway in the 1890's — apparently more or less doubled every second year during the period 1903—1910.[8] The number of mechanical looms in the mill increased under a new owner from 18 somewhere around 1890 to 170 in 1912, when

intervals in the country's earlier economic history, e.g. in the early nineteenth century — was, however, mainly the result of a drastic reduction in the cotton export of the United States to England, caused by the American Civil War. Venezuela's cotton export rose fram a yearly average of 500 tons in the 1850's to between 2,000 and 5,000 tons in 1863—1875 but fell back to low quantities in subsequent years (Veloz 1945:89—174).

4 See Landaeta Rosales (p. 213) and Lairet (p. 85). Vila (1966a:238) sets its inception year to 1877 and its share capital to Bs 600,000. Carrillo Batalla (p. 85) dates it to 1886.

5 This area comprised the states of Aragua and Carabobo as well as adjacent parts of Guárico and Yaracuy. The non-exportable cotton surplus of Venezuela in the late 1870's may have contributed to the founding of the Valencia mill (cf. note 3).

6 Vila 1966a:238.

7 Lairet, 85—86.

8 See diagram on the railway's cargos of raw cotton (Lairet, 55). In 1910 and 1911, when two new cotton mills had been erected, more than 2,000 tons of raw cotton were dispatched by the railway. Practically all this was consumed in the mills (see also Dalton 1912:249). To raise the cargo potential, the German railway company made great efforts to stimulate the area's cotton growing. It distributed North American and Egyptan seeds freely and installed a modern cotton gin (at Mariara in 1905). The export of cotton over La Guaira and Puerto Cabello, the main shipping ports of the central area, was insignificant in the early 1910's just as in the foregoing decade (see *AE* 1910:232 and 1912:193 and Lairet, 117).

a dyeing plant was also started.[9] Around this time the mill operated 5,000 spindles.[10]

The establishing period, 1908—1914

As in many other Latin American countries, there was a considerable time-lag in Venezuela between the introduction of factory technology and the economic establishment of the industry. It was half a century after the first attempt using power-driven machinery — that is when, among other things, the economic infrastructure of the country (power and transport) had radically improved — before the textile industry developed and became established on a broad basis. Within a few years in the period before World War I, the single mill in Valencia was joined by about half a dozen more cotton factories.

In 1908 the owner of the Valencia mill erected a mill in a workmen's suburb of northern Caracas (San José), investing in it Bs 1.5 million.[11] Its new English machinery included 6,000 spindles and 100 looms.[12] It was driven by hydro-electrical power from the small El Encantado plant that had been constructed about ten years earlier on the Guaire stream on the south-eastern outskirts of Caracas.[13] Two years after its inception, a small knitting department was added with eight knitting and four hosiery machines, all of Spanish make.[14]

In 1911 the two mills merged to become a single company, Telares de Caracas y Valencia, with a share capital of Bs 4.04 million. Their combined production capacity after the amalgamation could be estimated at around 700 tons of textiles per year.[15] For a decade or two the company was

[9] Lairet, 86. The new owner was the firm of Señores Francisco de Sales Pérez y Cía.

[10] See Clark (1910:II:95), who sets the number of looms at 150. One hundred more looms were added by a mill enlargement in the early 1920's (Bell, 175, 262).

[11] Lairet, 86.

[12] Clark, 95 and Bell, 175.

[13] For early electric power developments in Caracas, see e.g. Moll 1956:290—5, Vila 1965a:121—2 and 1967a:328—9 and Rangel 1970:357—368. Around 1913 and 1918, English financiers, among them a certain Edgard Wallis (cf. note 16), acquired major interests in the gas and electric light business of Caracas.

[14] Clark, 96.

[15] Lairet, 87. The two mills operated a total of 11,000 spindles and 250 looms (Clark, 95) or perhaps 300 looms (Kertesz 1917:546).

probably the country's largest manufacturing employer. In 1920 about 900 women and 100 men worked in the two mills.[16]

In 1910 Valencia's second cotton-spinning and weaving mill — Telares de Carabobo — was erected, and another was built at Cumaná. Two more factories were installed in northern Caracas, a knitting factory in 1911 and a weaving mill in 1913. They were merged into Telares de Catia in 1914, and the first factory was closed down soon after.[17] A cotton manufacturing enterprise in Maracaibo was probably also founded during this period.[18]

The growth of the Venezuelan textile industry in the years before the First World War was notable (see table 4.1).[19] In 1913, according to a conservative estimate, the industry supplied roughly one quarter of the country's consumption of textiles.[20] By 1915 four mills, employing about

[16] Vila 1967a:273. The medium wage per day was Bs 4 for men, 2.5 for women and 1 for boys (Lairet, 87). The name of the president of the directing board, E. A. Wallis (Posada Callejas 1921:196), might imply some foreign participation in the company.

[17] Lairet, 86—87, Vila 1965a:93. Apparently all new mills were founded by local entrepreneurs.

[18] See below, note 28.

[19] Around 1913, factories had surpassed the craft shops in production by a wide margin. However, small hand-loom establishments, turning out blankets and so on, still existed, e.g. in Maracaibo (Bell, 211) and in Mérida, where mainly woollen cloth was made (Dalton, 164). One establishment at La Victoria, using locally grown cotton, was probably also entirely non-mechanical, but was still described as a mill (Dalton, 144). Many hand-looms with commercial production, presumably of woollens, still existed in Mérida in 1936 (see note c of table 4.2). Competing factory production of woollens did not develop in the country until the forties.

[20] Kertesz, 546—7. The estimate is based on valuations of local production and import, the latter as shown in the export statistics of European and North American countries. Local production is deducted from an uncertain estimate of the local cotton harvest plus the import of semi-manufactures. The import concerns all kinds of textiles. If measured by weight, estimated by Kertesz at close to 1,300 tons, and compared with the import of cotton textiles only, the domestic cotton fabric production accounted for a higher share of the country's consumption, may be one-third. In 1913 the import of cotton fabrics was 2,054 tons with a value of Bs 16.1 million, i.e. nearly 20 per cent of the country's total imports (*AE* 1938:204).

Cotton-yarn import was much less important: around Bs 1 million in the 1913—1917 period (*ibid.*, 105; Bell, 363).

Table 4.1 *The Venezuelan Cotton Textile Industry, 1910—1970: Some Reported Estimates and Data*

Year	Mills	Capital, Bs million	Spindles[a], thousands	Looms[a]	Persons employed	Cotton consumed, tons	Production, fabrics		Sources
							tons	million m[b]	
1910	2		11	250					A
1915	4		19	500	1800	1350[c]	1283[i]		B, C
1920	6	11	19	600		1950[d]			D
1924	7	25				(4300)[e]			E
1930			49[g]	1417		2700			F, G, J
1931	15[f]			2469		2300			H, J
1933			47	1517		2200			G, J
1936	8	21	47	1729	3126	2750	2400		G, I, J
1938	8	30	42[h]		2331	2458	2000		G, J
1939	9		55	1371		2560	2400		K, J
1941					3851	3467	3240		J, L
1942	10		67	2027		4715	3931	20.4	K, L
1943	10	27			4000	5147	4000	23.9	J, L
1945						5251		21.4	
1947						5751		22.5	
1948						5208		20.9	
1950	10	50	63	2500	3000	3771		9.2	H, Q
1952			80	3215		5463		16.2	G
1954			82			6075		19.4	G
1956			91	3692		7859		23.0	M
1958			78	2307		6707		22.6	R
1962	19		157	3576		14801		58.9	R
1963	28		166	3669	7908	15458	13492	65.9	O
1970			287	5250		21144	18067[j]	80.1	N, P

Notes:

a Data refer as a rule to power-driven machinery installed in cotton mills, e.g. establishments primarily engaged in cotton manufacturing. Figures for 1952—1956 and 1970, however, apparently include machinery used all or part of the time for rayon or nylon spinning and weaving. Consequently, they relate approximately to the whole textile industry (except for small wool weaving mills).

b From 1952 includes cotton mixed with other fibers.

c 6,216 bales of probably 478 pounds.

d 43,000 hundredweight.

e 95,000—100,000 *quintales* (hundredweight). Probably refers to capacity, not to actual consumption.

f Refers to all textile mills, including knitting mills (with 234 knitting machines) and probably some small silk and rayon weaving mills.

g 1928.

h 1939.

i 1913 estimate (source C).

j Includes a small quantity of cotton mixed with other fibers.

Cotton Textile Industry

Sources (table 4.1)

— *Estimates*:

A — Clark, *Cotton Goods in Latin America*, part II, p. 95; part IV, p. 118.
B — *Cotton Year Book 1922*, p. 666.
C — Kertesz, *Die Textilindustrie sämtlicher Staaten*, p. 546.
D — Bell, *Venezuela: A Commercial and Industrial Handbook*, p. 115, 251.
E — Veloz Goiticoa, *Venezuela — 1924*, p. 93.
F — Wythe, *Industry in Latin America*, p. 253.
G — *International Cotton Bulletin*, various issues.
H — Wythe *et al.*, *Investment in Venezuela*, p. 121—2.
I — *Censo Industrial 1936*.
J — Lairet, *El algodón y la industria textil*, p. 94—109.
K — *Mining and Manufacturing Industries in Venezuela*, p. 32.
L — Muller-Karger, *The Industries of Venezuela*, p. 7.
M — *International Review of Cotton and Allied Textile Industries*, March 1957.
N — *International Cotton Industry Statistics* 1963.
O — *ECLA, La industria textil en América Latina — Part X Venezuela*, p. 15, 17.
P — *Anuario Estadístico* 1970.
Q — Maby, *Venezuela. Economic and Commercial Conditions*, p. 123.
R — MF, *Memoria*, various issues.

— *Serial data*:

Cotton consumed 1938—1970: *Anuario Estadístico* 1955/56, 1970.
Production of fabrics (in meters, new series after 1950)
—1942—1950: *Anuario Estadístico* 1955/56.
—1952—1958: *Boletín Mensual de Estadística*, XX:4 (1960).
—1962—1970: *Anuario Estadístico* 1965, 1970.

1,800 persons, operated a total of 19,000 cotton spindles and 500 looms.[21] This was more than the figures reported for Argentina and Chile, and roughly the same as in Colombia (see table 4.5).

The chief reason for the delayed but rather sudden rise of the factory textile industry in 1900—1915, was the need for (and introduction of) protection against foreign competition. Most likely, it was not until the turn of the century that effectively high customs duties on cotton textile imports were introduced.[22] By 1910 Venezuela, together with Mexico and Colombia, had the highest tariff system on cotton manufactures in Latin

[21] *The Cotton Year-Book* (London) 1922:666 and Wythe 1945:300, both referring to *Annual Cotton Handbook* (Comtelburo Ltd., London), issue for 1915 and earlier years. Excluding the machinery operated by Telares de Caracas y Valencia, the other two mills, probably the Carabobo and Cumaná ones, together had 8,000 spindles and 250 looms.

[22] Protective tariffs were first instituted in the tariff act of 1896 (Bell, 358 and Veloz, 237).

America after Brazil.[23] Including surtaxes, the Venezuelan tariff protection on textiles varied between 50 per cent (for finer goods) and 100 per cent (for coarser goods) *ad valorem.*

Other circumstances contributed to the initial progress. As already mentioned, the infrastructure of the country improved, starting from the two last decades of the nineteenth century. Of special importance were evidently the improvements in the supply of power, notably after the turn of the century. Electricity became available to industry in Caracas and other major cities. Also significant was the political and financial order that followed the earlier chaos in Venezuela after Juan Vicente Gómez had assumed power in 1908.[24] The market for textiles, although still very modest, probably also improved after that, as the country prospered from a coffee export boom in the following five years.

Progress was also favored by the domestic cultivation of cotton, which also played a major role in the location of the mills. The largest mills were those in Valencia, the center of the leading cotton growing area. Also in Cumaná, Maracaibo and Caracas, traditionally the other main trade outlets for Venezuelan cotton, capital was invested in the manufacture of locally grown cotton.

The links with the raw-material supply help to explain the vertical integration that for many years was characteristic of the early Venezuelan textile industry. Typically, the Venezuelan cotton mill grew much of its raw cotton on its own farms, processed the cotton in its own gins and went on with the spinning, weaving and finishing of the product in one and the same plant.[25]

A decade and a half of continued expansion, 1915—1930

The newly established cotton industry throve during the war. The markets of the textile mills were favorable. Prices rose abroad as well as in Venezuela itself, and foreign products were in scarce supply.

[23] See the detailed study by Clark (1911:IV:113—5).

[24] Gómez seems to have been personally interested in the welfare — or profitability — of the cotton industry. Besides raising the tariffs on textiles, his government promoted the domestic cultivation of cotton with the goal of assuring an adequate supply for the cotton mills. Later on Gómez built a mill of his own at Maracay, his favorite place of residence (cf. note 31).

[25] See Romero & Zealand, 435. For a description of the highly integrated Telares de Carabobo, see Bell, 263 (summarized below in note 33).

Domestic production underwent a period of rapid growth.[26] Some years the mills had to import raw cotton, when domestic harvests failed to meet the demand.[27] Companies made large profits, but because of the wartime shortage of textile machinery, new investments often had to be delayed until after the armistice.

Growing foreign competition after the war — resulting in a temporary crisis[28] — was soon met by the Gómez government with a series of tariff increases.[29] This higher protection barrier helped the industry's further development. In addition, the domestic market for textiles increased rapidly during the prosperous twenties when the country enjoyed export booms in coffee and, above all, petroleum.

More cotton textile enterprises were founded in the early 1920's. Two spinning and weaving mills were erected in suburbs of Caracas — Palo Grande and San Martín. After a merger in 1928, the San Martín machinery was moved to the other mill.[30] The dictator Juan Vicente Gómez built a factory for himself in Maracay, installing 300 looms there.[31] Other

[26] One example: the production of Telares de Caracas y Valencia rose from 9,000 pieces of fabric (of 50 meters' length) and 2,500 dozen undershirts in 1911 to 14,000 pieces and 5,000 dozen in 1920 (Vila 1967a:274). Consumption of ginned cotton had increased by the end of the war to 43,000 *quintales* or hundredweight (approximately 1,950 metric tons) in the four largest mills: 21,000 (950 tons) in the two mills of Telares de Caracas y Valencia, 14,000 (640 tons) in Telares de Carabobo and 8,000 (360 tons) in the Cumaná mill (see Beaumont 1921:15, Bell, 115 and Bürger 1922:195).

[27] As was the case in 1916 and 1917 when locusts had largely destroyed the domestic crops, and again in 1923 and 1924 (*The Cotton-Growing Countries*, 1922: 133 and 1926:266).

[28] In Maracaibo a cotton-knitting mill, founded probably before World War I with a share capital of Bs 1.75 million, was in liquidation by 1920, a year of over-supply of cotton goods in Venezuela (Bell, 211, 221).

[29] Lairet, 88 and USTC 1948:8.

[30] The Palo Grande enterprise was established as early as 1916 (Lairet, 87). The incorporated company, Telares de Palo Grande, was formed in 1920 with a share capital of Bs 4 million. A small knitting mill, making undershirts, was purchased (Beaumont, 15). The installation of a large new mill was completed in 1924 (Vila 1967a:274). This year also the San Martín mill was finished.

[31] Veloz Goiticoa 1924:94. Production started in 1924 (Vila 1966b:221). One of Gómez' reasons may have been to earn money on the manufacture of cotton cloth for uniforms, still a major product in the early fifties. The army was greatly expanded by Gómez. The mill was built with government materials and labor.

new mills were contemplated but did not materialize.[32] Enlargements were made at the existing plants of Telares de Carabobo and Telares de Caracas y Valencia.[33] Thanks to the developments in Valencia and Maracay, the Lake Valencia region, i.e. the states of Carabobo and Aragua, the country's main cotton-growing area, became by far the leading cotton manufacturing region as well.

In addition to this expansion, a small cotton-knitting industry grew up during the twenties, independent of the spinning and weaving mills. From the early thirties, five knitting mills were reported, one in Valencia and four in Caracas.[34] They were protected by a tariff against imported goods. A start was also made in the non-cotton fiber industries. Small silk and rayon-weaving mills existed in Caracas and its surroundings by 1930.[35]

Thanks to the development induced by the high tariff wall in the first three decades of this century, the cotton textile industry had achieved a position of considerable importance in the national economy by 1930.

It was favored in other ways, too, and the Valencia cotton industry had to fight unfair competition (Rourke 1937:262). Upon Gómez' death, the mill reverted to the state as one of the "Bienes restituídos" (Restored Properties). See further note 71.

[32] For a planned mill at San Felipe, Yaracuy, a company was formed (Beaumont, 15).

[33] Telares de Carabobo in Valencia was the core of a large industrial conglomerate, managed by six brothers Branger. They had received their industrial education and training in the United States. By the early 1920's their enterprises were said to be the country's largest industrial concern, employing some seven hundred persons and involving a capital of Bs 20 million. The spinning and weaving mill, largest in Venezuela for three decades or more, was integrated with cotton gins, a dye plant, a knitting plant and a large oil mill, extracting cotton seed oil. The machinery was mostly of British make. The enterprises, located in Valencia and its vicinity, also included a tannery, a sawmill (at La Victoria), lime-kilns, an electric power plant and transport undertakings. The brothers also owned extensive ranches, where in addition to the main business of cattle-raising, cotton was grown for the mill (Bell, 263—4). The textile mill was transformed by new management in 1929 (C. A. Sucesora de Ernesto L. Branger). In the mid-1950's the company went into the man-made fiber branches, founding in Valencia a joint venture with the American corporation Burlington Industries (see note 76).

[34] Kirwin 1932:29—30. The Caracas manufacture of hosiery is said to have started in 1924 (Wythe *et al.* 1953:121).

[35] Toledo de Salas 1965:9. The few attempts to establish a silk industry had no success (Kirwin, 29).

Table 4.2 *Census Data (and Estimates) for Spinning and Weaving Mills, 1936*

	Federal[a] District	Aragua[b]		Carabobo[a]	Total[c], estimate
		Oct.—Dec., actual data	Whole year estimates		
A. Enterprises	4	1	1	3	8
B. Employees	963	540	540	1623	3126
— of whom:					
women	669	255	255	947	1871
foreigners	9	12	12	8	29
C. Capital	9650	2300	2300	8915	20865
D. Machinery value	6724	800	800	4236	11760
E. Sales	4521	532	2128	5882	12531
F. Profits	962	98	392	1212	2566
G. Raw material and fuel cost	1855	171	684	1691	4230
H. Wages and salaries	1380[d]	238	952	2759	5091
I. Value added	2666	361	1444	4191	8301

a An enterprise in the Federal District owned two mills, one of which was located in Valencia, Carabobo (see main text). As data for the two mills were probably not reported separately, the figures for the Federal District may be exggerated and those of Carabobo correspondingly underrated.

b Concerns the state mill in Maracay. The whole-year estimates for variables E—I are the actual figures reported for the fourth quarter multiplied by four. Sales of the mill, in 1936 estimated to Bs 2.1 million, reached Bs 2.4, 3.0 and 3.6 million in 1938, 1939 and 1940 respectively (see Lairet 1945:95). In the early forties its subscribed capital was Bs 3.5 million (*ibid.*, 108).

c The 1936 census failed to count the cotton mill at Cumaná, probably because of a general omission of enterprises, whose operations had been discontinued (see further, the appendix). On the other hand, 14 "mills" in the state of Mérida were included in the census. They were omitted in this table as they were obviously of the one-family, handloom type. According to the census returns, they had no employees and no machinery of declared value.

d Includes wages to operatives only. The salaries to the 20 salaried employees must have been small, however, compared with the wages. They were probably less than Bs 100,000.

General note: C—I are in thousands of bolivars. The production cost (not listed) could be derived from E minus F or I minus F plus G. I minus F minus H equals "general costs" (in the case of the Federal District, including salaries).

Sources: *Censo industrial — Distrito Federal 1936*, Caracas 1937, p. 16—22, 133; *Censos industrial, comercial y empresas que prestan servicios 1936 — Estado Aragua*, Caracas 1938, p. 267—274; *do. — Estado Carabobo*, Caracas 1939, p. 10—16.

It was the leading factory industry in terms of employment. The country's seven major spinning and weaving mills[36] employed some three thousand persons and represented a total subscribed capital of around Bs 20 million. They produced 2,000—2,500 tons of finished products with a market value of Bs 10—15 million (compare table 4.2).[37] Domestic production was challenging imports as the principal source of domestic consumption. During the final years of World War I, Venezuelan mills already provided half the country's requirements of common rough cloth.[38] They probably maintained their market shares during the twenties.[39] Admittedly imports rose again on an average (although fluctuating greatly from year to year) but, for the reasons indicated above, the Venezuelan market probably

[36] Namely the following enterprises: C. A. Suc. de Ernesto L. Branger (in Valencia), C. A. Telares de Caracas y Valencia (two mills), C. A. Telares de Palo Grande (Caracas), C. A. Telares de Catia (Caracas), Telares de Maracay and C. A. Telares e Hilanderías Orientales (Cumaná). In the whole textile industry, including smaller establishments for knitting and non-cotton manufacturing, there were fifteen mills by 1931, accounting for an estimated 90 per cent of the country's total textile production (Wythe *et al.*, 121). They operated 2,469 looms and 234 knitting machines (*idem*) and were said to have represented an invested capital of US$ 10 million, i.e. more than Bs 50 million (Dean 1931:31). The remaining 10 per cent of Venezuela's textile production was accounted for by small shops, best described as craft industry.

[37] Unfortunately continuous statistics for the industry are wholly lacking right up to the late thirties. The estimates given in the text are based on the 1936 economic census results (table 4.2). Presumably, the industry's activities were as high, maybe higher, in the late 1920's as in 1936. An official report from the early twenties gives inflated figures for the capital involved, Bs 25 million, and for mill consumption of ginned cotton, around 100,000 hundredweight or 4,500 metric tons (Veloz Goiticoa, 93—94).

The 1930 mill consumption was estimated at some 2,700 tons (Lairet, 109). With a reduction of 20 per cent for carding and spinning losses, which in Venezuela were larger than the normal 10 to 15 per cent due to the irregular fiber length of the domestic cotton (see USTC 1949b:33 and Lairet, 95, 112), the output would amount to 2,200 tons. To this should be added the mills' (unknown) processing of imported semi-manufactures.

[38] Bell, 115.

[39] In the early thirties the domestic mills could supply all the demand of the cheaper drills thanks to increased import protection. For the same reason their share for blankets was also able to increase sharply (Kirwin 1932:17). Cotton-yarn imports practically ceased in 1932 as a consequence of increased duties. Domestic yarn production grew only modestly, however (*International Cotton Bulletin*, April 1933:322).

increased as fast.[40] In fact by 1928 the knitting industry supplied nearly the whole domestic market with its chief product, ordinary underwear. Most of this probably came from the integrated cotton mills.[41]

Even in a Latin American perspective, this initial evolution of the Venezuelan cotton manufacturing industry stands out as relatively unusual. The amount of textile machinery installed by the end of the 1920's was larger in Venezuela than in any other Latin American country of comparable population size, although it lagged far behind the textile giants of Brazil and Mexico (see tables 4.5 and 4.6). The relatively advanced position of the Venezuelan textile industry of the time is further underlined by foreign trade statistics. In Venezuela the import of textile goods accounted for a smaller share of total imports than in most other countries in Latin America (see table 4.3).

[40] The 1913—1953 import of cotton cloth was according to *Anuario Estadístico* (1938:204, 1940:317, 1943:468—9, 1953:454—7):

Annual data

	1913	14	15	16	17	18	19	20	21	22	23	24	25	26
tons	2054	3076	3089	4681	3155	1651	3447	6581	716	1276	2857	3510	4304	3756

	1927	28	29	30	31	32	33	34	35	36	37	38	39	40
tons	2907	3303	4736	3165	2661	2400	2636	2709	3505	4664	5629	3490	4157	4839

	1941	42	43	44	45	46	47	48	49	50	51	52	53
tons	3142	2541	2887	2562	4068	3974	5743	7107	3716	2921	4273	4042	4460

Yearly averages

	1915—9	1920—4	1925—9	1930—4	1935—9	1940—4	1945—9	1950—3
tons	3205	2988	3801	2716	4288	3194	4922	3924
Bs million	20.7	28.9	31.7	15.5	15.5	17.4	52.3	42.2

Up to the 1950's cotton cloth constituted the bulk of the textile import, often two-thirds or more. Other items, such as yarns, sewing thread, knitwear and, outside the cotton sector, silk and woollen cloth accounted for an insignificant share. More than half the pre-1940 cotton cloth import normally came from England. In addition to the legal foreign trade, a considerable contraband import of textiles — estimated by some sources to correspond to an additional 25 per cent — occurred in the interwar period as well as after World War II.

[41] The production of men's underwear was 150,000 dozen units in 1928 or 95 per cent of the internal market demand (Wythe *et al.*, 121). The 1928 import of cotton underwear was small, some 15 tons with a value of Bs 280,000 (*Estadística Mercantil y Marítima 1928*). For a long time the main knitwear item in the imports was cotton hosiery (see note 44).

The low level of textile imports into Venezuela may be explained in part by factors other than a relatively large domestic production: for instance, greater Venezuelan dependence on the import of food and non-textile light-industry products, a larger import of dispensable consumer goods as well as of intermediate and capital goods, a large illegal import of textiles and a small per capita demand, especially for woollen textiles.

Table 4.3 *Imports of Textile Manufactures*[a] *in Relation to Total Imports, 1935* (per cent)

Brazil	3.5	Peru	17.0	Cuba	25.6
Uruguay	4.0	Ecuador	17.4	Colombia	25.9
Mexico (1931)	8.5	Chile	17.5	Haiti	30.4
Venezuela (1933)	10.5	Argentina	24.7	Paraguay (1932)	31.4

a Including knitted goods but excluding wearing apparel. By value.

Source: Data extracted from *L'industrie textile dans le monde*, vol. 2, Genève 1937, p. 11.

It is significant that the low import share for textiles was reached as a result of a development which occurred chiefly in the twenties. In 1909 the share was a good third. It was over a quarter until the beginning of the twenties. But in the second half of the twenties, in 1933 (see table 4.3) and in the late thirties it only amounted to around 10 per cent.[42] However, the rapid relative reduction of the textile sector's import — in absolute terms more or less on the same level — was primarily due to the increased diversification and sophistication of the greatly expanded total of Venezuelan imports 1915—1930.

The 1930's — a decade of decline

The notable advancements in the first three decades of this century were brought to a halt in the early thirties. The following quarter-century witnessed a series of vicissitudes. Years of growth resulting from restrictions on imported goods were succeeded by periods of stagnation or recession. This cyclical development deviates from the vigorous growth

[42] See Dalton, 274, Bell, 362—6, Dean, 41 and *Estadística Mercantil y Marítima*. The share of total imports remained at about 10 per cent in the forties but fell to around 5 per cent in the fifties.

in many Latin American countries at this time (see table 4.5). In Venezuela, strong and steady growth did not come until the late fifties.

Especially remarkable is the development of the thirties, which, contrary to the contemporary trend in the rest of Latin America, saw a setback in the cotton manufacturing industry. Venezuelan industry was working below capacity throughout the decade.[43] The spinning and weaving mills were probably producing on an even smaller scale at the end of the thirties than at the beginning (see table 4.1) with manufactures still confined to the cheaper types of fabrics (chiefly drills) or poorer quality cloth in comparison with the imported products. The small knitting sector, on the other hand, seems to have continued to grow.[44]

From year to year the spinning and weaving industry experienced a series of ups and downs. During the period 1931—1934, mill consumption of ginned cotton was about 20 per cent below — and in 1935—1937 on a par with — the 1930 level. It fell back again in 1938, but started on an upswing in the following years (see table 4.1).[45] Recovery from the Great Depression in the mid-thirties was temporary only, but seems to have lured a few new enterprises to start up.[46] In 1937 the domestic mills

[43] Lairet, 57—58, 88. In fact the total subscribed capital stock in textile corporations in the Federal District decreased in the thirties by Bs 4.2 million altogether, after a substantial increase of Bs 12.2 million in the twenties (BCV, *Memoria* 1958, table D-1).

[44] Thanks to enlargements and new mill installations (for examples, see note 46) the knitting industry had a comparatively modern set of machinery by the end of the thirties (Lairet, 96). The decline in the import of cotton knitwear after 1930 (and 1933), in particular of hosiery, indicates some growth in local production, presumably under increased protection. From 1928 to 1938 the import of cotton hosiery was reduced from 128 tons (valued at Bs 2,163,000) to 20 tons (Bs 362,000). The import of cotton underwear, small already by 1928 (cf. note 41), was a meager 4.5 tons (Bs 60,000) in 1938 (*Estadística Mercantil y Marítima* various issues).

[45] The 1930 level was some 2,700 tons, the 1931—1934 level 2,200—2,300 tons and the 1935—1937 level 2,700—2,800 tons per year according to Lairet (p. 109, the diagram). These estimates correspond fairly well with data given in other sources (see *International Cotton Bulletin*, e.g. April 1933:322, 336—7; Oct. 1935:24 and July 1939:428). In the second half of the twenties Venezuelan cotton fiber consumption seems to have been on the level of 3,000—3,500 tons per annum (*ibid.*, April 1925:637, Jan. 1932:184 and Oct. 1934:30; see also Dean, 22).

[46] On the whole, there seems to have been few new factory establishments or expansions during the thirties. In 1932 in Valencia, an industrialist of the Degwitz family, who owned one of the country's largest hat factories founded in 1887 (Posada Callejas, 303), installed several spinning and weaving machines in addition to a knitting mill erected in the twenties. This firm was later transformed into a corporate textile enterprise, C. A. Tejinac (Pérez P. & Castillo B.,

were again pushed back by overriding competition from abroad, now notably including Japan.[47]

The setbacks were related to developments in the currency situation. The immediate cause of the over-supply of foreign textiles in 1938 was the revaluation of the Venezuelan currency in April 1937 from 3.93 to 3.19 bolivars to the US dollar.[48] This measure was imposed to adjust to a market on which a growing supply of petroleum dollars was stemming from the heavy expansion in oil prospecting.[49] As a result the bolivar's value in foreign currencies returned to the high level of mid-1934.

The mid-1934 level in its turn was the culmination of a rapid and continuous appreciation, which in two years more than doubled the bolivar's dollar value.[50] However, high tariff increases on imported manufactures were imposed in 1933 and 1934, more or less compensating for this appreciation.[51] As a result, duties on leading yarn and piece goods doubled or more than doubled in the period 1931—1936 (see table 4.4). By 1937 the government's collected duties on imported textiles amounted to about 125 per cent of the value of imported textiles before duties.[52]

Regardless of other restrictions, tariff protection in Venezuela was among the highest in Latin America already in the early thirties and even more markedly so by 1936. This applied particularly to yarns. For fabrics, protection was slightly lower in 1936 in Venezuela than it was in Brazil and Chile. Thus, it is evident that Venezuela followed the same course as most other countries in Latin America, sharply raising its import duties

15). In 1934 one more Valencia mill was founded, Manufacturas Karam. The following year a small company was formed in Caracas, Textil Venezolana (Lairet, 87). Two knitting mills, rather large in the mid-sixties, were established (or reorganized) in 1937 and 1939 in two Caracas suburbs: Medias Cometa (hosiery) in Petare and Tejidos de Punto Tip-Top in San Martín.

47 In 1937, after a continuous rise for five years, the import of cotton cloth reached its highest level since 1920 (see note 40). Lairet (p. 99) estimates the (total?) import of cotton textiles at 8,500 tons and the domestic production at about 3,000 tons, which would imply a self-sufficiency rate — in this untypical year — of only one-quarter. In 1938 this rate could be estimated at one-third (for the thirties a more normal figure).

48 Lairet, 88, Luzardo 1957:23 and (for currency rates) Castillo 1939:348, 374.

49 Lieuwen 1955:63, 68, 84.

50 From a low-water mark of 7.75 in August 1932, the bolivar was appreciated to the extreme of 3.04 per US dollar in August, 1934 (Castillo, 364—9).

51 USTC 1948:8.

52 Lairet, 99. Another source (USTC 1948:7) states that the 1937 rates of duties on textiles averaged 93 per cent *ad valorem* (on cotton drill 145 per cent in 1939).

Table 4.4 *Tariff Duties on Cotton Manufactures in Some Latin American Countries, 1929 and 1936* (pence per lb.)

	Bleached yarns[a]		*Plain piece goods*					
			Unbleached		*Bleached*		*Printed*[b]	
	1929	1936	1929	1936	1929	1936	1929	1936
Argentina	0.9	2.2 E	3.8	4.0 E	8.8	5.6 E	9.9	6.2 E
Brazil	9.2	7.6 E	20.2	34.8 E	20.2	34.8 E	26.9	38.2 E
Chile					10.2	25.2 E	16.8	44.1 E
Colombia	2.9	2.6 E	8.1	7.6 E	11.9	7.6 E	15.0	9.8 E
Venezuela[c]	8.0	32.4	14.0	27.9	9.6	23.0	20.0	40.3

E=Exchange restriction (for importers of textiles)

a The duties on grey yarns were at both times the same as on bleached yarns in Venezuela and slightly lower in the other countries.

b Dyed piece goods had roughly the same duty structure as printed, both in 1929 and 1936.

c 1931 instead of 1929, invariably.

Source: *L'industrie textile dans le monde*, vol. 2, Genève 1937, p. 117—8.

in the first half of the thirties. However, in Venezuela this development was counterbalanced by the appreciation in the currency and continued free imports, whereas the rest of Latin America not only increased their tariffs but also devalued their currencies and imposed restrictions on imports.

The impetus provided by the increased tariff protection thus differed considerably in strength between Venezuela on the one hand and most other Latin American countries on the other.

The 1937 appreciation had the same effect on imports as a lowering of tariffs. As no compensating tariff increase was enacted this time, the import of foreign textiles increased rapidly, as we have seen. In 1938 the Venezuelan cotton manufacturers, facing a crisis, called for assistance from the López Contreras government, and a special commission was set up.[53] On the basis of its recommendations the government undertook a

[53] For a description of the profound crisis in the textile industry in 1938, see Lairet (p. 88—90). Factors internal to the industry contributed to the crises: obsolete machinery, maladministration, poor financial reserves, lack of skilled workers and the inferior quality of the domestic cotton fiber (which was of a low-grade short staple type). In many mills production was cut back, wages were cut, and workers dismissed. Private mills complained not only about foreign competition but also about contraband trade and competition from the state mill at Maracay (Luzardo 1963:77).

series of measures late in 1938, which saved the industry. For the first time an import quota system was instituted, valid at first for half a year but subsequently renewed several times. It stipulated the maximum quantities to be imported for the main classes of locally produced textiles. Import duties were also raised. In return, cotton manufacturers had to pledge to improve the efficiency of their mills, as well as not to sell their products above the maximum prices stipulated. Parallel to its protection policy, the government launched a campaign to foster the domestic cultivation of cotton.[54]

World War II and its aftermath — a growth which faded out

Thanks to the measures described earlier, the cotton industry entered a period of expansion which was later (mainly from 1941) reinforced by the considerable stimulus provided by the wartime decline in foreign competition. From 1938 to 1942 mill consumption of ginned cotton almost doubled (see table 4.1). The number employed in the spinning and weaving mills increased by nearly three-quarters to about 4,000. Several enterprises were revived financially but, on the whole, there was little replacement of old machinery and few enlargements were made.[55]

From 1943, however, the activities of the industry stagnated, remaining at more or less the same level for some years until a new peak was reached in 1947 (see table 4.1). Apparently the industry could not take full advantage of the wartime absence of foreign competition. There were several reasons for this. The previous production increase had occurred largely with the same production structure and with old machinery. The much needed modernization had not taken place. By 1943 the mills were producing at full capacity.[56] They turned out the traditional coarse fabrics of low-count yarn (drills, *liencillos* and *crehuelas*).[57] In 1943, however, the market for these products was saturated, whereas lighter and finer goods were in great demand.[58] To raise capacity by adding new machinery

[54] The government measures also included direct assistance to the industry, such as loans on favorable terms (Luzardo 1963:77).

[55] A few mills were able to get some North American machines before supplies were cut off (Romero & Zealand, 435). At least one new cotton mill was installed during the period 1940—1942, in addition to a silk weaving company and one or two woollen mills (Muller-Karger 1948:6—9, USTC 1949b:32—33).

[56] Some mills had instituted a second shift (USTC 1949b:32).

[57] The production of bleached goods was small, that of printed goods practically nil (*idem*).

[58] Lairet, 100—6. High price increases on local products also contributed to buyers' resistance.

was hard, because of wartime difficulties in obtaining foreign products.[59] Another constraint on the production side was the inability of domestic cotton cultivation to expand as fast as the spinning industry. Mills became increasingly dependent on imported raw cotton, in scarce supply during the later war years.[60]

After the war, textile industrialists pleaded for new quota restrictions on foreign textiles. The import of cotton piece-goods tended to rise rapidly; it more than doubled from 1944 to 1948. As the pleas for restrictive measures were disregarded by the government, the industry was drawn into a deep and lengthy crisis, beginning in 1948. This year the production of cotton cloth was only slightly lower than it had been in the record year, 1943. In two years it dropped to less than half (see table 4.1). The 1948 level was not surpassed until the late fifties. Measures later adopted by the government, such as the quota restrictions introduced late in 1948, proved to be inadequate, and although imports were radically reduced, the measures were without any significant effect on domestic production.

This decline may, however, have been the result of increasing competition from domestically produced rayons rather than of competition from imported cotton goods. A marked shift in consumer preferences, particularly in the case of women's wearing apparel, led to big increases in the consumption of rayon fabrics after 1948, while the demand for cotton fell off drastically.[61] Some of the mills which handled both cotton and rayon converted to rayon exclusively.[62] A production advantage for the

[59] By 1945 practically all cotton mills had obsolete machinery (Luzardo 1957:23). Out of 24 textile establishments, 8 were substantial cotton mills, operating 40,000 spindles (Romero & Zealand, 435). Industrialists were more interested in using the high profits earned during the war for high dividends than for improvements (Lairet, 112; Pérez P. & Castillo B., 16).

[60] In 1940—1942 imported raw cotton accounted for about one-fifth of the industry's supply, but between 35 and 55 per cent in 1945—1952 (*AE* 1955/56:263). Before and after the war most of the cotton import came from the United States. Because of wartime restriction on US cotton exports, Venezuelan mills had to turn to Latin American sources during the war. In 1940—1942 Peru, and in 1943 Argentina, was the principal supplier (USTC 1949a:27).

[61] See calculations of consumption and the share of domestic industry for 1948—1963 (ECLA 1965 mimeo, 45—50). Dependence on import for cotton fabrics remained at the high level or about 60 per cent in 1948—1954. Later it was radically reduced; it fell from about 50 per cent in 1958 to about 20 per cent in 1963.

[62] While the production of cotton cloth decreased from 20.9 to 11.0 million meters in 1948—1951, that of rayon cloth rose from 3.3 to 19.9 million meters (*AE* 1955/56:236—7).

rayon mills was that their weaving and finishing machinery was newer and more efficient on the whole than that of the cotton mills.

The 1950's — looming and elusive growth

The crisis in the cotton industry during the late forties was not fully overcome until the end of the fifties. Measures adopted to protect and stimulate the industry were invariably too weak and incomplete. The unsuccessful cotton textile policy of that period may be partly explained by too close a reliance on the recommendations of "mixed" commissions, which were appointed on several occasions to find solutions to the textile crises. Opposing interests were represented on these commissions (manufacturers, importers, wholesale merchants and others) and their recommendations turned out to be half-hearted compromises.[63]

In 1954 the quota system was abolished. Instead, the import duties on several products were raised substantially, particularly on coarse fabrics, which were traditional products of the Venezuelan industry. Domestic production was stimulated (see table 4.1) but growth was by no means as fast as expected.[64] The rising prices of local products contributed to a marked shift in domestic consumption towards imported, finer and lighter products, on which the duty was lower.[65]

[63] ECLA 1965 mimeo, 54.

[64] The production of drills, *liencillos* (rough unbleached calico) and unspecified cotton cloth, the industry's main products, remained low and stayed under the record levels reached in 1942, 1943 and 1946 respectively up to 1959 (except that the records were temporarily surpassed in 1953 and 1955 in the case of liencillos). On the other hand, the production of mixed cotton and rayon fabrics, of certain cotton piece-goods (particularly bedspreads and towels), and of general cotton-knit goods, increased rapidly from 1951, or from 1954, to 1958 (*AE* 1957/63:598—603; for a detailed account of the postwar development of textile production by products, see Carrillo Batalla 1962:91—106). Thus, there was a diversification to non-traditional products.

It should also be noted that in the fifties many cotton mills at last started a long overdue modernization. Outmoded equipment, some of it forty to fifty years old, was replaced and production techniques were improved (Wythe *et al.*, 122 fn, Maby, 185, USDC 1958:10). As a result, an excess of mill capacity was created — a few new factories were also established — and production could be maintained with a considerably smaller labor force. However, in 1958 some 15—20 per cent of the cotton spindles and loom machinery were still classified as inadequate or obsolete, and doomed to be replaced (MF, *Memoria 1963*, Appendix table, Industrias III-12). The number of non-automatic cotton looms was drastically reduced: from a peak of 3,086 in early 1956 (*UNSY 1956*), it fell to 462 in 1962 (compare table 4.6).

[65] Pérez P. & Castillo B., 17, Montiel Ortega 1967:158.

Cotton Textile Industry

In 1958, the new government that succeeded the Pérez Jiménez dictatorship launched a program of intensive encouragement with self-sufficiency for cotton textiles as its goal. The tariff wall was more or less doubled and, in subsequent tariff revisions, was extended to several new products, which had received little protection before. In addition, the industry was given extensive technical and financial assistance through the governmental bodies of Ministerio de Fomento and Corporación Venezolana de Fomento. As a result, the industry experienced a period of very rapid growth, beginning in 1959. In four years, between 1958 and 1962, the number of spindles and the output of fabrics more than doubled (table 4.1). Expansion continued through 1970.

The Venezuelan Development Pattern Reconsidered in the Latin American Context

In order to have a base for a comparison between the early development of the cotton industry in Venezuela and the corresponding development in the rest of Latin America, data regarding cotton spindles and loom machinery in the different countries were collected and are presented in tables 4.5 and 4.6. The tables show great differences between the countries. Two opposing patterns of development can be discerned: rapid development in the early 1900's with a slowing down in the interwar period, or a delayed development until the thirties and then a sudden development for two or three decades. The reasons for the differences are manifold; here only a few will be indicated.[66]

The different times at which tariff protection was introduced are important in explaining the rapid or delayed development of the early textile industry in the Latin American countries.[67] In Mexico and Brazil,

[66] For global studies dealing with the early cotton textile industry in Latin America, see e.g. Clark (1909—1911), Scott, Blanchard & Jacobs (1944), Wythe (1945), Romero & Zealand (1946), and Cobos (1953). An outstanding country study is that of Brazil by Stein (1957), although completely lacking in location aspects. An equivalent work on Mexico is still lacking (on nineteenth century development, see Carden 1898; on locational developments, see sources given in note 77). The evolution and geography of the important textile industry of the Medellín area in Colombia are splendidly summarized by Parsons (1968).

[67] On the issue of tariff protection it has been stated that "the cotton textile industry in all Latin America has been developed under the protection of tariffs and other governmental devices. It is doubtful whether a factory textile industry could have developed otherwise" (Scott *et al.* 1944:7).

Table 4.5 *The Evolution of Cotton Spindles in Principal Latin American Countries* (thousands)

	c. 1910	c. 1919	1928	1932	1939	1950	1958	1965	1970
Brazil	1000	1501	2610	2690	2765	3284	3474	3600	3588
Mexico	726	762[a]	840	830	884	986	1175	1647	2704
Argentina	9	20	...	43	329	512	984	1050	1070
Colombia	20	25	39	40	105	307	420	600	649
Chile	5	5	...	...	33	171	208	290	403
Venezuela	11	19[b]	49	47	42	60	98	286	287
Peru	52	68[c]	...	86	118	123	207	230	265
Cuba	—	—	—	—	...	...	...	140	237
Uruguay	—	—	—	—	—	...	89	167	180
El Salvador	—	—	...	...	14	49	73	110	127
Ecuador	5	...	...	40	42	48	87	125	116

a 1913 b 1915 c 1917

Note: The 1932—1970 figures refer to the raw cotton spindles installed, active and idle, and exclude waste or doubling spindles. Both ring and mule spindles are included, as, from 1950, small quantities of spindles spinning rayon and/or nylon staple all or part of the time. Mule spindles, however, have always played a very limited role in Latin America. From the mid-1950's none have been reported for the countries shown above, with the exception of a few in Brazil.

Sources: The c. 1910 data were taken from Clark, *Cotton Goods in Latin America*, Part IV, p. 118, the c. 1919 data from *Cotton Yearbook 1922* (London), p. 666, and the 1928 data from *L'industrie textile dans le monde* (Genève 1937) and Wythe, *Industry in Latin America* (New York 1949).

The 1932—1970 data are from the International Cotton Spindle Censuses, taken semi-annually during the period 1923—1939, and from 1950 onwards, by the International Federation of Master Cotton Spinners' and Manufacturers' Associations (Manchester, England), which from 1955 was renamed the International Federation of Cotton and Allied Textile Industries (from 1963, Zürich, Switzerland). This is presumably the most reliable statistical source in the field. Up to 1958 the census returns were published by the Federation in its quarterly *International Cotton Bulletin* (Manchester), which from 1955 was renamed the *International Review of Cotton and Allied Textile Industries*. From 1958 they were published in a new publication issued by the Federation, the yearly *International Cotton Industry Statistics*. The returns for 1950—1968 were reproduced in issues of the *Statistical Yearbook* (United Nations).

cotton manufacturing was helped by protective duties quite early in the nineteenth century and by 1910 had made remarkable progress. More specifically, Mexico's industry underwent periods of substantial growth in the 1830's and 1840's, following a highly favorable law in 1830; it moved forward again from 1880 up to World War I, and finally, again during the 1960's. The Brazilian expansion period *par excellence* was from the mid-1880's to the mid-1920's, with a revival during and immediately after World War II. On a lesser scale the cotton textile industry in Peru and Ecuador, also helped early by protective measures, had a rather rapid and continuous development from the 1890's to the mid-1930's, and again from the 1950's onwards. In Venezuela the development pattern is similar to the Peruvian. Here cotton manufacturing went through a period of rather strong growth from about 1910 to 1930; the growth collapsed in the 1930's, however, and did not get up any real speed again until the 1960's when effectively high tariffs were introduced.

Other countries followed a reverse pattern. Argentina, Colombia, Chile and Uruguay adhered longer to the principles of free trade for the textile sector, and consequently were embarking on textile manufacture at a later time. The initial growth phase started for Argentina and Colombia in the early thirties, and for Chile and Uruguay in the early forties. In all these countries except Chile, growth almost came to a standstill in the late sixties.

Other circumstances as well as the tariffs were also important. Extensive markets for cotton cloth, and convenient water power, contributed to the substantial early progress in Mexico and Brazil. Traditions from craft spinning and weaving played an additional major role, not least in Mexico. Tradition also explains an early factory start in nineteenth century Peru and Ecuador. In all Latin American countries growth was favored by an adequate supply of native-grown cotton, except in Cuba, Uruguay and, above all, in Chile, which always had to import practically all its requirements.

Historically, factory cotton weaving expanded before spinning, and much yarn was imported into Latin America. In Venezuela the two branches were more closely integrated and had a more parallel development. This explains why Venezuela has traditionally ranked higher in terms of spindles than in terms of looms.

Table 4.6 *The Evolution of Cotton Power Looms in Selected Latin American Countries* (hundreds)

T=the total of ordinary and automatic looms installed, active and idle, in establishments primarily engaged in cotton manufacturing.

A=automatic looms only (including semi-automatic ones and looms with automatic attachments).

		c. 1910	1930	1936	1952	1958	1965	1970
Brazil	T	350	779	809	1001	1194	930	800
	A	...	26	67	300	458	340	350
Mexico	T	253	314	299	341	386	419	491
	A	...	8	8	75	159	279	370
Argentina	T	12	15	36	142	194	222	196
	A	...	1	20	91	144	162	176
Colombia	T	3	37	23	64	97	120	128
	A	...	11	5	18	92	120	127
Chile	T	4	4	13	50	55	64	84
	A	—	—	5	28	42	58	67
Peru	T	18	32	44	57	70	59	67
	A	—	—	12	17	30	49	60
Venezuela	T	3	14	17	32	38	57	53
	A	—	—	3	6	19	52	48
Cuba	T	—	—	—	25	27	40	53
	A	—	—	—	25	26	37	51
El Salvador	T	—	...	2	9	9	30	28
	A	—	—	—	—	3	18	23
Ecuador	T	2	12	12	15	21	26	27
	A	—	—	—	—	7	13	22
Uruguay	T	3	1	2	13	32	24	26
	A	—	—	1	13	17	22	25

Note: The 1930 and 1936 data for Brazil are somewhat lower than the figures given by Stein (1957:191). The 1930 data for Colombia seem to be inflated and may include wool looms.

Sources: The 1910 data, for the total number of looms only, are from Clark, *Cotton Goods in Latin America*, Part IV, p. 118. The data for 1930—1970 were derived from the International Cotton Loom Censuses taken by the International Federation of Cotton and Allied Textile Industries (for further details, see the source note of table 4.5).

Foreign Financing and Ownership

The role of foreign capital in the early development of the Latin American textile industry has varied very much from country to country. Up to World War I, French and Spanish merchants very largely controlled the large textile mills in Mexico.[68] In Peru, English and American firms long dominated cotton manufacturing.[69] In Cuba, United States textile industrialists also played a significant role. In other countries such as Brazil, Argentina, Chile and Colombia, local enterprice and ownership have predominated. North American and English manufacturers established subsidiaries in these countries too, but they were always in a minority.

In Venezuela all cotton mills before the 1940's were apparently in the hands of domestic enterprise and capital.[70] Except for the Maracay mill they were also managed privately.[71] Foreign participation was on another level: as in the rest of the continent, managers and foremen for the mills were generally brought in from older textile areas, e.g. Catalonia.[72] The Venezuelan market for textiles was too small obviously to attract foreign enterprising capital on a significant scale. Furthermore foreign interest most likely was abated as a result of the early initiatives taken by domestic manufacturers.

Machinery capital, of course, was also imported. Of the industry's total machinery at the end of World War II, an estimated 75 per cent was British, 15 per cent American and the remainder French, Swiss and Italian.[73] After the war, the mills switched largely to United States suppliers of machinery.

[68] Romero & Zealand, 436, 440—1.

[69] *Ibid.*, 427—8. The English firm was Duncan Fox & Co., the US firm W. R. Grace & Co., which also operated mills in Colombia and Chile.

[70] Compare Brito Figueroa 1966:511. Some entrepreneurs were probably immigrants or the descendants of immigrants.

However, for a case of probable foreign influence, see notes 13 and 16.

[71] The mill in Maracay, declared state property after Gómez' death in 1935, was among the few Latin American examples of government ownership in the field of textiles by the early forties (Romero & Zealand, 438). The mill was for a period managed by the state development bank CVF but was in 1954 sold to private businessmen.

[72] However, only about 30 of a total of 3,200 employees in spinning and weaving were classified as foreigners in the 1936 economic census (see table 4.2).

[73] Maby, 185. A detailed year-by-year analysis of the imports of textile machinery (*máquinas para telares*) from various countries can be made from data furnished by *Estadística Mercantil y Marítima,* issued by Ministerio de Fomento from 1920 to the late 1950's. Such an analysis should yield valuable information on the growth periods of the industry.

Manufacturing in Venezuela

The postwar period saw a new orientation in Venezuela with regard to foreign textile investors. Direct foreign investment was considerable, especially during the military dictatorship period (1948—1958). The leading light seems to have been United Merchants and Manufacturers, Inc. (New York), which participated in the rehabilitation of the cotton mill at Cumaná in the early forties.[74] By that time already operating a mill in Argentina, this company founded various Venezuelan subsidiaries later in the forties and fifties, specializing in production based on synthetic and artificial fibers. Its first subsidiary was a spinning and weaving mill completed in 1948 in Maracay and mounted to handle both cotton and rayon.[75] Several other North American companies were likewise engaged. Although most of them were interested in the production of man-made fibers, two or three enterprises in Caracas, founded in the early fifties, seem to have been working with cotton.[76]

Locational Developments: A Summary

The location pattern of the early cotton manufacturing industry developed from the centers of cotton-growing and trade: Valencia, Caracas, Cumaná and Maracaibo (see above). Proximity to the raw material coincided with proximity to the largest urban markets. As spinning and weaving mills were established after electricity had become available in the cities, waterpower sites — so important in other parts of Latin America[77] — had a very limited locational significance.

During the interwar period, proximity to the main fiber-growing area, the states of Carabobo and Aragua, was even more marked. Valencia

[74] Romero & Zealand, 435.

[75] The mill, Sudamtex de Venezuela (compare Sudamtex de Argentina, the corporation's oldest South American subsidiary), produced 40 per cent of the country's output of rayon woven fabric in the early fifties (Wythe *et al.*, 122—3). In 1952 another affiliate, Confecciones Unidas, started production of men's rayon suits in a plant at Los Teques (*idem*). A few years later two more affiliates were founded, both with plants in Maracay: Sudaseta making rayon filament yarn and Sudalon making nylon filament yarn (Maresch & Montel 1958:11, Brito Figueroa 1972:51).

[76] Maby, 185. The US company Burlington Industries, also operating in Cuba, Mexico and Colombia, participated in the mid-fifties with capital and technology in a plant associated with the Branger mill in Valencia (Maresch & Montel, 10).

[77] This was true of Mexico in particular (for studies on Mexican cotton-mill location, see Barajas Manzano 1959 and Jensen 1961).

strengthened its position as the nation's leading cotton manufacturing center. Two more mills were located there, and one of the two existing ones grew to become the largest in the country. In addition, Maracay was established as a second textile nucleus in the area. Individual circumstances also contributed to this development (compare notes 24 and 31).

The Valencia establishments in 1936 accounted for over half the country's employment in spinning and weaving mills; the Maracay mill for more than 15 per cent, and the Caracas mills for some 30 per cent (see table 4.2). After the crisis in 1938, the largest mill in Valencia (Telares Branger) alone delivered nearly half the national output of cotton textiles. Including the Maracay mill (almost 20 per cent) and the other Valencia mills (some 15—20 per cent) provincial industry accounted in the late thirties for about 80 per cent of the total cotton textile production.[78]

After World War II a sharp reverse trend took over and continued up to 1958 and beyond. The capital gained in importance at the expense of Valencia. This was particularly evident if we look at the textile industry as a whole, i.e. including man-made fibers. Several new mills were located in Caracas, some of them partly processing raw cotton. A few mills in the capital were considerably enlarged. Valencia on the other hand, had the same four cotton mills as in the mid-thirties. Measured in terms of production, Valencian industry declined even more, as some mills experienced sharp setbacks in the fifties. The only consolation in Valencia's gloomy situation in that decade was the establishment of two rayon factories.[79] Maracay finally consolidated its position as the country's third textile center. The old cotton mill doubled its spinning and weaving capacity in the early fifties and three important textile plants specializing in man-made fibers were founded in the first decade after the war.[80]

Unfortunately there are no complete data illustrating the shift in the regional distribution of the cotton manufacturing industry. A compilation of the scanty returns available indicates, however, that by the early fifties Caracas accounted for over two-fifths of the country's cotton-system spindles whilst Valencia accounted for one-third and Maracay for

[78] The proportions are based on production-related figures (see Lairet, 94). The relative figures for the mills still hold if we instead apply data on capital invested (*ibid.*, 108).

[79] Celanese de Venezuela, the subsidiary of a North American company and founded in 1952 for the production of rayon staples and Burlington y Branger (cf. note 76).

[80] The three Maracay plants were all affiliates of United Merchants and Manufacturers (see note 75).

one-quarter.[81] In the other textile branches (knitting, rayons and woollens) Caracas dominated. Of the country's 1951 output of rayon-woven fabrics, produced by eleven textile mills, Caracas accounted for six mills and 45 per cent, while one mill in Maracay produced 40 per cent.[82] The regional shift persisted throughout the decade. By the late fifties the Valencian spinning and weaving industry seems to have employed close on 2,000 persons, less than half as much as the Greater Caracas area and also considerably less than Maracay.

The change in the locational pattern of the textile industry after World War II was due to a complex of economic and other reasons, not easy to identify and distinguish. A fundamental fact, however, was that the industry became more market-oriented. Its production became more diversified, responding to the sophisticated demand of the fast developing Caracas market.

[81] Maby, 121—4, 185.

[82] The remainder, 15 per cent, was divided between another mill in Maracay and three in Valencia (Wythe *et al.*, 122—3).

5. The Food Industries. Three Cases

Food processing, along with the textile industry, has normally been the first factory industry to develop in tropical countries. In Venezuela, the food industry, including beverages, has invariably accounted for a large share of the manufacturing employment. However, for a long time, it was characterized by artisans and small-scale operations. Only during recent decades have large-scale factories developed. Until the late fifties the amount of capital invested in the food industries (except brewing) was limited. After 1958 however, it increased rapidly as the sector received a high share of the total investments in manufacturing.

To throw more light on this development, three food industries were selected for closer study. Two, meat packing and dairying, grew up essentially after World War II and one, brewing, experienced substantial growth also in the early decades of the country's petroleum era. Most space will be devoted to describing the development, structure and location of the dairy industry, which has been characterized as the most highly developed major agricultural industry in Venezuela, both at the farm and the plant level.[1]

The Meat Slaughtering and Processing Industry

Development

Cattle raising has been a major economic activity in Venezuela since early colonial times. Livestock products such as hides, cattle on the hoof and dried meat were fairly important exports in pre-oil Venezuela.

[1] Cook 1965:132.

For a time in the first three decades of this century, these exports included a non-traditional product, frozen beef, processed in a British-owned packing plant in Puerto Cabello.[2]

However, cattle raising ceased to be a source of export earnings after World War II, and the country became a net importer of meat products. In the period 1948—1950 considerable quantities of chilled beef were imported from Argentina.[3] In 1951, to protect domestic production, meat was made subject to import restrictions.[4] Presently, most meat products are subject to high protective tariffs or import licensing.

In the 1940—1955 period, meat production did not wholly match the increasing demand, although the apparent per capita meat consumption remained on the prewar level.[5] Most meat in this period came from a great number of municipal abattoirs spread over the country. Meat-processing plants were rare. They included a medium-sized plant in Maracay, established by Gómez, the dictator, in 1934, and another at San Fernando de Apure, founded in 1941.[6] Being primarily slaughterhouses with some refrigeration and canning facilities, these plants were later operated by BAP, the government's bank for agriculture and livestock-raising. A small private plant was built in Maracaibo in 1942.

A variety of obstacles, long restricted the development of cattle-raising. Important ones were adverse climatic and grazing conditions, prevalence of insect pests, parasites and diseases in the lowlands, not the least the foot and mouth disease, inadequate water supply and pasture during the long dry season and inadequate storage, processing and transportation facilities.[7] In addition, and partly as a result of the above factors, the *criollo* breed had a low meat yield per head.

However, during the last fifteen years considerable progress has been made in combating these handicaps. Native breeds have been improved

[2] The British-owned Lancashire Investment Co., which has owned a number of ranch estates in Venezuela for many years, erected a cold-storage plant, the Venezuelan Meat Products Syndicate, at Puerto Cabello in the early 1910's and until about 1930 shipped quantities of frozen beef to Great Britain (Bell 1922: 262—5; Beaumont 1921:28; Wythe *et al.*, 1953:115).

[3] MAC 1958:42, FAO 1962:86, 91—2.

[4] However, cattle has for long been constantly smuggled across the Colombian border. This clandestine import increased to considerable quantities in the late 1950's (FAO 1962:71).

[5] MAC 1958:44, FAO 1962:86. The Venezuelan per capita consumption of livestock meat was at one of the lowest levels in Latin America (*ibid.*, 89).

[6] Black 1937: 530—2, Wythe *et al.*, 115.

[7] See e.g. Black, 533—6 and FAO 1962:79—85. The problems were more or less the same in the late 1950's as twenty years earlier!

by breeding with imported Zebu (Brahma) cattle. Irrigation and domestically produced feeds have helped overcome the dry-season constraints. The foot and mouth epizootic has largely been curbed.[8] The highway net-work has been expanded into the agricultural areas of the country. A number of modern slaughterhouses and cold storage facilities have been built, largely as a result of a special program which the government launched in the mid-1960's.[9]

Beef production, which was 53,000 tons in 1940 and 71,000 tons in 1950, has lately grown rapidly. It passed 100,000 tons in 1958 and 200,000 tons in 1969.[10] Even more marked progress has been made in the production of pork and poultry. The production of lamb meat is low. Lamb was never a major Venezuelan food.

Location

In studying locational patterns, we must separate meat slaughtering from meat processing. The former activity is influenced in its location by the distribution of cattle raising, the latter is highly concentrated to the Caracas market.

Cattle-breeding areas

Llanos, the savanna plains between the mountain chains in the north and the Orinoco in the south, is the traditional cattle country of Venezuela. Three llanos states, Apure, Guárico and Barinas, accounted for around half the country's cattle in 1937 and 1950, and for one-third in 1973. This year the other llanos states, including Bolívar, accounted for an additional one-fifth. After World War II, Zulia and the Andean states have gained in importance. Zulia is now the leading cattle state with more than 20 per cent of the national total. The Andean states combined, in-

[8] See MAC, *Memoria*, various issues.

[9] The program was led by the CVF agency, which provided financial, technical and management assistance. It concerned the construction of eight large slaughter houses, most of them equipped with rendering plants: at La Fría, El Vigía, Charallave, Santa Rita, Barquisimeto, Barinas, Achaguas (Apure) and Aragua de Barcelona (CVF, *Mataderos Industriales*, 1965). The number of plants with a capacity exceeding 50 animals a day increased from 10 in 1962 to 27 ten years later. The combined capacity of such plants increased from 1,700 to 7,630 head a day (*AEA*, 1962:279 and 1972:391).

[10] Official MF statistics. This excludes *in situ* slaughter, in the 1950's estimated at 10 per cent of recorded slaughter (FAO 1962:78).

cluding Lara and Falcón, come close to Zulia in head of cattle. The north-central states, with more than a third of the population, have only a few per cent of the country's cattle.[11]

Meat-slaughtering plants

In areas with livestock raising, small ordinary slaughterhouses, public and private, are found in virtually all communities of any size. In addition, a number of large packing plants exist. In the central states, large plants dominate and the small abattoirs are few. Of a total of some 360 slaughtering plants under public health inspection in 1972, the 27 largest, those with a minimum capacity of 50 head a day, accounted for approximately 80 per cent of the 1972 meat production in the country.[12] The six largest plants, those at Santa Rita (opposite Maracaibo), Los Teques, Turmero, Macarao, Charallave, and Barquisimeto (see fig. 9), contributed half the total.

The most important locational change in recent years has been the movement away from the market towards main cattle-breeding areas. Such traditionally leading slaughtering cities as Caracas, Maracay, Puerto Cabello, and Maracaibo have lost ground to places in the interior. Presently, most slaughtering is performed at plants in small and medium-sized cities in intermediate locations between the major markets and stock-raising areas. A major reason for this change is the improvement of the highways in the provinces.

Caracas is supplied by a chain of large slaughterhouses in a southern belt of satellite towns in the Miranda state: Macarao (D.F.), Los Teques (most important), Charallave and Guarenas (important for swine slaughter). Much of the output at the Turmero plant in Aragua is also for the Caracas market. Maracay, Valencia and Barquisimeto are supplied primarily by their own plants, Maracaibo by the Santa Rita plant.[13] All the above plants except for the latter two are located in cattle-deficient states and have wide supplying areas. In the east, Puerto La Cruz has lost to Aragua de Barcelona and, in the utmost west, San Cristóbal to La Fría in slaughtering importance.

A second line of large packing plants, oriented towards the central and

[11] *AEA* 1973:457—9.

[12] Author's calculations on data by municipalities in MF's *Estadística Industrial. Beneficio de ganado*, 1972.

[13] *Idem.*

eastern markets, was established in the late 1960's and the early 1970's in small llanos towns within important cattle-breeding areas: Aragua de Barcelona, Calabozo and Tinaco.[14] In the west, the new plants at La Fría and El Vigía, both on the Pan American Highway north of the Andes, have a similar relative location vis-à-vis Maracaibo and the Andean markets.

Meat-processing plants

The meat-processing industry (poultry dressing and production of ham, bacon, sausages, etc.) is a recent phenomenon in Venezuela. In the late 1950's these activities were still performed on a small scale in small shops, engaging a total of only a few hundred people. Since 1959 the industry has been undergoing a vigorous and continuous expansion with the help of tariff protection, the government's CVF credits and foreign capital and management. [15] US capital (Oscar Mayer, Underwood) as well as British (Lancashire) and Italian (Boschi) have all participated. In addition, many US firms have their products made under license by local companies.

In 1961 some 600 were employed in meat-processing plants; in 1966 the figure was around 1,500 and at the end of 1971 more than 3,000.[16] Half the number of employees in 1971 worked in sausage plants. Production increased even more spectacularly; from 3,100 tons in 1959 to 15,700 tons in 1965 and 37,000 tons in 1973.[17]

The industry is heavily concentrated to Caracas and its suburbs, the main meat-consuming center (see map). Los Teques and vicinity and Cagua in the Aragua state are secondary centers. The two large plants at Cagua are general packing and canning plants turning out a major share of the preserved meat produced in the country. On the other hand, most of the smaller plants in Caracas, of which many are owned by Italian-named firms, are higly specialized in the production of sausages. Poultry dressing is concentrated to a region adjacent to southern Caracas, extending from Caucaguita in the east to Las Tejerías in the west.[18]

The plants to benefit first from the official assistance to expansion were

[14] *Idem.*

[15] Carnevali 1960 and Buvat Irazábal 1961.

[16] *Ibid.*, 7; Cordiplan, *II Encuesta Industrial 1966*, and MF, *Estadística Ind.*, 1971.

[17] Summation of data in *AEA* 1962:252—3; 1973:496—7. Excludes poultry.

[18] For the development of the poultry industry, very small still in the early 1950's, see e.g. Broehl jr 1968:232—241.

those located in the proximity of Caracas and in Aragua.[19] In the fifties meat processing on a small scale also existed in Maracaibo, Valencia and Barquisimeto and a few other places in the interior. These plants were still of roughly the same size in the late 1960's as they were a decade earlier.[20]

The Milk Processing Industry

A major component in the Venezuelan postwar industrial development has been the establishment of a modern milk processing industry. The rise of this industry, almost non-existent before 1937, also witnesses the rapid socio-economic and cultural transformation of the country. The increasing dietary role of milk, a product with a high income elasticity of demand in tropical countries, in Venezuela after World War II had far-reaching economic repercussions. To the agrarian sector the evolvement of dairying opened up new viable lines of production. In the mid-1960's dairy farming passed beef production, traditionally the main agricultural industry, in economic importance.[21] It also meant a certain tendency to break the traditional land-holding structure, augmenting the commercial, middle-sized farms sector between the two dominating groups of the *latifundios* and the subsistence *conuco*-plots. The rapidly evolved milk-processing industry, the development of which was greatly influenced by government action, assumed a structure and location pattern which, by international comparison, is unique. This will be presented below.

Development

Historically, herding cattle for dairy farming was secondary to beef-ranching in Venezuela. The tropical climate and inadequate transport and marketing facilities militated against the development of commercial dairying, which for a long time was quite a rare activity. Milk consumption,

[19] Buvat Irazábal, 2.

[20] *Estad. Ind.*, 1971.

[21] See BCV, *Informe Económico* 1969:A—136. In the mid-1960's an estimated 60,000 farmers gained their livelihood from milk production (Montiel Ortega 1967:45).

and butter consumption, were both minimal.[22] Uncured cheese, being less perishable and more easily transportable, was traditionally the chief commercial domestic dairy product in Venezuela as in other tropical countries.[23] After World War I cheap North American powdered milk came increasingly into use; in the late 1930's imported milk powder provided most of the country's milk requirements.[24]

The making of cheese and — much less important — of crude butter, were farm activities, and hence ubiquitous in their geographical distribution. They were particularly noticeable in Zulia, Lara and the llanos states.[25]

Factory-based dairy industry dates back to 1915, when the country's first butter and cheese factory was completed at Maracay. It was owned by Gómez, the dictator. It was built in his favorite town, equipped with complete machinery (e.g. for canning condensed milk and packing tinned butter), and produced in the first place for the Caracas market. As long as Gómez lived, until 1936, it enjoyed a tacit monopoly in butter sales in Venezuela, with the exception of the far-away Maracaibo region.[26] The establishment of other dairies in the country was impeded. However, the output of the Maracay creamery was not at all able to satisfy domestic demand, and considerable quantities of butter and cheese had to be imported.

Gómez' death and World War II seem to have been two factors favorable to the development of the dairy industry. In the late 1930's the first plants for milk pasteurization were erected in Valencia and Caracas. Their establishment was largely a result of the special regulations imposed by the government on the sale of milk.[27] By 1942 there were five pasteuri-

[22] The 1936 daily intake of fluid milk in Caracas — in those days milk of very bad hygienic standards — was estimated at less than half a deciliter per head (Ramírez Avendaño 1955:3,7). In 1953 this figure was still valid for the large group of families with a monthly income of less than Bs 100. Half a deciliter per day represents what a Venezuelan could be expected to pour into his coffee with the prevailing *café con leche* drinking habits. The 1939 per capita milk consumption was higher in cities in the west than in the central and eastern parts of the country (Luzardo 1957:14—15).

[23] USTC 1949a:30, Bedoya de Alvarez & Rincón 1962:13—16, 19 and Marrero 1964:377.

[24] Hunziker & Hodgson 1942:15; Luzardo 1957:16. See also Wylie 1942:248 and Rudolph 1944:50.

[25] Perales Frigols 1954:255.

[26] Bell, 115,171—2,420—1. In the early 1920's the plant turned out about 130 tons of butter a year; mostly fresh butter for the Caracas and Valencia markets but also tinned butter for more distant parts of the country and for export.

[27] Ramírez Avendaño, 3. A 1937 regulation was substituted by a more vigorous one in 1941, which definitely forbade the sale of unpasteurized milk in Caracas.

zing plants in the country with a combined daily output of 55,000 liters: one each in Valencia, La Guaira and Turmero and two, the two largest, in Caracas.[28] A sixth was under construction in Maracaibo.

The manufacture of milk products became concentrated at an early stage to western and southern Zulia, the main milk surplus area in the country. In 1937 a Maracaibo creamery started the factory production of butter and cheese.[29] It was followed by three other plants in Zulia during World War II.[30] In 1944, with foreign capital, the production of powdered milk began at Santa Bárbara in Zulia.[31]

However, the development of the dairy industry was slow to gain momentum, in spite of a rapidly growing urban population and rising income levels. Persisting distribution problems and poor quality in the nationally produced milk seem to have influenced the taste of the consumers in favor of the cheaper imported milk powder, which, after a slump during World War II, soon dominated the market as it had done before the war.[32] Foreign competition was particularly severe from North American dry whole milk, which up to 1950 accounted for almost all the Venezuelan import of milk conserves.[33]

The dependence on imported dried milk, together with the crisis in the high-cost domestic dairy industry, prompted the 1946—1948 AD-led

[28] Hunziker & Hodgson, 14. In the official statistics, however, no plant outside Caracas appeared until 1948 (*AE* 1955/56:214)!

[29] Bedoya de Alvarez & Rincón, 19—20.

[30] In 1942 there were two butter creameries in Concepción and Machiques and a third was under construction at Encontrados. The government operated the butter plant in Maracay. The fluid-milk plant in Valencia also turned out butter from surplus milk. Of the six butter plants, four were cooperatives (Hunziker & Hodgson, 14, 18—19).

[31] The Santa Bárbara milk-drying firm, Indulac, was a subsidiary of the North American companies Borden and Dairy Dale of New York and the Swiss Nestlé (USTC 1949a:30). Together with the new butter and cheese factories it gave a strong impetus to the farmers in southern and western Zulia. A great many of them converted from ranching to dual-purpose breeding or to dairying alone (Rivera 1945:10).

[32] Ramírez Avendaño, 4,10. Milk powder, reconstituted at home, was until recent years the most important dairy product in Venezuela, used above all by the poor. In 1953, it answered for over 60 per cent of the consumption of dairy products in Caracas (compared with 0.07 per cent in the United States), according to a household inquiry (for a detailed discussion of its results, see *ibid.*).

[33] FAO 1962:92. The very low international prices were mainly deducted from low raw milk prices. Universally, milk intended for manufacture is paid much less than fluid milk for consumption (Fryer 1964:203).

government to act. Following the Chilean model of the late 1930's, it decided to intervene in the industry with a view to increasing the supply of milk and reducing its cost. In 1946 it authorized its development bank, CVF, to acquire the pasteurizing firms in Caracas. These were merged into one company (Silsa) and milk producers were invited to buy up to 45 per cent of the stock.[34] In 1948 a production subsidy was introduced — the *subsidio lechero*, paid to farmers delivering milk to Silsa. It was intended to stimulate the production of milk of drinking quality without increasing consumer prices. In 1949 the subsidy was extended to the suppliers of the rebuilt Valencia plant, and in 1952 to the country as a whole.[35] Paid through the plants, it added substantially to the farmer's milk income. Dairy farming was strongly promoted. Factory-based milk processing expanded at the same time, but this was partly a result of a reduction in the distribution and consumption of raw milk and in the on-the-farm production of cheese.

Various pasteurizing plants were now built in the provinces.[36] In the whole of Venezuela, they increased from 4 plants in 1952 to 18 in 1960.[37] They were all equipped with modern processing and packing machines.[38] As a result of the many new installations the production of pasteurized milk increased almost tenfold between 1948 and 1958. On the other hand, the production of cheese stagnated, while that of butter and milk powder increased modestly (see fig. 11).[38b]

Nevertheless, as the domestic demand for dairy products at the same time increased vigorously, imported products maintained their positions, accounting for around half the total milk requirements still in the late

[34] Betancourt 1967:387—8, Ramírez Avendaño.

[35] *Ibid.*, 13—18.

[36] Unfavored milk producers outside the central region associated themselves in order to have plants installed — and the subsidy paid — in their parts of the country too (MF, *Memoria* 1963:109). According to official statistics the Federal District (Caracas) accounted for more than half the country's pasteurized milk production up to 1952, but in the 1958—1965 period for around 15 per cent only (*AE* 1965:174).

[37] Cook, 132—137.

[38] For example, already in the mid-1950's all plants used cardboard containers for bottling the milk (Ramírez Avendaño, 9).

[38b] A small part of the increase may be statistical in the sense that it reflects a shift from unrecorded consumption of raw milk and milk for farm-made cheese. In 1969, on-farm-consumption of milk was estimated to be 6—7 per cent of the production of pasteurized milk (BCV, *Informe Económico* 1969:A—130).

1950's (see fig. 11).[39] Preserved milk remained the major item, together with wheat, in Venezuela's food imports. For several years in the 1950's the country was the world's largest importer of whole milk powder.

In 1958 a new dairy policy was implemented with self-sufficiency in dairy products as the ultimate goal. The *subsidio lechero*, formerly restricted to fluid-milk plant suppliers only, was extended to milk for other processing, including milk-drying factories.[40] The growth of the latter industry was promoted by increased protection against imported milk powder.[41] The quota system, introduced in 1950 as a complement to an inadequate import duty, was altered repeatedly to match the expansion of the industry.[42] As a result, the domestic production of milk powder increased enormously; from 4.5 million tons in 1957, the year before the substitution escalation, to 34.4 million tons in 1967. Imported quantities fell from 42 to 26 million tons.[43]

In 1965 the AD government revised its dairy policy. Import substitution was escalated further. Also, the consumer prices of fluid milk and milk powder were adjusted to the national production-cost level.[44] Surprisingly,

[39] The great upsurge in consumption, which more than doubled between 1948 and 1958, was explained by low initial consumption, a rapid growth in population, in particular of infants, rising standards of living, and changing diet habits under the influence of government propaganda and milk company advertizing. During the 1950's the population grew by 3 per cent annually, the economy by 7 per cent, but milk consumption by 10 per cent.

[40] Bedoya de A. & Rincón, 41—42 and MF, *Memoria* 1963:36,97,99. It was now also scaled according to quality. In addition the government helped the farmers with low-interest loans and subsidized services for disease control.

[41] The warnings about the big cost difference between national and foreign production were disregarded (IBRD 1961:429—30).

[42] An importer had to buy a certain quantity of Venezuelan milk powder for each quantity of imported powder. From 1958 the import quota was gradually decreased from, initially, six imported units for one unit of nationally produced milk powder, to 1:1 in 1965.

[43] *AEA* 1962:236 and *BCE* 1967:216. Imports during the 1960's came mainly from Holland, Canada and Denmark.

[44] The milk powder price was originally based on the low international prices, which gave rise to an untenable situation when imports vanished (Hurtado 1967). The 1965 dairy policy, provoked by a milk surplus crisis, also implemented a revision of the *subsidio lechero*. Frozen at a fixed appropriation level of Bs 40 million in 1963, it was now limited to the milk suppliers of the milk-drying plants, thereby softening the price increase. The suppliers of the pasteurizing plants in the central region were instead guaranteed a minimum price (Bs 0.85/liter), while at the same time the maximum price of milk was increased from Bs 1.00 to 1.25 per liter (Montiel Ortega, 47—48). One year later the prices were lowered, to Bs 0.795 and 1.125 resp., after sharp consumer reactions (*ibid.*, 271—4).

the price increase (around 30 per cent) for milk powder, which was consumed primarily by people with low incomes, was higher than the increase (12.5 per cent) for pasteurized milk, which was consumed mainly by high-income groups.

The effect of these price increases on consumption was dramatic. The consumption of dairy products fell markedly, and did not resume its 1965 level until 1969 (see figure). In per capita terms it fell back to the mid-1950-level, from 106 to 90 liters per year, and failed to increase again significantly until 1970. As a result, the program for the further expansion of the industry had to be halted.[45]

These developments are illustrative of the postwar industrialization efforts. Even in such an essential sector as the dairy industry, the burgeoning domestic demand, derived from the increasing oil incomes, was initially primarily directed towards imported goods instead of national production. In order to achieve a comprehensive domestic production the government had to construct a high tariff wall also in this area. The main reasons for the continued preference for imported products were the high internal cost level, production problems and distribution deficiencies. Of importance was also the official policy of promoting fluid-milk production (a high-cost industry) in the first place, instead of the production of milk powder.

Structure

Since the mid-1960's, when it had reached a fairly advanced development stage, the dairy manufacturing industry in Venezuela has employed a rather stable labor force; slightly more than 4,000 persons in over a hundred factories. In the early 1970's this represented about one-tenth of the total employment in the food industry and 2 per cent of the total employment in manufacturing. The shares were larger in terms of production value and value added.

Up to 1972 the main sub-sector by employment was the milk-powder production, with consumer milk and ice cream in the second and third places. These relationships also held in terms of production value for the principal products in 1968 (per cent): preserved milk 30, fluid milk 24, ice cream 20, cheese 12 and butter 5.[46] The main type of preserved milk

[45] Two new plants, projected to start in 1967 and 1968, had to be postponed. In 1969 the milk-powder plant in El Vigía, state of Mérida, went into production.

[46] *BTEI* 1970, no. 31. The corresponding figures for 1963, before the milk-powder industry was fully developed, were 31, 39, 10, 13 and 7 respectively (according to the 1963 Economic Census).

was whole-milk powder, while skim-milk powder, condensed milk and evaporated milk — all common types in other countries — were much less important.

The degree of product specialization in the creameries is remarkably high. Most of them are geared to the production of a single commodity. Particularly remarkable is the sharp distinction between milk-powder and fluid-milk plants. In 1963, product specialization in the main types of dairy factories, defined as the production of goods pertaining to the industry in relation to the total production, was as follows (percentages):

cheese plants	81	ice-cream plants	99
butter plants	64	fluid-milk plants	93
milk-powder plants	93		

The proportions were at the same high level in 1968.[47] This degree of specialization is unique, even compared with industrialized countries. It can be chiefly explained by the recency of the Venezuelan dairy industry, which adopted an advanced technology for production on a large scale; by the existence of a well developed road network, which made long distance transportation economically feasible; and by the long distances between the main dairying areas and the main consumer markets. In addition, the composition of the final products, especially regarding fat content, is similar to that of the raw milk. Butter production is not significant.

The production pattern deviates from that of the industrialized countries in Western Europe and Anglo America.[48] Fluid milk, butter and cheese are less important in Venezuela, where much fluid-milk consumption is replaced by the use of milk powder and much butter by margarine. In addition ice cream plays an important role, even more than in Western Europe. The Venezuelan pattern may be typical for a tropical country with a newly developed dairy industry.[49]

As was mentioned earlier, the dairy industry cannot grow unless it is

[47] *BTEI* 1968, no 30. The main additional production in cheese plants was cooking fats and margarine (in 1963) and fluid milk (1968), in butter creameries noodles, etc. (1963) and cheese (1968), on powder plants butter (both years) and in fluid-milk dairies cheese and juices (both years).

[48] For studies of the dairy industry structure in industrialized nations, see e.g. OECD (1968), Alexandersson (1969) and Lewthwaite (1971).

[49] Compare Arnold (1955), MacPhail (1963), Whyte (1967) and Patten (1971). An anomaly in the Venezuelan dairy industry is the absence of milk reconstitution plants, producing consumer milk from imported milk powder. They are fairly common in South-East Asia (Lewthwaite, 97).

protected from foreign competition (except for the pasteurization industry, which has a certain natural protection). The high cost level of the industry stems from the high cost of the domestic raw material which, for the large-scale industry, amounted to almost 70 per cent of the 1966 production value. The high production cost for raw milk is mainly a result of small dairy farms and low productivity levels in animal husbandry and farm management.[50] The average milk yield per cow was 6 liters per day in the early 1960's, varying between 2 liters for *criollo* herds and 12 liters for breeds mixed with foreign pedigree cattle.[51] These figures are low even by Latin American standards. In the mid-1960's manpower requirements were estimated at one man per hundred of liters of milk produced per day.[52]

Location patterns

Figure 10 shows the dairy factories with more than ten employed persons in 1966, measured by employment. Pasteurizing plants were separated from milk-drying plants and creameries mainly engaged in making cheese, butter and other milk products.

The great number of plants primarily devoted to ice-cream production were excluded, since their location follows a rather simple pattern, namely the distribution of large and medium-sized cities. They constitute a dairy industry of a special kind since they use as much non-dairy food inputs, mainly sugar, vegetable fats and fruits, as milk.

The only large ice-cream factories in 1966 were two in eastern Caracas, both in the parish of Chacao and each employing more than 200 persons. Founded in 1915 and 1926 they have for long dominated the industry.[53] They compete, evidently with increasing success, with a great number of small ice-cream factories, around 15 in Caracas and around 40 in about 20 of the provincial cities.[54] The latter are distributed fairly evenly among the states. Most states have at least one factory, normally located in the

[50] Dairying in tropical countries has to combat severe ecological handicaps: high temperatures and humidity (limiting feed intake), proliferation of diseases and lack of high-nutritive tropical grasses and legumes (see e.g. Payne 1957 and Whyte).

[51] FAO 1962:79.

[52] Montiel Ortega, 1967:45.

[53] The twin plants accounted for two-thirds of the Venezuelan ice cream production in 1963, valued to Bs 34 million (the 1963 Economic Census).

[54] In addition, there are a great number of artesan producers employing less than five persons. They account for a small production however.

state capital or at the main economic center. The ice-cream factory, usually a small-scale operation, is the most frequent dairy activity, far more common than the fluid-milk dairy. In 1966, for example, the southern and eastern states had about 18 ice creameries but only two fluid-milk plants.

The pasteurization industry, sensitive to economies of scale, is characterized by a small number of efficient and rather large plants that use modern machines, including units for bottling into cardboard containers. They are located in the main urban markets: Caracas (with Los Teques), Maracaibo, Barquisimeto and Valencia. The combined 1963 milk production of the Caracas dairies was 47 per cent of the national total by value; all five cities listed above accounted for 94 per cent. The rest of the country has a few small dairies in secondary centers, but relies essentially on the former for its milk supply. The large plants have wide milk-collection and milk-distribution areas, especially the dairies in Valencia and Caracas. The latter collect much of their raw milk in refrigerated tank trucks from western Venezuela,[55] as far as Machiques, and distribute the processed milk over practically the whole of central, southern and eastern Venezuela. The Caracas region, on the other hand, is supplied with milk from plants in Maracaibo as well.[56] There is sharp competition between the dairies with overlapping distribution flows.

The location of the manufacture of other dairy products — milk powder, cheese and butter — is geared to the raw material, to areas with strong comparative advantages for dairy farming. The four largest milk-drying plants[57] lie in the sparsely populated areas south and west of Lake Maracaibo. Three of them are the largest employers in the whole dairy industry. The country's leading cheese and butter factories are also located in these areas. The raw-material orientation and the geographical concentration of this constellation of dairy plants are clearly illustrated by the 1963 production shares regarding raw milk, milk powder, cheese and

[55] It was estimated that in 1963 half the raw milk of the central plants came from Zulia (MF, *Memoria* 1963:99—100).

[56] Shepherd *et al.*, 1963:80—81. "The milk is possibly one of the most efficiently marketed products in Venezuela".

[57] In the mid-1960's the installed raw milk capacity (liters per day) of the Venezuelan milk-drying plants were (Montiel Ortega,93) as follows:

Santa Bárbara, Zulia	(Indulac)	240,000
Machiques, Zulia	(Canprolac)	150,000
Machiques, Zulia	(Indulac)	145,000
Machiques, Zulia	(Ilapeca)	120,000
Quebrada Arriba, Lara	(Lavenca)	100,000

butter for Zulia, the state embracing most of the area concerned. They were 64, 93, 65 and 46 per cent respectively.[58] On the other hand, Zulia's production share for fluid milk was only 19 per cent and for ice cream only 10 per cent. The state had 14 per cent of Venezuela's population in 1961.

The main milk production region is the Santa Bárbara — El Vigía — Caja Seca area, the Dairy Belt of Venezuela. It has favorable natural conditions; fertile, alluvial soils and abundant rainfall all the year.[59] This provides good pastures, almost totally artificial,[60] and allows for intensive farming. However, animal husbandry operates at low efficiency. Farm herds tend to be rather small, mostly under 100 cattle, and are based on low-yielding *criollo* and mestizo breeds.[61] The recent reconstruction of the Pan-American Highway, now running parallel to the northern piedmont line of the Andes, and the building of feeder roads have enlarged substantially the milksheds. From its original area around San Carlos—Santa Bárbara, dairy farming has extended to the south and to the east. Milk processing has spread to El Vigía (a milk-powder plant) and Caja Seca (two small creameries).[62] San Carlos-Santa Bárbara (a milk-powder plant, a cheese factory and a fluid-milk dairy) is still number one.[63] The dairy industry has contributed to an economic and demographic growth in this area, which is matched by few other Venezuelan regions.

The lactary industry at Machiques includes butter and cheese creameries from the early 1940's and two milk-drying plants from the early 1960's.[64] The important dairy farming in the surrounding district of Perijá has long traditions, with cheese as its principal output. [65] The area

[58] Computed from data in BCV *Informe Econ.* (1964:547).

[59] Vila 1952:67—68,88 and Vila & Pericchi 1968, vol. 2:145—55.

[60] *Censo Agropecuario 1961.*

[61] FAO 1962:79. The average location yield per cow and day was reported to be only four to five liters.

[62] With a daily capacity of 400,000 liters of raw milk, the new plant at El Vigía in Mérida, inaugurated in 1969, is one of the largest in Latin America.

[63] San Carlos and Santa Bárbara on opposite sides of the Escalantes river form parts of the same conurbation. The industrial and commercial activities are concentrated to Santa Bárbara, the official agencies to San Carlos (Vila 1952:201). The locality doubled its population during the 1950's to 14,500 inhabitants in 1961.

[64] The butter creamery (Canprolac) also produces milk powder (cf. note 57). The dairies, the only major factories of Machiques, have contributed to a remarkable demographic growth. The city population dropped between 1936 and 1941, but trebled to reach 11,000 in 1961.

[65] Vila 1952:67—68,88 and IBRD 1961:436.

has natural advantages for dairying. Soils, mostly non-alluvial, are moderately rich and suitable for artificial pasture; rainfall is high but confined to a wet season.[66] Dairying is especially intense in the piedmont hills of Sierra de Perijá and the adjacent eastern plains. Rainfall declines rapidly and the drought season becomes more pronounced farther eastwards from the mountains. Food concentrates are used in large quantities as supplementary feeding during drought periods, in this and other droughtstricken areas. Dairying will probably extend farther to the south with the completion of the all-weather road connecting Machiques with La Fría in Táchira and the associated drainage projects.

Both Zulian areas have benefited from the postwar building boom in interregional roads. Lying within overnight trucking distance from the main urban markets, both areas deliver milk to the dairies of the central region.

The concentration of dairies in the state of Lara, fluid-milk plants in Barquisimeto and Carora,[67] cheese factory at Carora and milk-drying plant at Quebrada Arriba,[68] is explained mainly by a long and thriving dairy-farming tradition, particularly in the Sabanas de Carora in the west.[69] Dairy products and, periodically, raw milk are sent from Lara to Valencia and Caracas.

To summarize, a major feature in the present location pattern of the milk processing industry is the concentration to specific agricultural areas

[66] *Ibid.*

[67] Both were founded in the early 1950's, that in Barquisimeto by the milk producers' association, that of Carora as a subsidiary by a large company (Inlaca) in Valencia (Gormsen 1963:120).

[68] The plant (Lavenca), an affiliate of North American companies, was founded in 1953 at a place known for its high-quality *criollo* milk breeds (FAO 1962:85 and Perales Frigols, 175).

[69] Dairying on the Carora alluvial plain (district of Torres), particularly old and prominent in the more humid fringe zones, is often cited as an example of man's victory over his environment (Perales Frigols, 174—84; Vila 1966:223). The climatic conditions of this semiarid area — drought period half the year and heavy insolation — form a main obstacle. Irrigation through river barrages and artesian wells is now used. Natural pasture has been replaced increasingly by the cultivation of dry-resistant grasses: Parra, Gamelote and above all Guinea-grass. By 1961 three-quarters of the total pasture area in the Sabanas de Carora was artificial (Vila & Pericchi, v. 2, 101). The pastures are also used for fattening beef cows brought in from llanos and southern Falcón and then shipped to Caracas (Vila 1966:226). The *criollo* herds have been improved since the beginnings of this century with European breeds, mainly Brown Swiss but also the Zebu. The high-quality mestizo breed of Carora is gaining in importance also in other Venezuelan regions (Vila & Pericchi, v. 2, 102).

with natural advantages for dairying. Being geographically separated from these areas the large urban markets exert a complementary locational pull, attracting above all the pasteurization and bottling operations, but to a lesser degree than expected.

With respect to locational developments, one may conclude that modern milk processing started more or less simultaneously in Caracas, the main market, and in areas with dairy exports traditions. The industry in the north-central region, directed towards pasteurization, developed faster in the early phase, encouraged by the government. In a later phase, due to a change of the official policy among other factors, the industry developed fast in other regions, particularly in the major dairy farming areas, which specialized in the manufacture of dairy products other than fluid milk.

The Malt Beverage Industry

Development

Bottled beer was an early cultural innovation offered to tropical people by industrial Europe. A low-cost item afforded also by the low-income worker, beer became one of the first domestically produced goods to reach the mass consumption stage. Typically, breweries were among the earliest large-scale factory industries to develop in many Third World countries.

Venezuela is an illustrative case. The habit of drinking beer in bars and clubs was soon adopted by the country's upper class, which was quick to imitate immigrant Europeans.[70] Introducing the production technology, the immigrants participated in the installation of the country's first breweries in Caracas and Maracaibo in the 1890's.[71] The incipient

[70] For a vivid account of the acculturation process generated by the force of example with regard to beer-drinking, see Rangel (1970:369—382), who also analyses the process of concentration within the Venezuelan brewing industry.

[71] Dalton 1912:251 and Rangel 1970. The Caracas brewery company was established around 1893. Its original capital of Bs 600,000 was increased to Bs 2.5 million in 1901 but reduced to Bs 1.41 million in 1909. At the end of World War I the brewery's production capacity was 3 million liters a year (Bell, 115). Actual production in 1920 was 0.75 million liters during six months (Beaumont, 16). The plant then employed 111 workers (Vila 1967a:273).

brewing industry developed rapidly in the years before World War I and, after a halt during the war, in the twenties, when more breweries were founded in Caracas and Maracaibo and one was founded at Maiquetía.[72] The high transportation costs for the bulky product provided the industry with natural protection against foreign competition, which made high protective tariffs unnecessary. Imports of beer were small, although not insignificant in the twenties and, later, in the latter half of the forties.[73]

In the late 1930's, brewing was still one of the country's most important industries. Together with many small liquor distilleries the breweries accounted for a quarter of all machinery, for one-fifth of all capital invested, and for about 15 per cent of the value added in manufacturing in 1936.[74] This was far more than the shares recorded for the cotton textile industry. However, despite its large national importance, Venezuelan brewing was small compared with that of other Latin American nations (see below).

Nevertheless, real development was not initiated until the mid-forties. The urban population increased rapidly in the postwar period. Of paramount importance was also the expansion and improvement of the country's highway network which, centered on Caracas, developed vigorously after the war. New beer-drinkers were steadily added as new roads ex-

[72] The official statistics on beer production only start in 1937 (11.5 million liters). As all malt (and hop) has traditionally been imported, the evolution of the 1913—1937 beer production could be estimated fairly well from foreign trade statistics, available in detail from 1913. Imports of barley in the period under consideration — practically all of it malted barley from Germany — were on rather a high level in 1913—1917; they then decreased considerably in the following four years (except 1920), but started to recover in 1922. They quadrupled in the four years through 1926, remained on this high level from 1928 through 1930, fell sharply the next four years and then increased continuously to World War II, which caused a temporary halt. The barley imports of 1926 and 1928—1930 — around 3,000 tons, or more than three times as high as the yearly average for 1913—1917 — were not exceeded until 1938 (*AE*, 1938:191, 1940:308 and 1942:550—1).

On the basis of a relation of 0.2—0.25 kg of imported malted barley to one liter of beer, the output of beer could be estimated at 12—15 million liters per year in 1928—1930, or about the same as in 1938 (14.1 million), at around 4 million in 1913—1917 and nearly as much in 1920. The actual output during the first half-year of 1920 was estimated at some 1.5 million liters by a contemporary observer (Beaumont, 16).

[73] See data in Carrillo Batalla 1962:134 and Rangel 1970:371. For the twenties as a whole, imports of beer must have been only a fraction, maybe some 10 per cent, of the national production.

[74] See the 1936 Industrial Census.

tended markets further and further into the interior. To secure undisturbed growth in the industry, the tariff on imported beer was raised.[75]

The output of beer almost doubled between 1937 and 1940. It stagnated for the next three years, because of wartime difficulties in obtaining imported malt. But in 1943 a growth process started, which continued every year through 1960. The output then amounted to 241 million liters, or almost exactly ten times the 1943 production. Output remained fairly stable in the first half of the sixties, subsequently entering upon a new period of growth. In five years production almost doubled, reaching 496 million liters in 1970.[76]

The rapid Venezuelan growth was remarkable even in a Latin American context. Before World War II, Venezuela's beer production was only a fraction of that of Colombia and Chile, about half as big as Cuba's, on a level with that of Peru and only slightly more than that of Uruguay, Bolivia and Equador.[77] From this position, however, Venezuela soon advanced. Peru was soon left behind, Cuba and Chile were bypassed in the early fifties and Argentina in the early sixties. By 1970, Venezuela was approaching Colombia in beer production, but was still far behind Brazil and Mexico. The latter country has been Latin America's leading beer-producing nation since the mid-1950's.[78]

Structure

The brewing industry has invariably been made up of a small number of plants (in 1966 nine units, see fig. 16). Until recent decades the small size of the national market was one of the main reasons for this, but there

[75] The tariff increased from Bs 0.30 per liter after World War I (Bell 1922:393) to Bs 1.10 after World War II (Shoup *et al.*, 1959:255,270). Together with the internal tax on beer (Bs 1.00 per liter on imported beer compared with Bs 0.30 on domestic beer) the import levies exceeded the retail price for domestically produced beer.

[76] *AE* 1955/56:231 and 1970:166—7. As in other countries the government favored the consumption of beer by imposing low taxes on malt beverages as a means of holding back the consumption of liquor. While the wholesale price of rum and *aguardiente* more than doubled from 1938 to 1953, the price of beer decreased to almost half (*AE* 1957/63:1:636). In 1960 however, the levy on beer was increased, causing a rise in prices of around 25 per cent. Prices and taxes on liquor also increased, whereas those on soft drinks were fairly stable, remaining at the pre-World War II level.

[77] The comparison is based on 1939 figures (see UN's *Statistical Yearbook* 1948). A comparison of 1937 data shows an even more backward position for Venezuela: its beer production was then the smallest of all the countries mentioned.

[78] UN's *Statistical Yearbook,* various issues.

was also a strong tendency towards concentration. Periodically, new establishments emerged — particularly in the twenties, around 1950 and in the early sixties — but the number of active breweries was kept down by mergers and closures.[79]

The concentration process started early and was particularly intense in the thirties and forties, when the base of the industry's present structure was laid.[80] A Caracas brewing company, established in the mid-1920's by local brewers and capitalists, expanded vigorously from its inception. At the end of the thirties it dominated the beer industry of the north-central area, having absorbed the area's other enterprises: the oldest Caracas brewery, another one in Caracas and that at Maiquetía.[81] In 1942, it had gained control over the largest, German-founded brewery in Maracaibo as well. Subsequently, the company, known as Cervecería Nacional, for some years had almost a monopoly in the country's beer production.[82]

The company eventually was challenged by a rival. In 1941, a group of Caracas industrialists founded Cervecería Polar in Antímano, a southern suburb of the capital. Within some ten years, thanks to an efficient, Caracas-based distribution system which exploited the expanded highway network and involved intensive advertising, this company captured a considerable share of the national market.[83]

These events gave the industry its fundamental structural characteristics. The two companies achieved a duopoly. From the mid-1950's they controlled, with equal market shares, around 90 per cent of the production of malt beverages.[84] Both concentrated on expanding their existing plants (or absorbing plants) rather than establishing additional ones.

[79] The number of plants was about eight in the late twenties, five in 1947 (Muller-Karger 1948:15), twelve in 1953, eleven in 1963, nine in 1966 and ten in 1971.

[80] Small breweries in Valencia and Puerto Cabello were absorbed in the first decade of this century (compare note 97). Only in remote Ciudad Bolívar did a small brewery, built before 1920, survive for a longer time. By the early forties, however, it was controlled by the leading Caracas brewing company and soon closed (Rangel 1970:370,375—6).

[81] *Ibid.*, 373—6. The capital of the company increased from Bs 1.7 million in 1925 to Bs 6.0 million in 1930. The two Caracas breweries taken over were apparently closed down a short time afterwards.

[82] *Ibid.*, 375—6.

[83] *Ibid.*, 379—81. The 1947 beer production of 50 million liters came from five breweries (Muller-Karger 1948:15). By comparison, the production of the state of São Paulo (12 million liters in the mid-1940's) came from 23 malt-beverage plants.

[84] USDC 1965:8.

Malt Beverage Industry

The high degree of concentration resultad in large production units, which permitted efficient scales of operations and decreasing production costs. The industry was very prosperous in the postwar period, when much capital accumulated. The industry was able to finance its large expansion entirely on its own, and even served as a source of financing for the development of other manufacturing industries. In the late fifties and the early sixties, much of the accumulated capital was reinvested via holding companies in production serving the government's import substitution program.[85]

From its inception, brewing has belonged to the most capital-intensive industries. Its capital/labor ratio in 1966 (about Bs 100,000) was one of the highest in the manufacturing sector. Despite the large amounts of capital involved, foreign financing played an insignificant role except in the initial development phase. In 1966, less than 2 per cent of the subscribed capital in breweries was of foreign origin.[86]

Location

The geographical concentration of the Venezuelan brewing industry is also very pronounced. Apart from the small peripheral brewery in San Cristóbal (see below), the industry — nine units in 1966 — is located in three places: Caracas, Maracaibo and Barcelona, each having two or three breweries. The Venezuelan market is supplied from these three places.

This geographical concentration was to a great extent a result of keen duopolistic competition. Since neither of them wanted to find themselves in the weaker position, the two rival corporations established their production "side by side". Before 1960, one of them lacked any production in the west, the other lacked any in the east. In the early sixties, the former company established its western brewery in Maracaibo and the latter its eastern brewery in Barcelona.[87]

Another important characteristic of the location pattern is Maracaibo's strong position relative to Caracas. The markets for Maracaibo and Cara-

[85] Rangel 1970:377,382.

[86] The prosperity of the industry during the 1950's enticed foreign investors to consider business starts (Maby 1951:115). However, the national industry managed to keep large-scale foreign investments out. The Dutch firm Heineken became a partner in a small brewery in Maracay, but this was taken over by Cervecería Nacional towards the middle of the sixties (USDC 1965:8).

[87] From the point of view of the national economy, it may be argued that Barquisimeto and Maturín or Ciudad Bolívar might have been better choices for the location of these additional breweries.

cas beer overlap each other but the "break-even" line runs relatively close to Caracas. This has a long and pertinent historical background. Maracaibo was for decades the leading brewing center of the country.

The early brewing industry in Maracaibo was established by industrious Germans around the turn of the century. The German colony in the city was quite large.[88] Many of its members worked as employees in large German commercial companies, which dominated the coffee export trade of Maracaibo.[89] In the city's hot tropical climate, beer quickly gained popularity among the natives. The market widened considerably when, during World War I and afterwards, Englishmen and Americans invaded the Lake Maracaibo region in an intensified search for oil. The industry grew rapidly and, at the end of the twenties when it had three plants, it was largest in the country.[90] The breweries were easily the leading industrial enterprises in the town.[91] Well-known for their high-quality beer, they supplied almost all the beer sold to the western part of the country, including the Venezuelan Andes, and part of the central market.[92] Maracaibo beer also found its way across the border to Cúcuta and other Colombian towns, although invariably in marginal quantities.

The prosperity of the pre-World War II Maracaibo brewing industry rested on the important coffee economy of the Andes and the dynamic petroleum industry. The Andean market was stimulated by the very great improvement in the Andean highway network, carried out during the regime of Gómez, himself a native of this part of the country. When coffee exports broke down and the petroleum companies reduced their activities in the early thirties, Maracaibo's breweries encountered their first crisis. A second occurred during World War II, when they were cut off by the allies from their supplies of malted barley from Germany.[93]

[88] Bürger 1922:253.

[89] Rangel 1970:369.

[90] *Idem.* By 1929 two of the three enterprises had merged into one company. Both in 1928 and 1938, imports of malted barley to Maracaibo were well over half the national imports. Most of the remainder went to La Guaira and only very small quantities to Ciudad Bolívar (*EMM,* cited years).

[91] In 1936 the two breweries in Maracaibo most likely accounted for almost half the total capital invested in manufacturing (excluding electric power plants) in Zulia, and over half the value of machinery equipment according to the Industrial Census. Employment, however, was only some 300 people.

[92] Little foreign beer was imported into the Maracaibo region in the late twenties. Most of the beer imports went to the central market via La Guaira and Puerto Cabello (*EMM* 1928).

[93] Rangel 1970:375.

In this precarious situation, the largest brewing company was taken over in 1942 by the leading Caracas company, Cervecería Nacional (see above). Since the forties, the Maracaibo brewing industry has gradually lost in importance, although a third brewery was added in 1960.

The Caracas brewing industry gained its leading position after World War II, when public investments became more concentrated to the central area. The greater part of the vigorous expansion of Venezuelan breweries in the 1943—1960 period accrued to the capital. Its breweries supplied half the national output in 1950 and, a decade later, two-thirds.[94] Cervecería Polar, established in 1941, developed particularly strongly. In the early fifties its Antímano brewery bypassed Cervecería Nacional's breweries in Caracas and Maracaibo, and became one of the largest in South America.

Until the sixties the developments in Caracas took the form of enlargements in the factories within the Federal District. Two small breweries existed in the eastern suburbs of the city (state of Miranda), but they remained small during the fifties.[95] However, in 1961, Cervecería Polar opened a large brewery in the east. In addition, Cervecería Nacional shifted the balance of its production in favor of its eastern unit in Boleita. In its old brewery in downtown Caracas, operations were gradually reduced during this decade.[96]

The third brewing nucleus, Barcelona, initiated in 1948, was the most expansive during the sixties. A second plant was established in 1963. The two breweries serve the eastern part of the country, including the rapidly expanding Ciudad Guayana area.

The small brewery in San Cristóbal, affiliated to Cervecería Nacional and started in 1962, serves a restricted local market on the western periphery. It accounts for about 2 per cent only of national beer production, but for 4 per cent of the industry's employment.

[94] In 1950 the four breweries of the Greater Caracas area produced 46.4 million liters, and in 1960 over 163 (Vila 1965a:101, 1967a:313 and 1967b:270).

[95] The Maiquetía brewery was apparently closed in the fifties. It was built already in 1912 to serve the Caracas market, beeing connected to the La Guaira — Caracas railway through a branchline (Vila 1967a:274). Like the breweries in Maracaibo the plant had one locational advantage in comparison with those in Caracas. It was situated on the coast near an import harbor for the imported raw materials (malt and hop). The enterprise expanded after the war, when, in 1926, its capital was raised from the original Bs 1.5 to 3.5 million (Rangel 1970:374—6). In the fifties, when the transportation system between the coast and Caracas changed radically, the factory was finished.

[96] Vila 1965a:101—2.

The densely populated west-central part of the country has never possessed any large-scale brewing industry.[97]

[97] Attempts to establish the industry in this area were not lacking, but they met the same end. By 1910, two small breweries in Valencia and Puerto Cabello, established around the turn of the century, had been absorbed by the larger brewing company in Caracas (Dalton, 251). By 1961, a small brewery in Maracay, established before 1950, had passed into the control of one of the large Caracas brewing concerns (Rangel 1970:376), and disappeared from the statistics in the mid-sixties.

6. Location Patterns of the Manufacturing Industries in the Mid-1960's

The core of this chapter is a cartographic survey of the location of manufacturing activities in Venezuela measured by employment in 1966. Data necessary for the survey were collected from Cordiplan's *II Encuesta Industrial 1966* (unpublished materials) and from the *Ministerio de Fomento.*[1] Data were gathered on employment, type of activity and location for individual establishments engaging 5 or more persons (that is the factory industry as defined by Cordiplan and ECLA).[2] Each establishment, over 7,000 all told, was arranged by localities on the basis of the information collected.[3] For identification of localities, the system of *centros poblados* of the 1961 population census was employed.

The aggregation of establishments and employment was made by localities for (a) a series of manufacturing activities and (b) totally for the manufacturing sector of each locality. In the latter case, the manufacturing employment was also related to the locality's estimated total labor force. The results were presented cartographically in both cases.

[1] *Directorio Nacional de Establecimientos,* Caracas 1968.

[2] See ECLA 1966.

[3] In a few cases, when the manufacturing plant was geographically separated from the head office or when a firm had several affiliates, the establishment may have been reported under the address of the head office of the firm. This is a common problem in Venezuelan industrial statistics (see e.g. *II Censo Industrial de Venezuela. Resúmen general de la República,* p. xvi and xvii). Its main effect is an overrating of the concentration to Caracas.

The Location Patterns of Different Activities

Cartographic techniques

Figures 9, 10 and 12—34 present the distribution pattern of various manufacturing activities on, as a rule, the 3- or 4-digit level of the United Nation's 1958 ISIC code (The 4-digit level is a Venezuelan national extension of the international classification.) The activities are measured by plants and employment (persons engaged). Practically all activities classified as manufacturing in the ISIC code are covered. The largest of the few omitted is the ubiquitous bakery industry (206), which is predominantly made up of a great number of small establishments.

A majority of the maps cover the employment in establishments with more than 10 persons engaged. Each establishment with more than 50 employees is mapped individually with a circle sector proportionate to the size of its workforce. In addition the name of the locality of the "50+"-establishment is given. The "11—50"-establishments are also mapped individually on several maps. However, for a majority of industries, which have a great number of small plants, they are grouped together into a single sector for each locality. In such cases the number of the establishments aggregated is given with a figure attached to the symbol. For some industries only the "50+"-establishments are shown. In most of these industries small plants were numerous but in aggregate rather unimportant.

Locational grouping

The various distribution patterns are commented briefly in connection with each map. Table 6.1 shows a dividing of the activities after their location patterns into three groups: (a) those activities for which three-quarters or more of the employment was concentrated in Caracas and vicinity, (b) other activities, for which three-quarters or more of the employment was concentrated in the north-central region, and (c) other activities not qualifying for the two above-mentioned criteria.

As evidenced in the maps, the Caracas Metropolitan Area accounts for a large proportion of most manufacturing industries in Venezuela. It is dominant in several of the industries producing consumer non-durables: apparel, knitwear, pharmaceuticals, plastic products, confectionary, etc. In some of these industries, Caracas practically has a national production monopoly. Small plants account for a large share of this production and

Table 6.1 *Locational Grouping of the Manufacturing Activities in the mid-1960's*

Activities concentrated in				Other location	
Caracas and vicinity		the north-central region[a]		patterns	
ISIC	Activity	ISIC	Activity	ISIC	Activity
2081	Chocolate	201	Meat packing	202	Dairy industry
232	Knitting mills	203	Fruit and vegetables	204	Fish processing
24	Apparel	205	Grain mills	207	Sugar mills
272	Paper products	209	Other food	2083,9	Sugar confectionary
28	Printing and publ.,	2211	Cigarettes	21	Beverages
	major plants	231	Basic textiles	2212,3	Tobacco products
292,3	Leather products	271	Paper mills	233	Cordage
3141	Pharmaceuticals	30	Rubber products	25	Lumber
396	Plastics	312,3,9	Chemical products	26	Furniture
39,r.	Misc. products	3142,3	Toilet goods, etc.	291	Tanneries
		332,3,9	Glass, cheramics	311	Basic chemicals
		35	Metal products	331,4,5	Constr. mtrls
		36	Machinery	34	Primary metals
		37	Electrical goods		
		383	Automobiles		

a The Federal District and the states of Aragua, Carabobo and Miranda.

Source: See the text.

they, in fact, constitute an important sector of the capital's manufacturing industry (see fig. 4).

The north-central region as a whole dominates many industries producing intermediate products and consumer durables. Much of this production is turned out in large-scale units. The manufacturing industry in Aragua and Carabobo is primarily based on large-scale industry (fig. 4).

Most of the industries not concentrated to the north-central region have a location pattern which is influenced by the raw-material supply.

The Overall Location Pattern of the Manufacturing Industry

Figures 3 presents the 1966 employment in manufacturing (the factory industry) for each locality with more than 100 persons engaged in this industry. It shows that manufacturing is highly concentrated to the north-

central region, far more than the population (compare fig. 2). Another striking feature is that factory industry of the above minimum amount (100 persons) is a rather rare phenomenon in Venezuela, existing in a limited number of places.

The 16 urban agglomerations with 1,200 manufacturing employees or more are listed by size of employment in table 6.2. The dominance of the Caracas-Valencia-Maracay constellation, and Caracas in particular, is conspicuous.

Table 6.2 *Factory Industry Employment*[a] *in Major Urban Agglomerations, 1966*

Cities or urban areas[b]	Number
Caracas, Metropolitan Area	84,600
Valencia—Los Guayos—Guacara—San Joaquín	19,600
Maracay—Cagua—Turmero—Mariara—San Mateo	17,300
Maracaibo	8,700
Puerto Ordaz—San Felix	6,700
Barquisimeto—Santa Rosa—Cabudare	6,300
Morón—Puerto Cabello—El Palito	4,700
La Victoria—El Consejo	4,000
Cardón—Amuay—Punto Fijo	4,000
Puerto La Cruz—Barcelona—Pertigalete—Guanta	3,800
Cumaná	3,100
San Cristóbal—Palmira—Táriba	2,800
Los Teques	1,500
Maturín	1,300
Acarigua—Araure	1,200
Guarenas	1,200
Venezuela	*200,000*

a In establishments engaging 5 or more persons.

b For delineations of urban areas with component cities and towns, studies by Chaves (1970:111—2) and Chen (see Fox 1975:49, 100—3) were useful.

Source: Cordiplan's II Industrial Survey (unpublished material) and MF's Industrial Directory.

For each locality, factory industry employment has also been related to the estimated total labor force of the locality. The highest shares, 45 per cent or more of the labor force, are found in a series of towns in the vicinity of Caracas and in a belt east of Caracas, including La Victoria, Turmero, San Joaquín, Los Guayos, and Morón. In fact, in most urban

places of this belt, including Valencia and Maracay, one-quarter or more of the active population works in factory-type manufacturing.

Industrialized cities or towns outside the north-central region are few. They include the steel mill city Puerto Ordaz, the oil refinery concentration Cardón — Amuay (Judibana), the fishing industry centers Cumaná and Marigüitar, some industrial satellite towns to Barquisimeto and to San Cristóbal, and, finally, Machiques and San Carlos-Santa Bárbara, both dairy industry centers in the west. In Maracaibo and other cities in the oil district, manufacturing accounts for a labor force share that is below the national average.

Final Remarks

Here, a few concluding reflections will be made regarding the studies presented in this work. They are highly tentative. The reader of the book may come to other conclusions.

Chapters 1 and 2 show how little manufacturing development there was in Venezuela during the first half of this century. The folly of a policy of *laissez-faire* in an open, primary-goods exporting country was clearly demonstrated by the course of events in the country during the 1930's. Instead of an industrial growth came a stagnation or even a decline.

Venezuela's petroleum industry for a long time was an export enclave, whose development impulses did not reach far beyond its confines. Up to 1950 nearly all manufacturing growth based on the Venezuelan oil accrued to territories outside the country. And when a domestic oil processing industry was established on a large scale after World War II, the result was a series of large fuel-oil plants with few qualifications to develop into industrial complexes. Would not a more active government in the 1950's, fully taking advantage of the favorable world oil market through 1957, have been in a position to negotiate the establishment of an oil refining industry on an even broader basis?

Chapters 4 and 5 show that even in the production of basic goods, such as textiles and food, real development did not occur until after several decades of high oil export earnings. The early, rather dispersed location pattern of the cotton textile industry changed towards a concentration to Valencia before World War II and, after the war, to Caracas and Maracay. The latter locational change was strongly interrelated with a broadening of the textile sector into new fibers and new products and an increased foreign participation, made necessary by heavy capital costs and patent rights.

The dairy and malt beverage industries got a unique locational structure

with a concentration to a few places, which contradicts the classical pattern of an almost ubiquitous distribution for industries of this type.

The location pattern of the manufacturing industry instead of registering a spread showed a continual concentration to Caracas and the north-central region. This was due to a number of economic and political reasons of which only two will be touched upon in this context. Probably the "backwash effect", to use Myrdal's terminology, was influential in the Venezuelan case. Crafts and traditional manufacturing industry on the periphery were squeezed out when large-scale factories were established in Caracas. With the strongly increasing government involvement in industrial development planning since the late 1950's, closeness to the government offices became a decisive location factor for manufacturing entrepreneurs.

The concentration of manufacturing contributed to a great regional economic imbalance in Venezuela. Regional planning in the early 1960's emerged as an important political issue: how to overcome the regional imbalance? For many years it remained more of a political slogan than an institutionalized process and some argue it still does. The principal exception to this generalization was the government's effort to develop the Guayana region in the south (see fig. 8), a spectacular undertaking that received much attention in academic circles and among the general public.

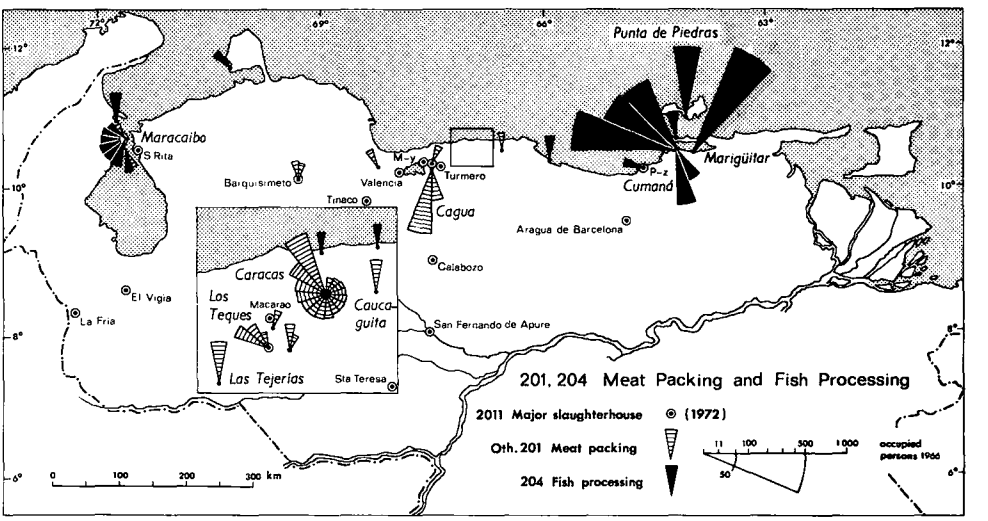


Figure 9 *Meat packing (excl. slaughterhouses) is highly concentrated to the central region; fish processing to the eastern region. Caracas, Los Teques and Cagua are leading meat industry centers; Cumaná a leading fish industry center.*

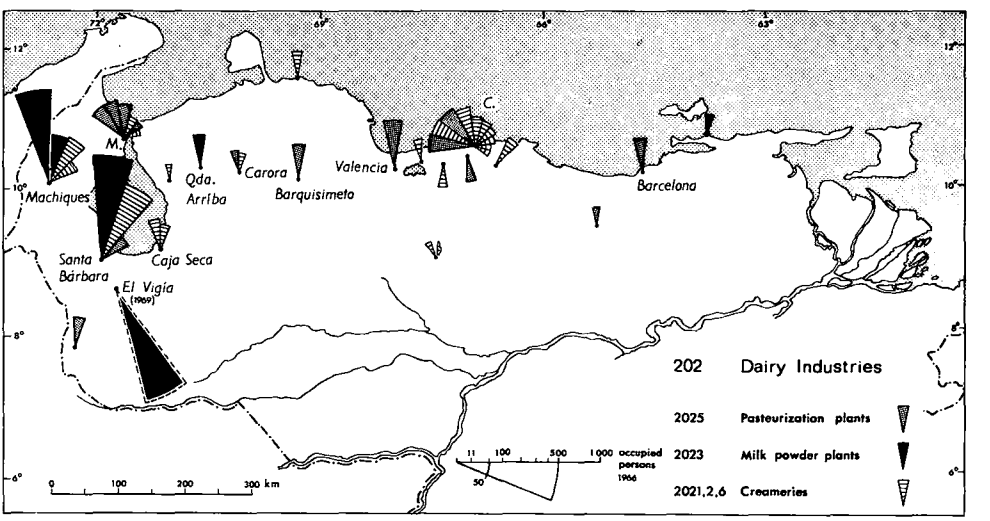


Figure 10 *Zulia in the west is the dominant dairying state. Caracas has a cluster of small creameries.*

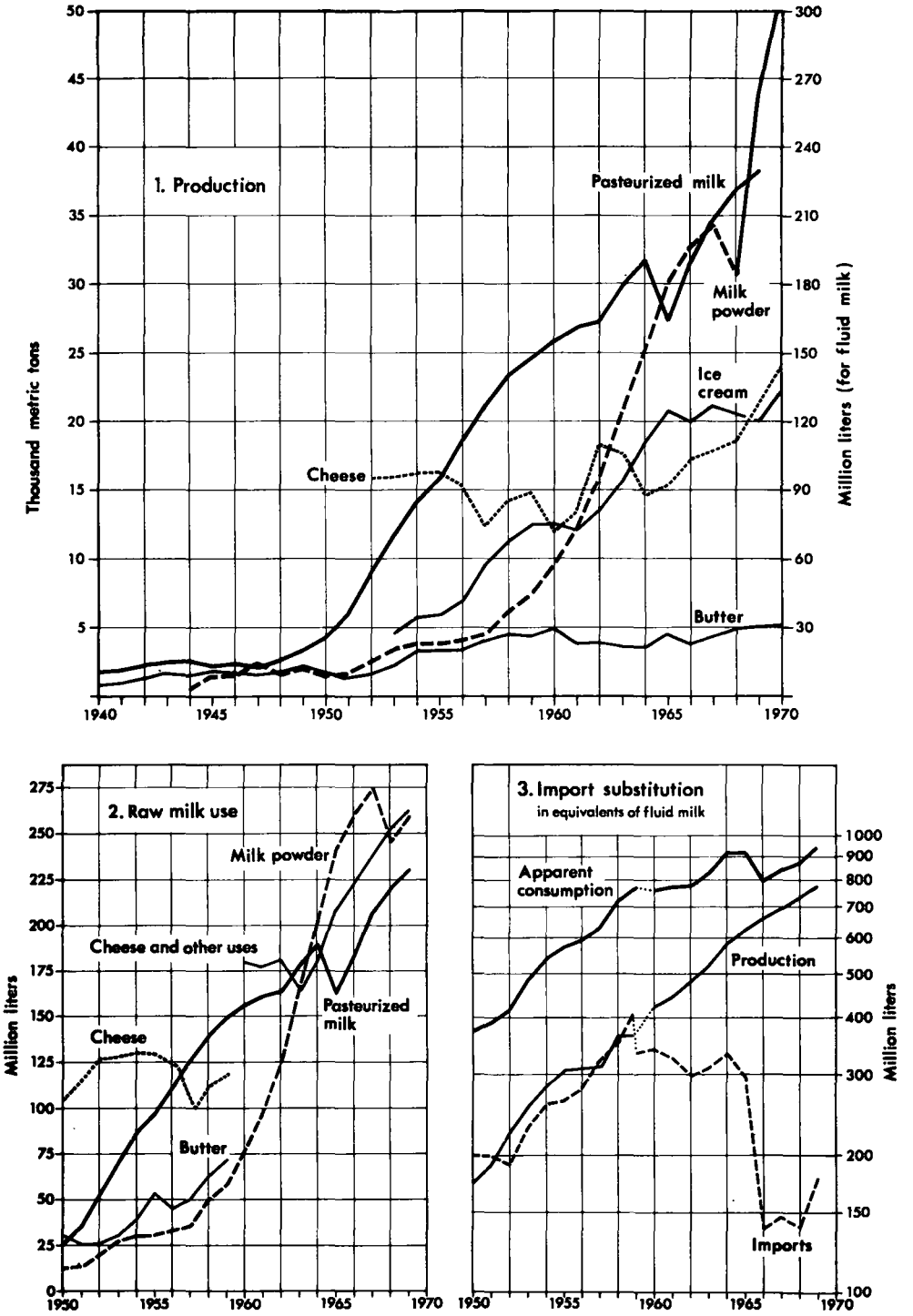


Figure 11 *Development of the dairy industry, 1940—1970.*
1. Production of consumer milk and major products.
2. Use of raw milk for pasteurization and by product.
3. Import substitution: between 1950 and 1959 around half the apparent milk consumption was imported but by 1969 this share had declined to 20 per cent. (Sources: Official MF, MAC and Cordiplan statistics).

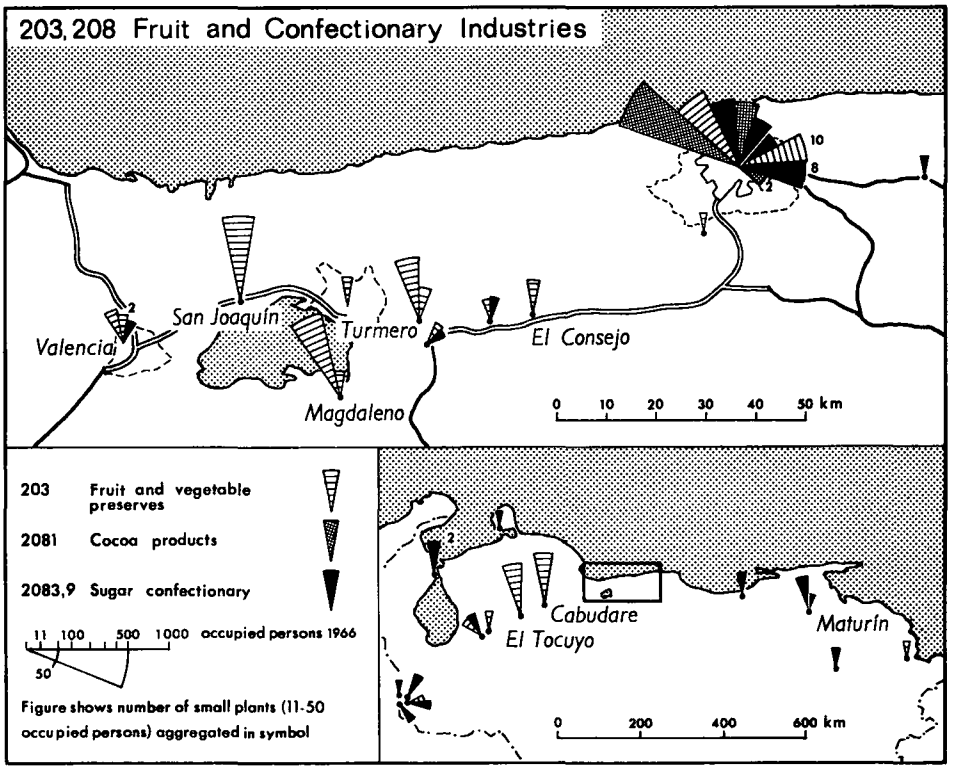


Figure 12 *Fruit preserving is important in a belt from El Tocuyo (Lara) in the west to Caracas in the east. The large confectionary plants are located in Caracas; small plants are scattered over the country.*

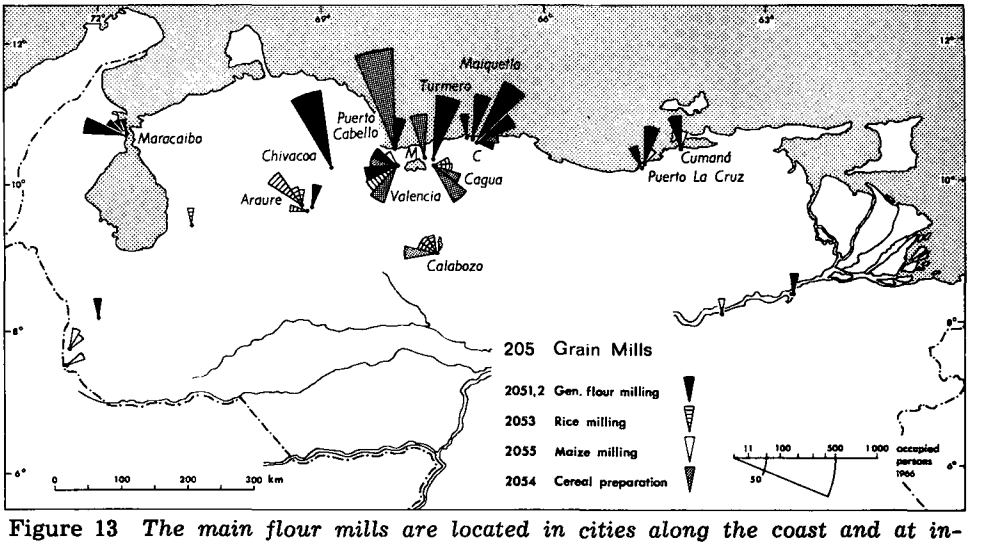


Figure 13 *The main flour mills are located in cities along the coast and at inland places in the north-central region. Rice milling is mainly performed in places in or near the llanos, the leading rice farming area.*

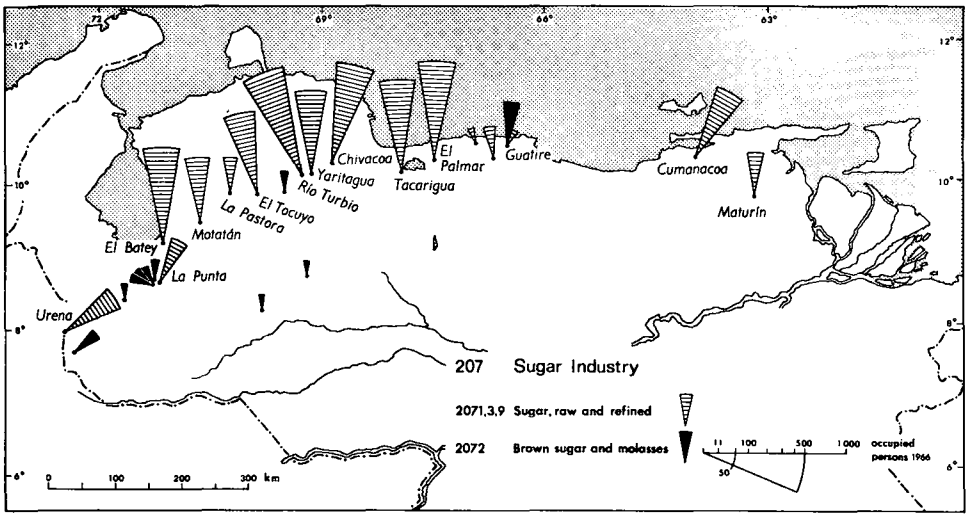


Figure 14 *The sugar mills form a conspicuous string along the Venezuelan Andes and the Coast Ranges.*

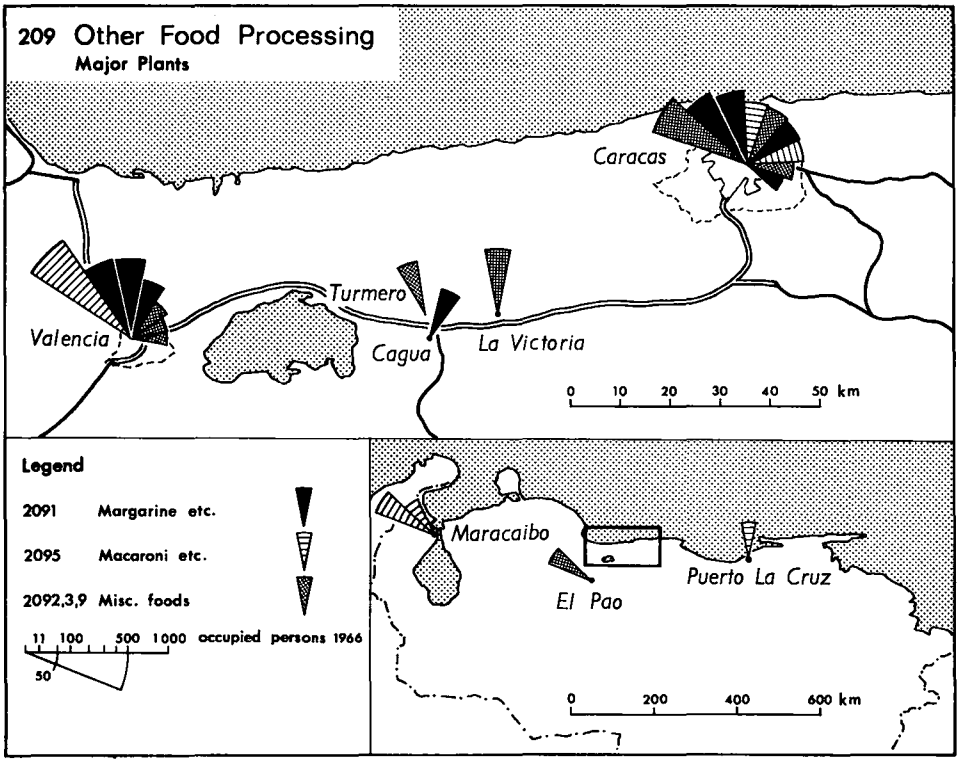


Figure 15 *Valencia and Caracas dominate the margarine, macaroni and other food processing.*

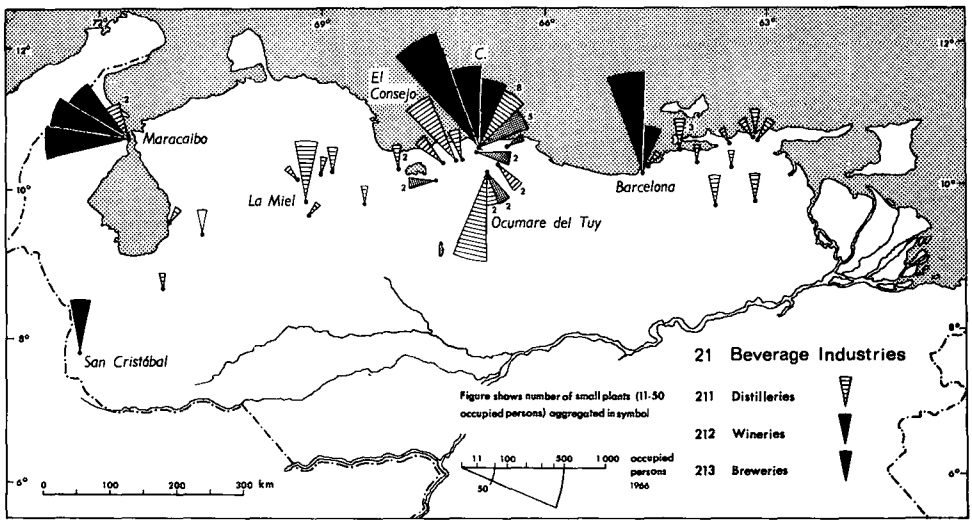


Figure 16 *The brewing industry has three strong footholds: Maracaibo in the west, Caracas in the central region and Barcelona in the east. The more dispersed distilling industry has a center at Ocumare del Tuy.*

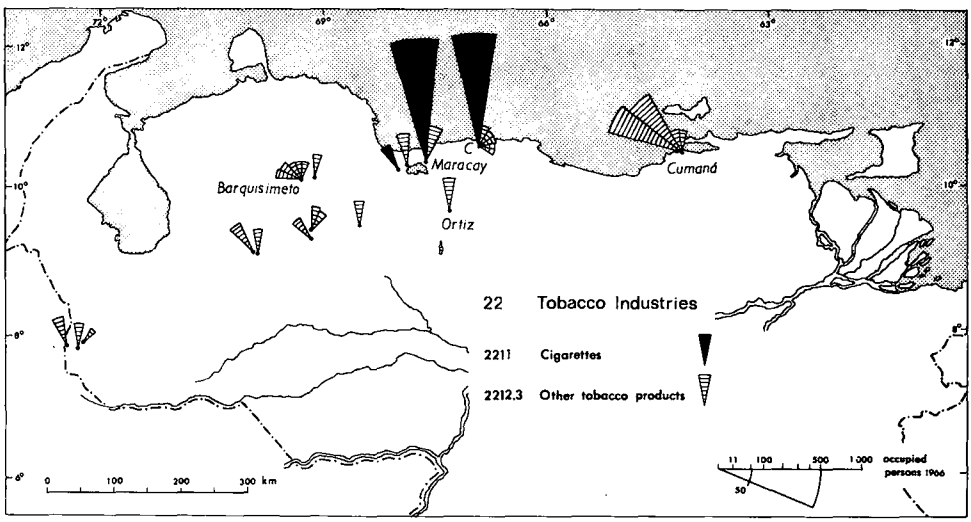


Figure 17 *Cigarette manufacturing is almost exclusively confined to two plants in Maracay and Caracas. The dispersed cigar industry has traditionally had a center in Cumaná.*

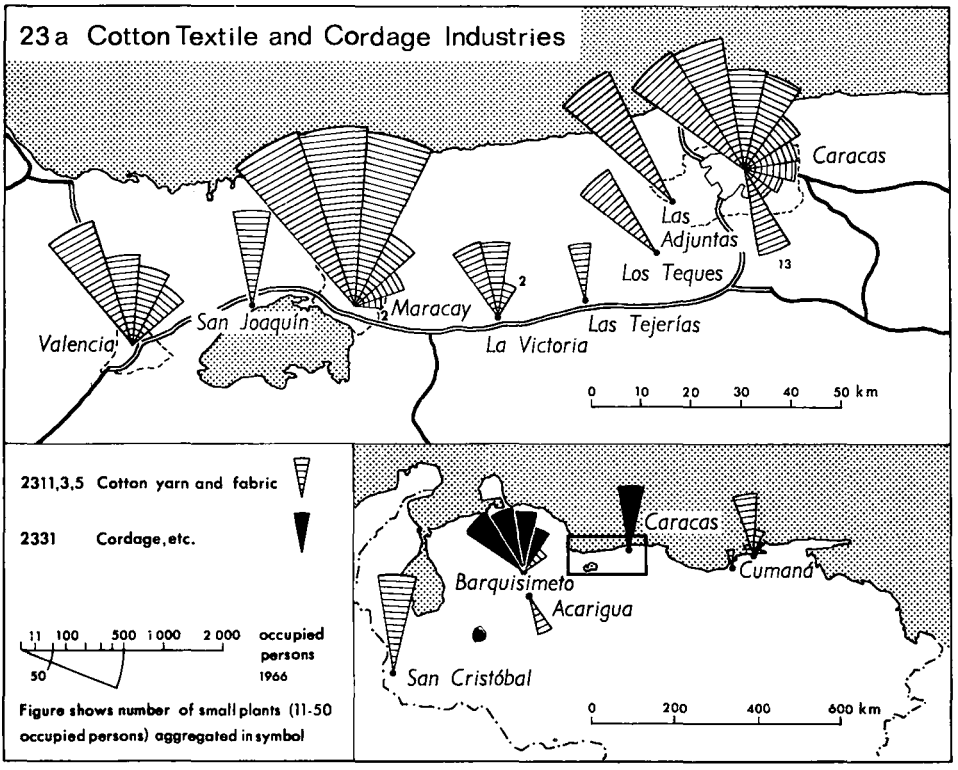


Figure 18 *Maracay, Caracas and Valencia are the main cotton textile centers. Barquisimeto is dominant in cordage manufacturing.*

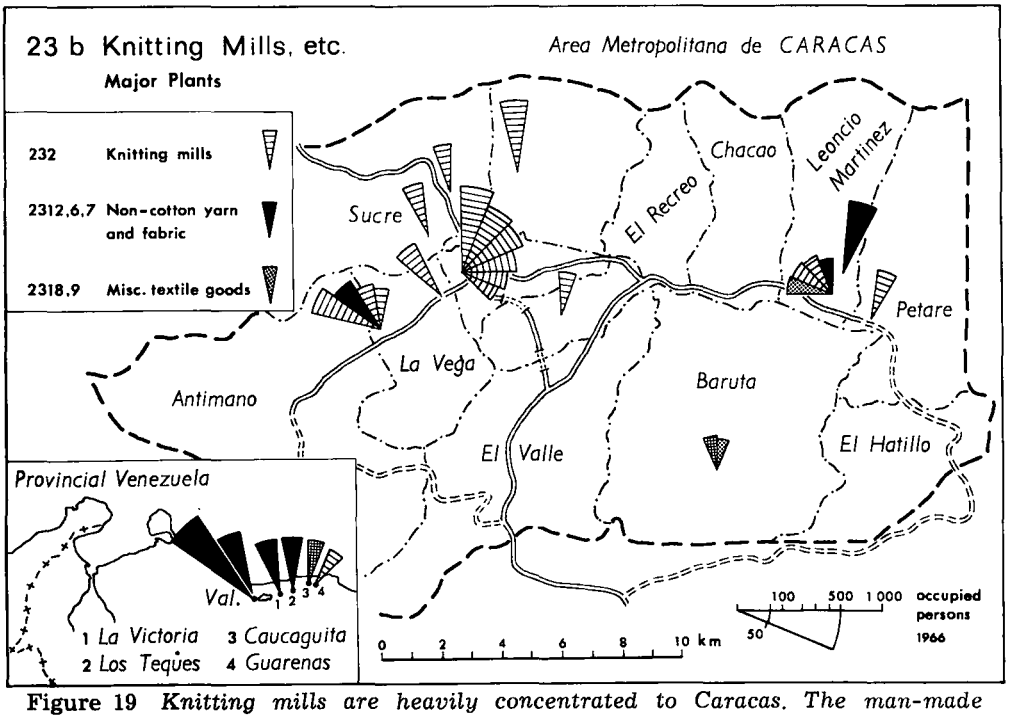


Figure 19 *Knitting mills are heavily concentrated to Caracas. The man-made fiber industry is important in Valencia and the state of Aragua.*

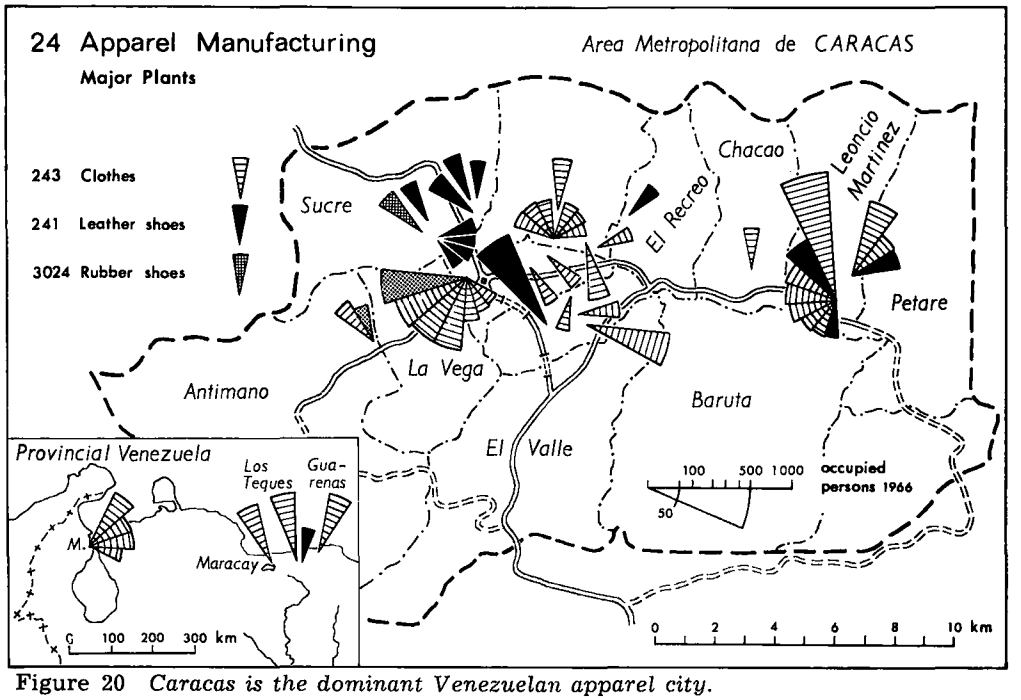


Figure 20 *Caracas is the dominant Venezuelan apparel city.*

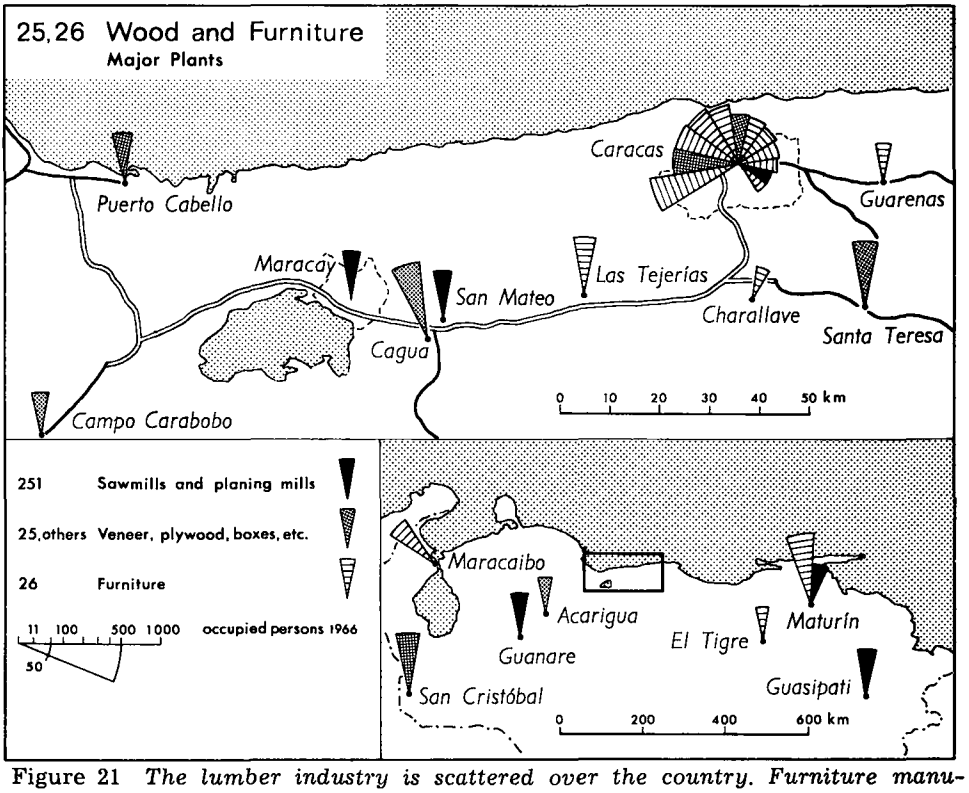


Figure 21 *The lumber industry is scattered over the country. Furniture manufacturing is concentrated to Caracas.*

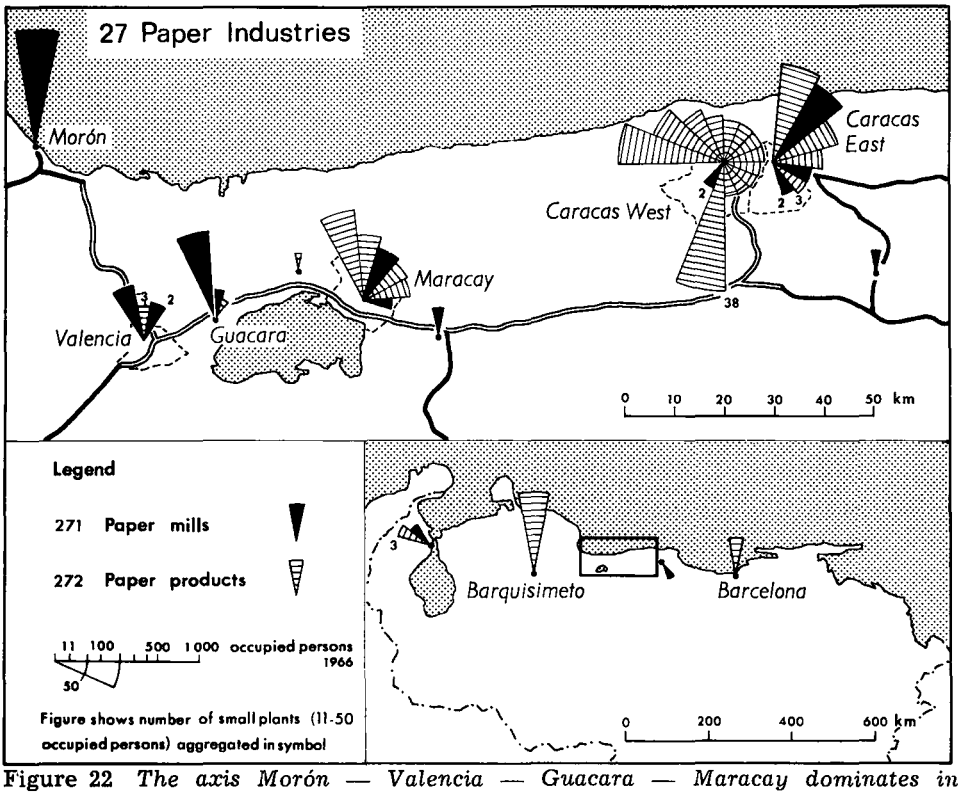


Figure 22 *The axis Morón — Valencia — Guacara — Maracay dominates in paper manufacturing. The paper products industry is important in Maracay but Caracas has by far the leading concentration.*

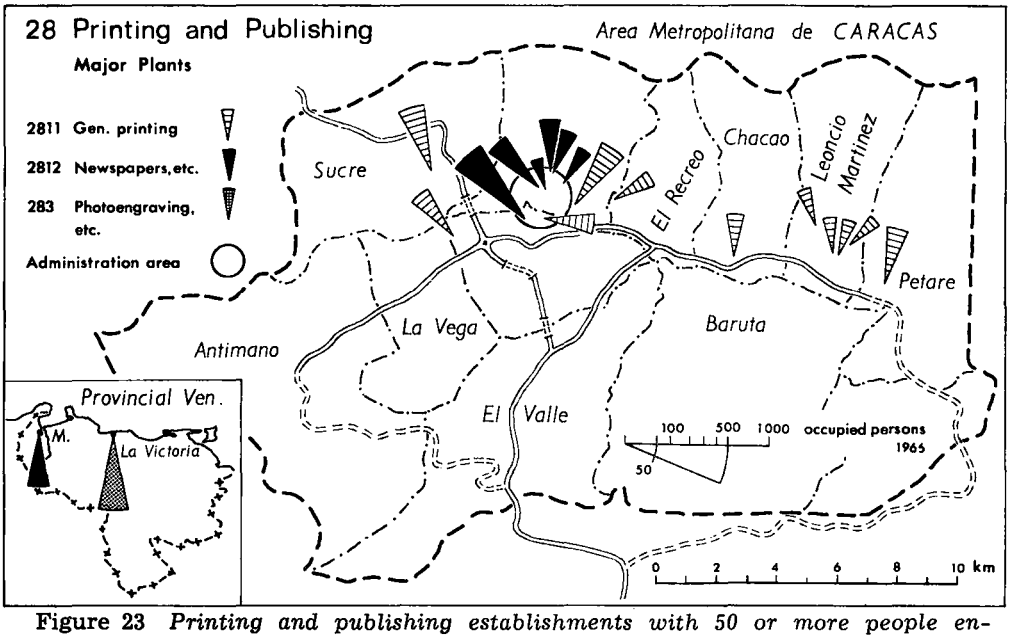


Figure 23 *Printing and publishing establishments with 50 or more people engaged are almost exclusively located in Caracas.*

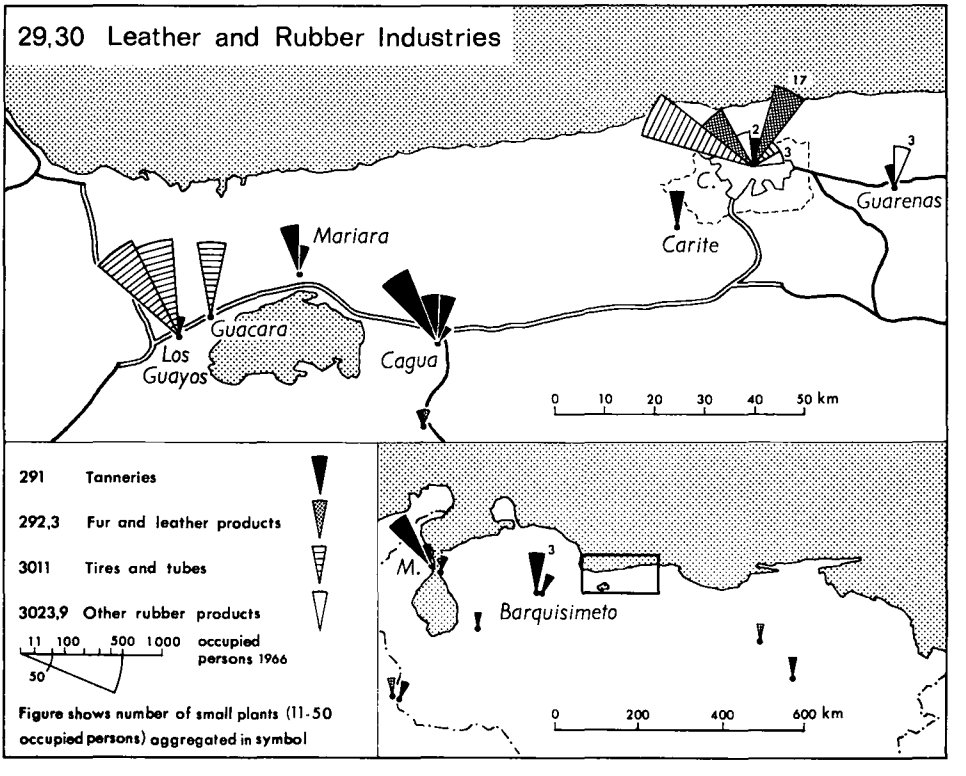


Figure 24 *Cagua has traditionally been important in leather processing. The Valencian satellite towns Los Guayos and Guacara dominate the tire and tube manufacturing. Caracas has a great number of small leather products plants.*

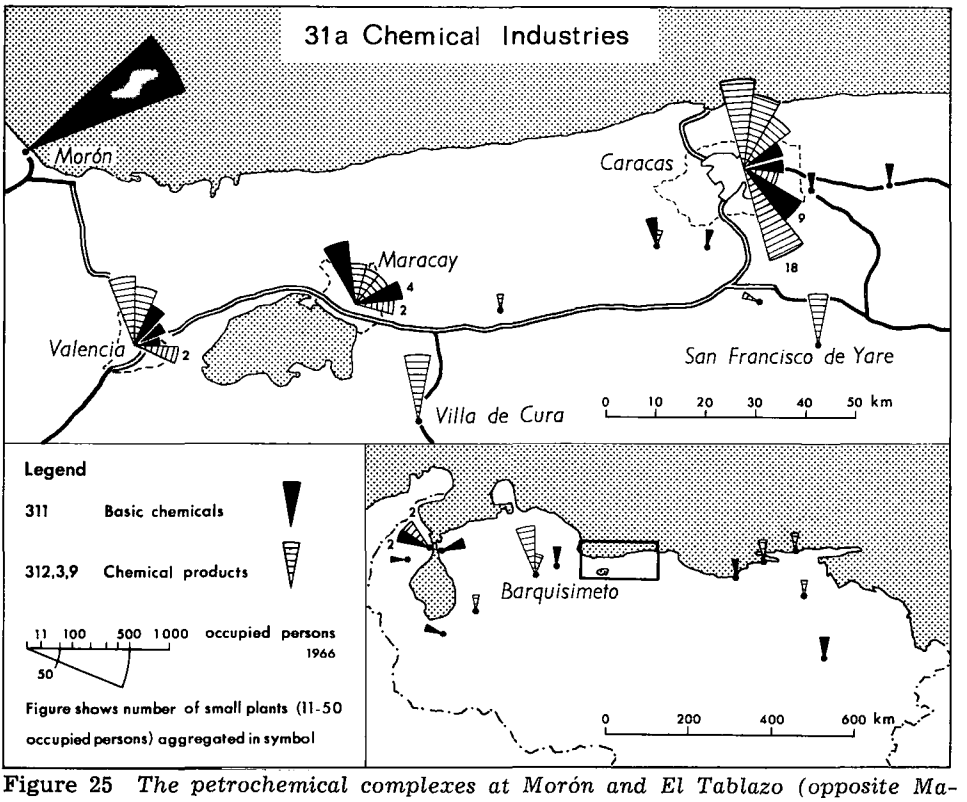


Figure 25 *The petrochemical complexes at Morón and El Tablazo (opposite Maracaibo, initiated in the late sixties and not shown in the map) dominate the basic chemicals industry. Chemical products are made in a variety of plants in Caracas, Maracay and Valencia above all.*

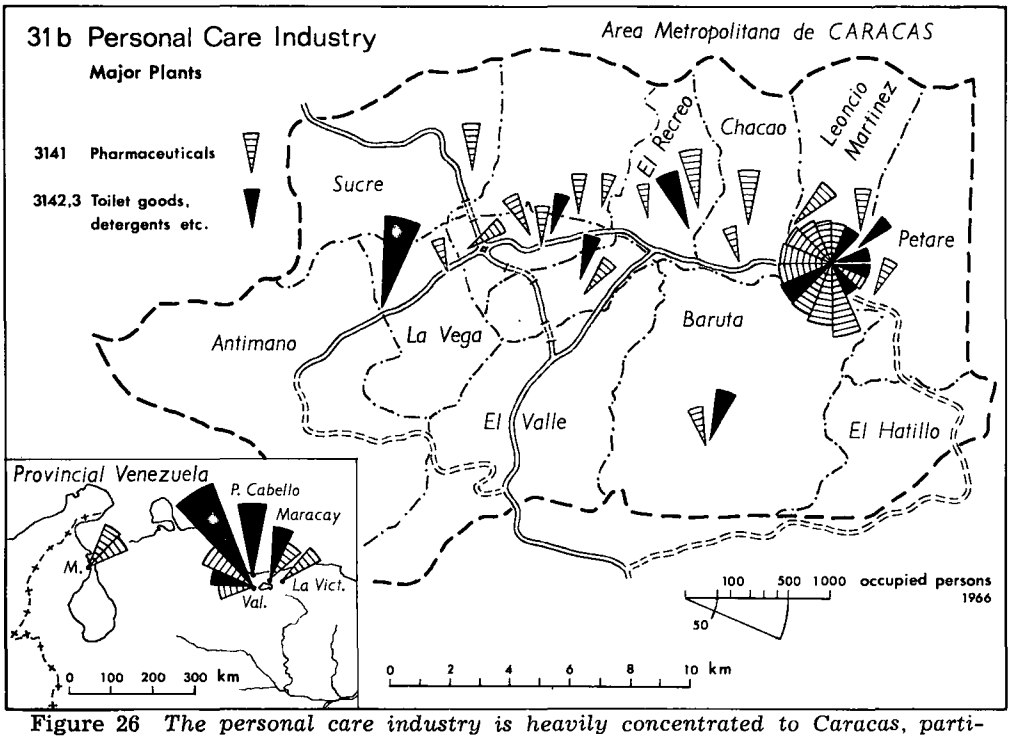


Figure 26 *The personal care industry is heavily concentrated to Caracas, particilarly to its eastern part.*

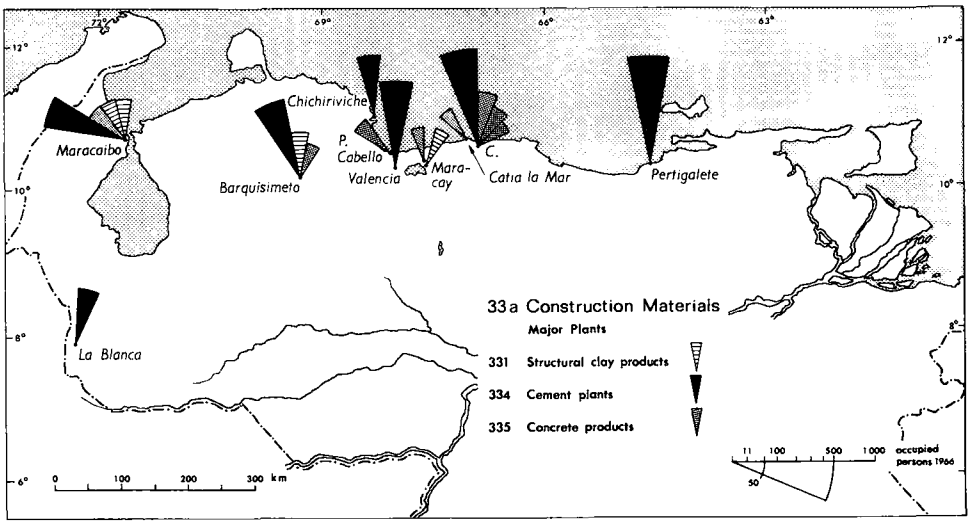


Figure 27 *The cement industry is represented in each major region thanks to widespread deposits of limestone. Other construction materials are made primarily at the two or three largest urban markets.*

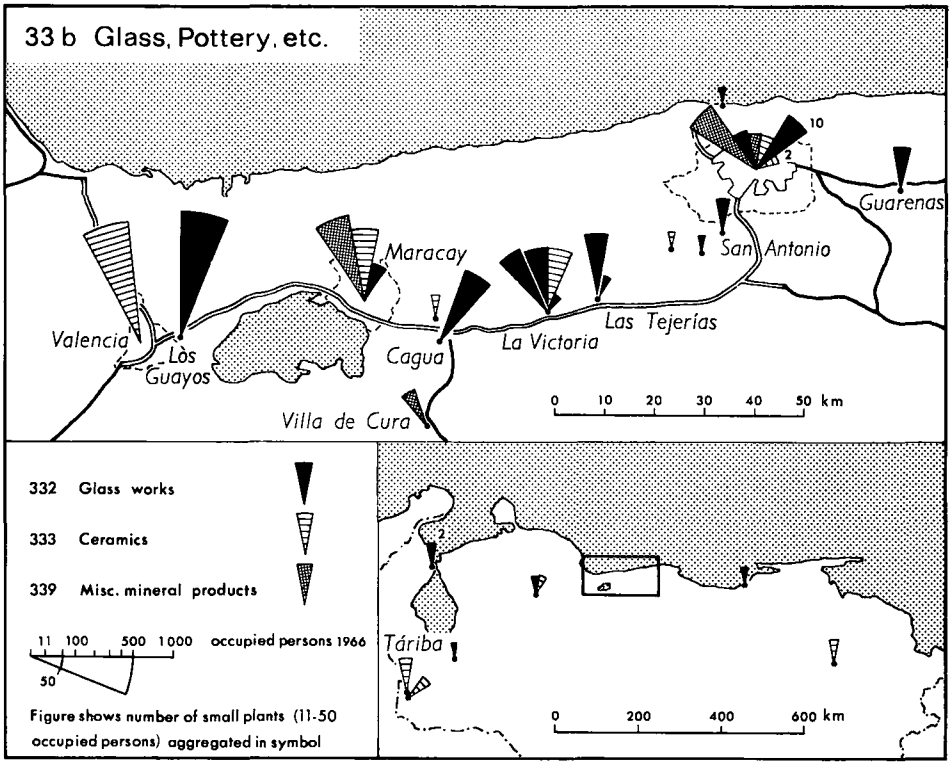


Figure 28 *The glass and pottery industries are highly concentrated to a string of towns between Valencia and Caracas.*

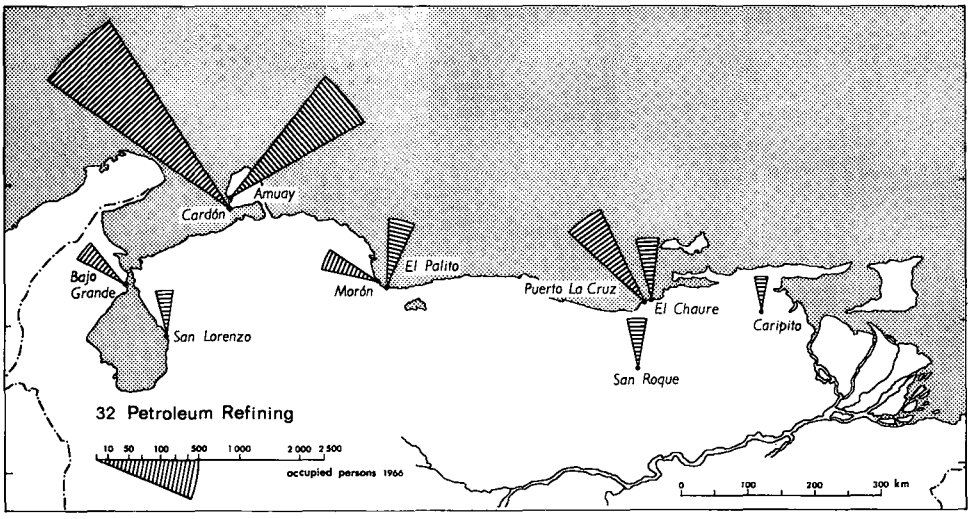


Figure 29 *Western Paraguaná dominates the country's oil refining. Puerto La Cruz is a secondary center.*

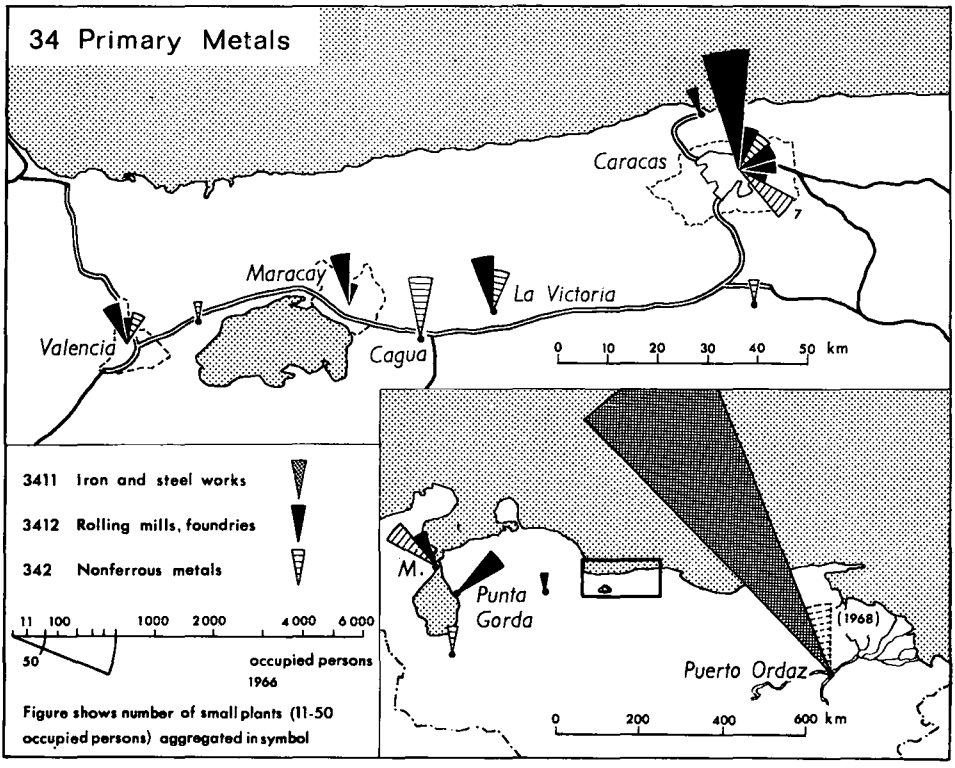


Figure 30 *The primary metals industry is dominated by the large iron and steel mill at Puerto Ordaz. Small steel-working plants are located in Caracas, in the central area and in Maracaibo and vicinity.*

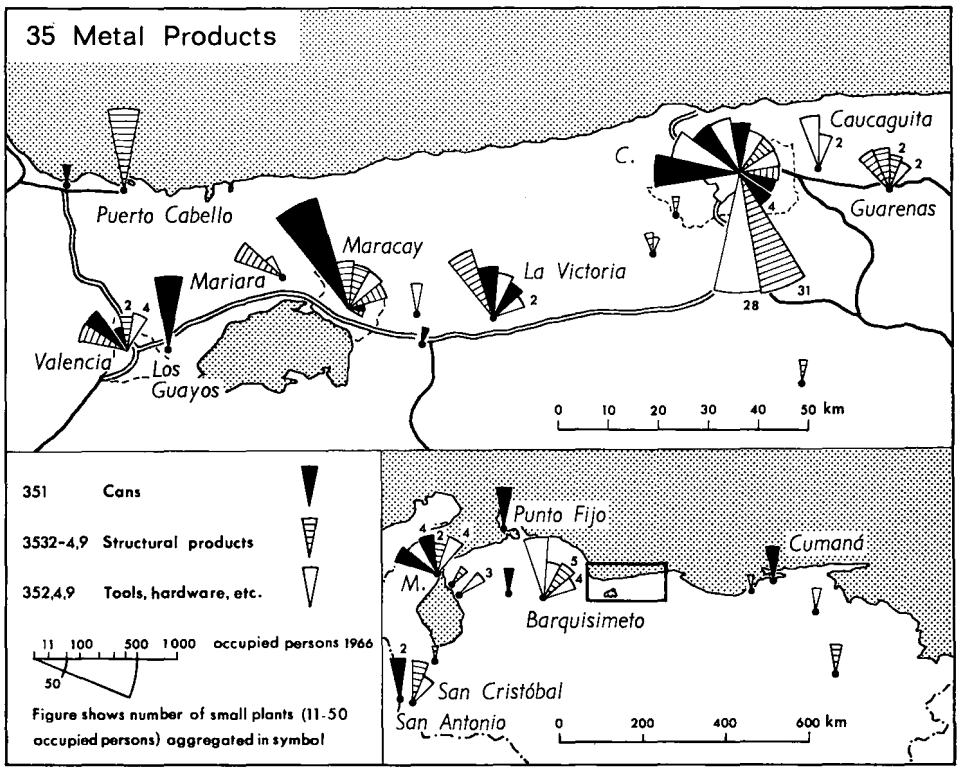


Figure 31 *The dispersed metal products industry has a center in Caracas, where many small plants are located.*

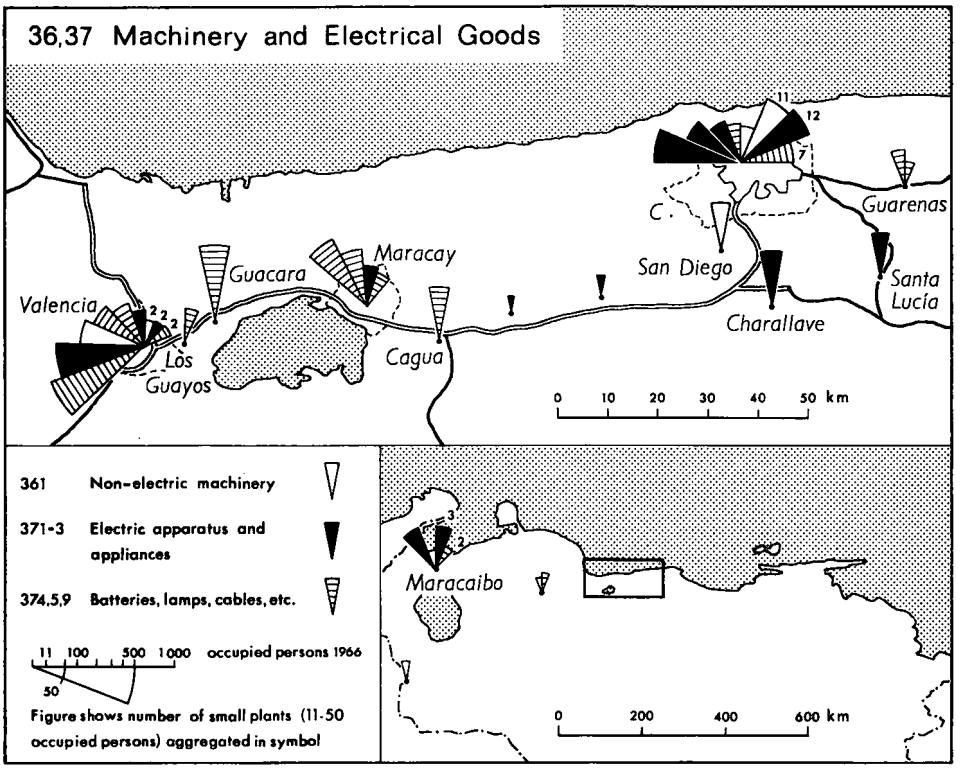


Figure 32 *The manufacturing of machines and electrical goods is largely confined to Caracas (and satellite towns), Valencia, Maracay, and Maracaibo.*

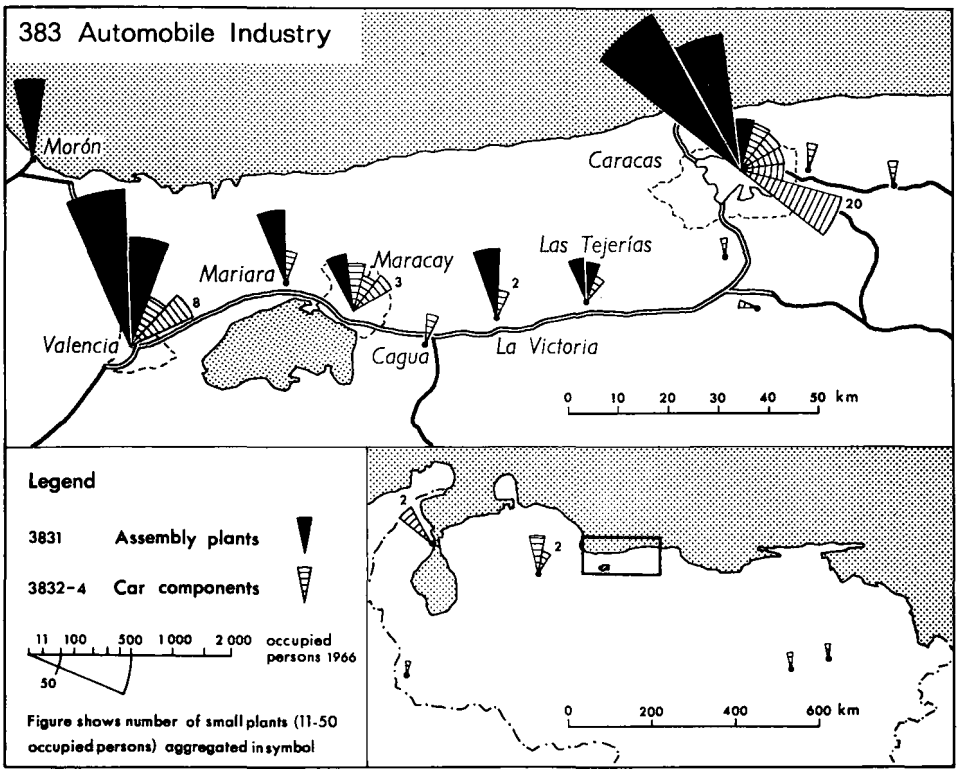


Figure 33 *The automotive industry is heavily concentrated to a string of towns in the core region with Valencia and Caracas as main centers.*

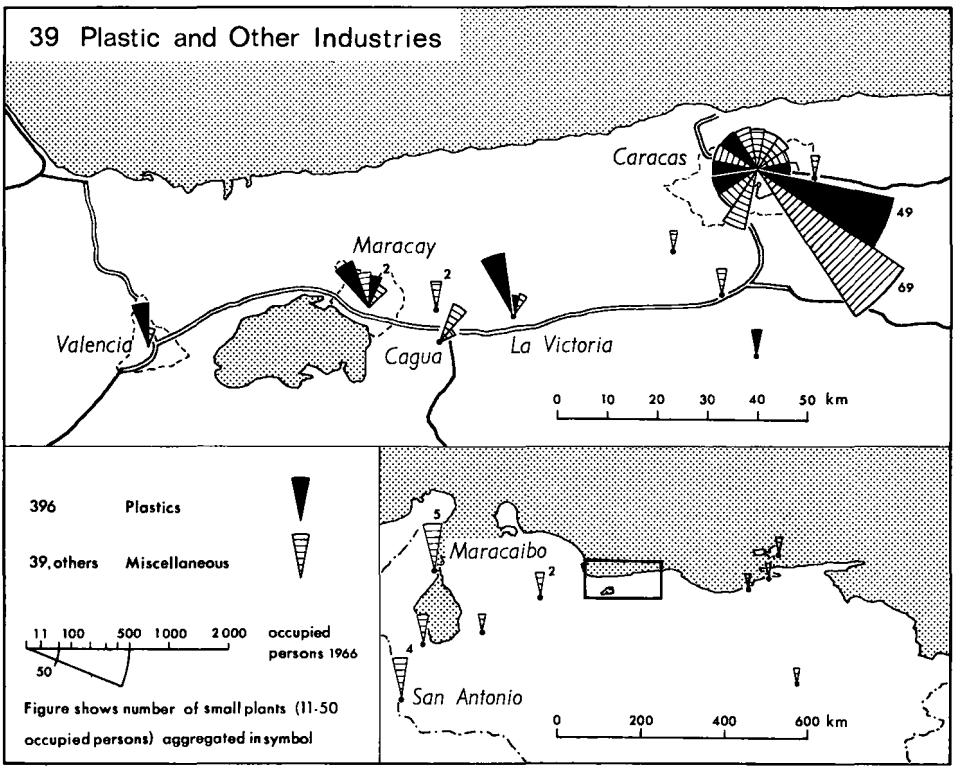


Figure 34 *Of the plants producing plastic and miscellaneous goods more than three-quarters are located in Caracas.*

Appendix

A Statistical Note on the Manufacturing Industries in Venezuela, 1913—1953

This excursus to chapter two was written to provide some quantifications of certain of the major variables of the early industrial development in Venezuela, for which serial data just are lacking. It contains some estimates of national aggregates for factories, employees and invested capital for different times.[1] These have been based on a critical examination of fragmentary information appearing in printed sources. For earlier decades in particular, the figures are little more than qualified guesses and should not be taken as exact. They indicate orders of magnitude and show the salient features of the course of industrialization in Venezuela. They should be seen as provocative outlines, serving to stimulate further empirical research, based on records and other primary sources.

Pre-World War I period

The earliest, official statistical survey of manufacturing establishments in Venezuela is to be found in *Directorio Industrial,* a directory of registered entrepreneurs (farmers, cattle breeders, industrialists and merchants), drawn up in 1910—1911 and revised in 1913. Summaries of the directory were published in *Anuario Estadístico de Venezuela* of 1910 and 1912 (issued in 1913 and 1915 respectively). Data were included about the number of enterprises and the total amount of *capital social* for each state and industrial activity.

[1] A reservation should be made for the estimates of invested capital. Needless to say, a clearly defined and consistent capital concept was never used in the past. This variable was included, however, as most of the information on early manufacturing enterprises was given in terms of capital.

The concepts of capital, invested capital and, for incorporated companies, share capital (or capital stock) are used synonymously in this appendix, as are labor force and employment with number of employees and enterprise with establishment.

Table A 1 *Industrial Enterprises in 1913 by Industries and Major States*
E Enterprises, number C Capital[a], Bs thousand[b]

Activity	Total Venezuela		Federal District		Carabobo		Sucre		Zulia		Other states	
	E	C	E	C	E	C	E	C	E	C	E	C
Meat freezing	1	1391			1	1391						
Meat salting	1	500									1	500
Flour mills	2	160									2	160
Maize milling	11	620					5	260	3	240	3	120
Wheat milling	2	284									2	284
Coffee peeling	2	80					1	40			1	40
Bakeries	7	290			2	80					5	210
Sugar mills	3	1700							3	1700		
Chocolate factories	2	180	2	180								
Macaroni factories	4	190	2	100	1	40	1	50				
Ice factories	5	486	1	42			3	144			1	300
Food industry	*40*	*5881*	*5*	*322*	*4*	*1511*	*10*	*494*	*6*	*1940*	*15*	*1614*
Alcohol distilleries	4	210					1	50			3	160
Liquor factories	4	355	4	355								
Breweries	2	2274	1	1410					1	864		
Carbonated water	4	460	3	260							1	200
Beverage industry	*14*	*3299*	*8*	*2025*			*1*	*50*	*1*	*864*	*4*	*360*
Cigarette factories	1	12500	1	12500[c]								
Cigar making	9	515	1	125	1	80	1	60			6	250
Tobacco industry	*10*	*13015*	*2*	*12625*	*1*	*80*	*1*	*60*			*6*	*250*
Cotton ginning	3	180									3	180
Cotton mills	3	6200	1	4040[d]	1	160	1	2000				
Rope factories	1	400	1	400								
Textile industry	*7*	*6780*	*2*	*4440*	*1*	*160*	*1*	*2000*			*3*	*180*
Shoe factories	12	1385[e]	4	880[e]	7	460					1	45
Tailoring	1	80	1	80								
Shirt making	2	250	2	250								
Hat factories	8	620	1	80	5	440					2	100
Clothing and footwear	*23*	*2335*	*8*	*1290*	*12*	*900*					*3*	*145*
Saw mills	*9*	*1270*	*2*	*370*	*2*	*400*			*3*	*420*	*2*	*80*
Furniture factories	*2*	*200*	*1*	*100*			*1*	*100*				
Paper mills	*1*	*540*	*1*	*540*								
Tanneries	9	4260	2	2400	4	1600					3	260
Saddle and harness	8	1135	2	700	4	260			1	130	1	45
Leather industry	*17*	*5395*	*4*	*3100*	*8*	*1860*			*1*	*130*	*4*	*305*
Vegetable oils	7	2646			3	488	3	2098[f]			1	60
Emulsions	1	100	1	100								
Gun-powder plants	1	60	1	60								
Soap making	16	1690	3	440	2	500	2	100			9	650
Match factories	1	5500	1	5500								
Candle factories	9	1000	2	360	3	440	2	100			2	100
Chemical industry	*35*	*10996*	*8*	*6460*	*8*	*1428*	*7*	*2298*			*12*	*810*

Table A 1 (*cont.*)

Glass factories	1	2500	1	2500								
Cement plants	1	2400	1	2400								
Marble cutting	2	128	2	128								
Mosaic tiles	1	285	1	285								
Stone, clay and glass	*5*	*5313*	*5*	*5313*								
Manufacturing industry	*163*	*55024*	*46*	*36585*	*36*	*6339*	*21*	*5002*	*11*	*3354*	*49*	*3744*
Asphalt exploitation	1	5200					1	5200				
Fisheries (incl. pearls)	7	1790					7	1790				
Electricity generation	12	9348	3	6836	2	1300					7	1212
Transport companies	15	170010	5	87473	1	20705	1	2500	4	15442	4	43890
Telephone companies	7	593					1	60	1	100	5	433
Other activities	5	1320	1	600	2	80	1	240	1	400		
Non-manufacturing	*47*	*188261*	*9*	*94909*	*5*	*22085*	*11*	*9790*	*6*	*15942*	*16*	*45535*
Total	*210*	*243285*	*55*	*131494*	*41*	*28424*	*32*	*14792*	*17*	*19296*	*65*	*49279*

a The item capital, interpreted as *capital invertido* in *Anuario Estadístico de los Andes* (1966:83), was not specified in the source. For most large establishments it was equal to the capital stock as reported in other sources. Evidently, it referred to other capital concepts, e.g. total investments or value of all assets, for non-stock companies, which presumably made up a majority of the small enterprises.

b With slight fluctuations one bolivar equalled US$ 0.193 (the par value established in 1912) up to 1930 (inversely, one dollar equalled Bs 5.20).

c The amount of capital given for the sole enterprise (Bs 12.5 million) seems to be an exaggeration, even if the figure means the investments of all the cigar and cigarette manufacturers existing in the country in 1913. By that time there was evidently only one cigarette factory, using machines on a large scale. Its share capital was Bs 3,125,000 (Arcila Farías 1962:413, Bell 1922:62, 115 and 174, Vila 1967a:273). The rest of the production of cigarettes, probably a minor part, and of cigars came from a great number of small factories and cottage workshops, scattered over the country, where manual methods dominated and little machinery was utilized.

d The company, Telares de Caracas y Valencia, owned two cotton mills: one in Valencia, founded in the 1870's, and one in Caracas, founded in 1908, the latter with a share capital of Bs 1.5 million. In 1911 they were merged into one company with headquarters in Caracas. This was probably the largest manufacturing enterprise in Venezuela by that time. The two mills gave employment to some one thousand workers (see chapter four for more details).

e The largest enterprise was a shoe and saddle factory in Caracas with a capital stock of Bs 300,000. The factory, evidently J. Boccardo y Cía, an Italian firm, in 1910 employed 140 persons. An additional fifty employees worked in the company's tannery, held to be the leading tannery in the country as was its main factory in the shoe industry (Butman 1910:32—33).

f A coconut and cottonseed oil factory in Cumaná accounted for Bs 2.0 million (Bell 1922:157—8).

Source: Reclassification of data in *Anuario Estadístico de Venezuela 1912*, p. 174—9.

Although for reasons obvious from the nature of the source (see further below), this survey was necessarily far from complete, especially as regards small-scale enterprises, it nevertheless presumably gives a fairly accurate picture of the extent and nature of the large enterprises. Since it contains valuable regional data it is worth describing it at some length. In tables A 1 and A 2 the 1913 data on registered industrialists have been rearranged and summarized. Manufacturing operations proper have been separated from other industries and ordered among themselves according to the 1958 ISIC classification to facilitate comparison with later surveys.

Two comments should be made about the enterprises included in the directory. No single enterprise with a capital of less than Bs 40,000 appears

Table A 2 *Industrial Enterprises in 1913 by States*[a]

E Enterprises C Capital, Bs thousand

State	Manufacturing		Non-manufacturing				Total	
			Electricity		Other			
	E	C	E	C	E	C	E	C
Anzoátegui					1	1500	1	1500
Apure	4	840					4	840
Aragua	9	360	1	200			10	560
Bolívar					1	100	1	100
Falcón	7	410			1	1040	8	1450
Lara	4	240					4	240
Mérida	6[c]	524	3	320			9	844
Miranda					2	6080	2	6080
Monagas	17[d]	1230	1	52			18	1282
N. Esparta	1	100					1	100
Táchira			2	640	2	203	4	843
Trujillo					1	50	1	50
Yaracuy	1	40			1	35350	2	35390
The four big[b]	114	51280	5	8136	26	134590	145	194006
Total	*163*	*55024*	*12*	*9348*	*35*	*178913*	*210*	*243285*

a No enterprise was reported for the states of Barinas, Cojedes, Guárico and Portuguesa or for the federal territories.

b The Federal District and the states of Carabobo, Sucre and Zulia (for specification, see table A 1).

c Of which four flour mills (Bs 544,000).

d Five enterprises and a capital of Bs 210,000 were reported for bread-making as well as for cigar manufacturing and soap-making.

Source: See table A 1.

in the table, and this also seems to have been the deciding factor for inclusion in the register.[2] We may presume that an establishment with an invested capital of Bs 40,000 or more would normally employ more than ten people, a limit which could reasonably be used for defining manufacturing at that time. However, this does not imply that any mechanized technology was always employed. The bulk of the enterprises in the tobacco, leather, soap and candle industries were merely craft shops — although in some cases employing up to fifty persons — where manufactures were turned out by artisans using manual techniques.[3]

The survey apparently included only those manufacturers who agreed to register.[4] For this and other reasons it is defective. Omissions are of three kinds at least:

1. Some manufacturing activities have been completely ignored, notably the whole graphics industry.[5]

2. Some states are incompletely surveyed, e.g. Zulia and Aragua.[6] In other states, such as Monagas and Apure, double-counting (listing the same enterprise under more than one activity) may have resulted in exaggerated values.

3. The development between 1911 and 1913 does not seem to have been satisfactorily covered. According to the directories for 1910/11 and 1913, manufacturing grew during this period to the extent of 16 enterprises and Bs 2 million in capital only. Among large enterprises two cotton mills in Caracas (founded in 1911 and 1913) and one in Maracaibo (presumably also prewar) have been omitted, as has a brewery at Maiquetía (founded in 1912 with a share capital of Bs 1.5 million). Big expansions of the Carabobo mill (listed in the directory with a capital of Bs 160,000) in 1911 and 1912 have apparently not been taken into account.

Below, enterprises have been distributed approximately among classes based on size of capital. The data given in table A 1 were first subjected to a few modifications. The amount of capital for the cigarette factory was reduced to Bs 3.1 million (its share capital). One of the Caracas chocolate factories and the Carabobo (Branger) cotton mill were increased to half a million (its share capital) and one million bolivars (a conservative

[2] *Anuario Estadístico* 1910:374, footnote, and *Boletín del Ministerio de Fomento*, IV:7 (Jan. 1913):551.

[3] In 1910 there were eight shoe factories with an invested capital of Bs 40,000 or more according to the 1910/11 directory. Only two were equipped with machinery, both situated in Caracas (Butman 1910:33).

[4] *Anuario Estadístico* 1910:374, footnote.

[5] *Ibidem*, p. 141—5, and PAU 1911:19—20. The first decade of the century seems to have been a golden age for the press. Almost 90 per cent of the 259 circulating periodicals in 1912 were founded after 1900, most of them after 1907.

[6] In the case of the manufacturing industries in Zulia, compare Dalton 1912:152.

Table A 3 *Industrial Enterprises in 1913 by Size Groups*

	Capital size, Bs thousand				
	40—100	101—250	251—999	1000—	Total
Number of enterprises	100—110	25—30	15—17	16—18	165
Aggregated capital, Bs million	6.0—6.5	5.0—4.5	6.0—6.5	32—34	50

Source: Adapted from table A 1.

estimate), respectively. Bs 1.5 million was added for the omitted Maiquetía brewery and Bs 1.75 million for the omitted Caracas cotton mills.

In summary, it seems reasonable to assume that on the eve of World War I manufacturing comprised roughly 150—200 factories representing an invested capital of Bs 50—60 million. They may have employed 12,000—15,000 persons, given an average capital/labor ratio of Bs 4,000/worker. A factory was an establishment employing a labor force of ten people or more and an invested capital of Bs 40,000 or more.

The 1920's

After the 1913 survey no more global data on manufacturing were published by the Gómez government. A single inflated estimate (Bs 350 million) was given in an official source for the 1918 (1920?) capital invested in the industrial sector.[7] This estimate, presumably an up-dating of the level given in the 1913 directory, is of little use for comparisons, as it refers to an aggregate of unspecified (and still undefined) "invested capital", embracing railways (Bs 201 million?), electricity and other non-manufacturing sectors as well as manufacturing proper. Nevertheless, we can reasonably assume that the substantial increase from the level reported for "industrial capital" for 1913 (Bs 243 million) that the new figure implies, includes a considerable growth in investment in manufacturing establishments as well.

The lack of data for the period up to 1936 is particularly unfortunate, as the economic booms during the first World War and in the twenties obviously provided great stimuli to domestic manufacturing in Venezuela. Thus, one would expect significant advances in this sector. To throw some light on the subject, a compilation was made of the returns for new mills as recorded in the available literature. An US estimate of the principal manufacturing plants operating at the close of the twenties gives valuable additional information on this period (see below).

[7] Veloz Goiticoa 1924:95, 132. Compare Bürger 1922:198.

Table A 4 *Major Establishments and Expansions in the War-Years and the Early Twenties*

ctivity	Locality	Inception year	Capital,[a] Bs million	Employees[a]	Sources
ew establishments					
dairy	Maracay	1913(15?)			Veloz G., 92—3; Bell, 115, 172
sugar mills	Zulia area	1913—20	17.5		Ewing, 27—9; Bell, 206—8
sugar mill	Tacarigua	1914	2.0		Ewing, 29; Hill 1959:73
sugar mill	Petare	1915(?)	0.5		Ewing, 29; Bell, 171
sugar mill	Santa Teresa	1918	1.0[b]	40	Vila 1967c:273
—4 cigarette ıctories	Caracas	1917—21	2.5—4.0	1400—1700	Vila 1967a:274; Posada C., 192—232
cotton mills	Caracas	1920—24	5—6		Lairet, 87; Bell, 175
cotton mill	Maracay	1924			Vila 1966a:221
paper factory	Maracay	1916	1.5		Arcila F. 1962:418; Bell, 115, 178
tannery	Valencia	1918	0.5	39	Vila 1966b:239
petroleum ›finery	San Lorenzo	1917	1.5—2.0		Veloz G., 77—8
xpansions					
akeries	Caracas and La Guaira		0.9[b]	244	Vila 1967a:271—2; Posada C., 193
rewery	Maracaibo		1.728		Bell, 221
extile industry[c]			25[d]		Veloz G., 94
ope and sack ıctory	Caracas		0.75		Veloz G., 94
aw mill	Maracaibo		2.0		Bell, 221
ortland cement ıctory	Caracas		e		Beaumont, 15

a Around 1920. For the expansions, data refer to factory totals after expansion.
b Presumably turnover per year.
c Counted as a whole, including new establishments.
d By the mid-1920's.
e New machinery was installed in 1920, which increased the factory's production capacity from 35,000 to 60,000 sacks of 95 lbs. per month.

Table A 4 provides a survey of large and medium-scale manufacturing establishments and expansions made during World War I and the early twenties, as gleaned from available sources. Only cases with investments amounting to half a million bolivars or more have been included.[8]

[8] As small-scale enterprises started during the war e.g. a tobacco plant at Cumaná, employing 60 persons in 1920, a chocolate factory in Caracas (44 persons), an ice-cream factory also in Caracas and a newspaper printing-house in Maracaibo (for sources, see table A 4).

The estimates in table A 4 of capital invested in the sugar mills are exaggerated as, except in the case of the Petare mill, they include the values of sugar-cane lands and transportation facilities in addition to plant and equipment. Total capital invested in the white-sugar industry was Bs 25—30 million, if the numerous small-scale producers are included. About half of this, let us say 15 million, may represent the value of plant and equipment.[9]

Table A 4 indicates a considerable degree of growth in the manufacturing sector during World War I and the immediate postwar years. The invested capital may have as much as tripled in the cotton, sugar, cigarette, paper-products, and petroleum-refining industries, which together with the leather and shoe industry were the country's most important manufacturing industries (see table A 5). Assuming a moderate increase in investments in the rest of the sector, from Bs 36 million in 1913 to about 50 million a decade later, the total capital invested in manufacturing in 1913 (Bs 50 million) may have more or less doubled in ten years.

Table A 5 *Estimated Capital Increase in Principal Manufacturing Industries, c. 1913—c. 1923* (Bs million)

	c. 1913	c. 1923
Cotton mills	8.7	20—25
Sugar mills	1.7	c. 15
Cigarette factories	3.1	c. 6
Paper mills	0.5	2
Petroleum refineries	—	2
Total	*14.0*	*45—50*

Sources: Tables A 1 and A 4 (with modifications given in the text).

To summarize, the 200—250 largest manufacturing establishments in the early (or mid-) twenties may have been factories, as defined above, representing a total invested capital of around Bs 100 million and employing 20,000—25,000 workers.

[9] The sugar refineries were established primarily for exports. The export of white sugar started on a considerable scale during World War I, reached high volumes in the early twenties but ceased almost completely in the thirties (Veloz 1945).

Table A 6 *Capital/Labor Ratios for Some Manufacturing Enterprises in the Early Twenties*

	Number	Number of employees	Capital, Bs million	Capital per employee, Bs thousand
Enterprises with a capital of Bs 1 million or more	5	2911	14075	4.9
Enterprises with a capital of Bs 0.1—0.55 million	4	384	1350	3.5

Sources: Data on capital and employment were taken from sources listed in table A 4.

Table A 7 *Estimates of Manufacturing Capital and Employment in the Early Twenties*

	Number of factories	Capital, Bs million	Capital/ employee ratio, Bs thousand	Number of employees
Large-scale industry[a]	c. 30	65	5	13000
Small-scale industry[b]	c. 200	35	3.5	10000
Total	*c. 230*	*100*		*23000*

a Enterprises with a capital invested of Bs 1 million or more.

b Enterprises with a capital invested of Bs 40,000—1 million.

Sources: Tables A 4—A 6 and the author's own estimates.

The growth indicated in tables A 5 and A 7 is on the whole confirmed by an official US estimate from late 1929 (see table A 8). As the estimate contains highly aggregated data it is not possible to make exact comparisons from which to derive information about manufacturing developments during the latter half of the twenties. However, it seems that the beverage industry in particular gained momentum during the decade.

Table A 8 *Manufacturing Plants by 1929/1930 as per US Official Estimates*

Activity	Number	Capital invested	
		in US$ thousand	in Bs million[a]
Chocolate	3	170	0.9
Sugar refineries	15	7000	36.4
Breweries	5	5000	26.0
Soft drinks	15	180	0.9
Cigars and cigarettes	16[b]	1000	5.2
Textiles	13	10000	52.0
Boots, shoes and sandals	4[c]	2500	13.0
Straw hats	10	200	1.0
Saw mills	14	700	3.6
Paper products	2	280	1.5
Tanneries	10	500	2.6
Rubber products	2	120	0.6
Cement	1	400	2.1
Glass	1	200	1.0
Matches	1	500	2.6
Wire nails	1	75	0.4
Total	*113*	*28825*	*149.8*

a At the early 1930 exchange rate of Bs 5.20 for US$ 1.00. Author's computation.

b One large factory represented half the total capital.

c Only the four largest. Many small establishments were included in the capital estimate.

Source: Rearrangement and summation of data in Harold M. Randall & Frederic D. Grab, "Industrial Development in Venezuela", *Commerce Reports 1930*, no. 5 (Reproduced with minor changes in Charles J. Dean, *Commercial and Industrial Development in Venezuela*, Washington 1931).

Restrictive limits in terms of capital invested were evidently used for defining manufacturing plants in the estimate. Only for soft-drink and straw-hat factories is the average amount of capital invested less than $ 50,000 (Bs 250,000). As a result, the many establishments in the food and chemical industries have with few exceptions been regarded as shops not large enough to be included. The flour mills, the distilleries and the soap and candle industries were entirely omitted, although they probably produced on a scale comparable to that of the soft-drink and straw-hat industries.

To make the picture of plants in the estimate more accurate, one large and four small petroleum refineries should be added. In 1929 they repre-

sented a probable invested capital of at least Bs 5 million.[10] Furthermore, a dairy, a meat-packing plant, and a few vegetable-oil plants were involved in fairly big capital investments. In addition, the investments of the two paper mills seem far too small. On the other hand, the capital estimates for the sugar mills, the breweries, the shoe industry and, above all, the textile industry are certainly exaggerated.

The situation in 1936

The Economic Census of 1936, including industrial, commercial and service enterprises, is of special interest to geographers, as it contains a wealth or regional data, presented in a series of volumes, one for each state and three for the Federal District.[11] However, the national census results seem to have been only superficially analysed and the state results hardly analysed at all.[12] Here some remarks and recompilations of the industrial census will be made, in order to throw some more light on the pre-World War II factory industry and its regional distribution.

The accuracy and reliability of data from this census, the first of its kind in the country, is questionable on many counts.[13] On the whole, however, it is likely to be as good as any other Latin American industrial census of that time.

In view of the considerable proportions of the craft industry, the census endeavoured to cover all productive units, regardless of number of employees or amount of production, thus including even family handicraft.[14] Although many very small operations with few or no employees were included, most such operations were apparently left out, largely because of data-gathering difficulties.

Apparently the census also failed to count a fairly large number of factory establishments. Only units that were in business during the census year as well as at the time when the census was actually taken (which was one or more years afterwards, varying with the state con-

[10] See chapter 3.

[11] *Censos industrial, comercial y empresas que prestan servicios 1936*, Ministerio de Fomento, Dirección (General) de Estadística, 23 vol., Caracas 1937—1941. National summaries were published in *Anuario Estadístico* 1938 (incomplete) and 1940.

[12] Elaborations of the industrial census were published in the United Nation's *The Growth of World Industry, 1938—1958* (reproduced in this work as table A 6) and BCV's *Ingreso Nacional de Venezuela* from 1949 (compare note 19).

[13] For a clarification and testimony on revision measures and the veracity of the returns, see the introductory notes by José A. Vandellós, the census director, in the census volumes regarding *Distrito Federal* (Caracas 1937), p. 5 and *Estado Aragua* (Caracas 1938), p. 5. Possible errors were believed to be of little significance (see also *Estado Portuguesa*, Caracas 1938, p. 5).

[14] *Distrito Federal*, p. 4.

cerned) were included.[15] The petroleum refineries, one fairly large and half a dozen small ones, were not covered at all.[16] Also excluded from the census results were the Aragua manufacturing establishments which reverted to the state as part of the "bienes restituídos" (restored properties) after Gómez' death, as data for these units could be gathered only for the last quarter of 1936.[17] They are, however, considered in many of the compilations below.

According to the census some 48,000 people, 41,200 of them wage-earners, were employed in the industrial sector, distributed over more than 8,000 establishments.[18] The food industry, including beverages, accounted for more than half of both establishments and employees.[19] Total invested

[15] *Idem.* Of 1,187 industrial enterprises surveyed in the Federal District census, returns were missing for no less than 235 units that had either ceased to operate or changed ownership after the census year, and for 17 which were small cottage industries keeping no accounts at all (*ididem*, p. 5). In the states of Aragua, Bolívar, Cojedes, Táchira, and Yaracuy the enterprises (industrial, commercial and service-producing) omitted because of their closure or for other reasons represented between 15 and 20 per cent of those originally listed for the census. Examples given are extreme cases, however.

This limitation in the census coverage probably explains why the cotton spinning and weaving mill at Cumaná in the state of Sucre, for instance was not enumerated. The industrial census for Sucre was completed late in 1939 (see *Estado Sucre*, Caracas 1940). By then the small Cumaná mill faced increasing difficulties and was periodically inactive.

[16] A contemporary MF inquiry was made of the petroleum industry although the results were published separately, *Estadística de Petróleo. Datos para los años 1936, 1937 y 1938*, Caracas 1940. In this a distinction was made between the industrial and the commercial activities of the petroleum companies, but unfortunately not between the exploitation and the refining activities. Of the 13,800 employees (11,000 operatives and 2,800 salaried employees) in the petroleum industry in 1936 (including some 600 in commercial activities) only some 500 may have been engaged in the refineries.

[17] Nine factories accounted for some 800 employees, a textile mill alone for more than 500. See the census volume on *Estado Aragua*, p. 6—7, 267—274.

[18] The concept of establishment was used synonymously with enterprise and "industry" in the census reports.

[19] The census only recorded persons employed (employees), i.e. wage earners and salaried employees, not the actual number of persons engaged. At least in theory it disregarded working proprietors, unpaid family workers and homeworkers. The 1936 number of persons engaged in manufacturing, including artisan industry, was estimated by another source at 147,600: some 51,000 employees and some 96,600 own-account workers, of which two-thirds were craftsmen in the textile and clothing industries (BCV 1949:107—111). This estimate was based on the 1936 industrial census (for employees) and the 1941 population census (for own-account workers). Some adjustments were made in the 1936 census results. Admittedly, the cheesemaking industry was excluded, being considered as non-manufacturing industry (*idem*, 107 and 159). It engaged more than 5,000

Table A 9 *Manufacturing in 1936 by States. Official Census Results*

State	Enterprises	Employees	Capital	Machinery	Wages and salaries	Value added[a]
			in millions of bolivars			
Federal District	935	12861	128.2	77.9	24.7[b]	81.2
Anzoátegui	73	378	0.9	0.5	0.3	1.0
Apure	473	1305	1.3	0.2	0.3	0.8
Aragua	366	1674	13.8	4.2	2.9	7.0
Barinas	166	792	0.8	0.1	0.3	0.5
Bolívar	86	552	2.9	1.7	0.7	1.7
Carabobo	209	3601	37.1	15.9	6.7	14.8
Cojedes	192	400	0.4	0.1	0.1	0.3
Falcón	433	696	0.6	0.1	0.5	1.2
Guárico	2064	5884	4.8	0.2	1.2	1.9
Lara	224	1858	4.0	1.5	2.0	4.9
Mérida	608	1748	4.1	1.1	0.9	2.4
Miranda	162	1836	8.7	3.8	2.1	5.9
Monagas	245	830	2.9	0.7	0.7	2.2
N. Esparta	164	875	1.0	0.3	0.5	0.9
Portuguesa	41	166	0.5	0.1	0.2	0.4
Sucre	189	2439	7.3	1.7	1.9	3.6
Táchira	641	855	1.6	0.4	0.9	2.3
Trujillo	256	3247	4.2	0.6	0.7	1.8
Yaracuy	166	1902	8.1	2.1	1.4	3.7
Zulia	332	3964	61.7	18.3	8.2	20.4
Total[c]	*8025*	*47863*	*294.9*	*131.7*	*57.1*	*159.0*

a At market prices, thus including indirect taxes.
b Wages only.
c The federal territories were not covered by the census.

Source: Anuario Estadístico de Venezuela 1940, p. 207—211.

capital was Bs 295 million, and machinery was valued at Bs 132 million (see tables A 9—A 11).

However, these magnitudes give a false picture of manufacturing proper in 1936. A general defect concerns the employment data. The national total given above (48,000) is a summation of state figures, which, as a rule, refer to the maximum number of employees during the year. For each state, monthly employment data were also published. Assuming the mini-

cheesemakers distributed over more than 2,000 "establishments" (farms). Apparently, several additions were also made to fill the gaps in the 1936 census, which together more than compensated for the industry excluded. The estimated number of employees (51,000) exeeds the number given by the census by 3,000.

Table A 10 *Manufacturing in 1936 by Industries. Official Census Results*

Industry	Enterprises	Employees[a]	Capital	Machinery	Wages and salaries[b]	Value added[c]
			in millions of bolivars			
Food, incl. beverages	4381	25647	120.0	40.1	21.2	57.9[d]
Tobacco	275	2182	7.4	1.4	2.5	24.6[d]
Textiles, incl. clothing	941	5628	28.2	16.3	8.6	16.6
Wood products, incl. furniture	536	1774	7.1	2.0	3.0	7.0
Paper products	7	200	3.8	2.4	0.5	1.6
Graphic arts	90	1115	11.6	6.1	4.3	7.2
Leather products, incl. shoes	568	4016	8.2	1.6	5.5	10.3
Rubber products	5	166	0.8	0.7	0.3	0.6
Stone, clay and glass	472	2278	10.0	4.4	3.0	5.9
Chemical industry, incl. tanneries	284	1839	21.8	3.7	3.2	10.2
Iron and steel	131	375	1.9	1.0	0.6	1.6
Other metal working	74	95	0.3	0.0	0.2	0.5
Repair shops	146	503	4.2	0.8	1.0	2.2
Miscellaneous[e]	115	1037	69.7	51.1	3.2	12.7
Total	*8025*	*46855*	*294.9*	*131.7*	*57.1*	*159.0*[d]

a Excludes 1,008 employees in the Federal District.

b Excludes the compensation to salaried employees in the Federal District.

c At market prices.

d Includes indirect taxes of considerable amounts.

e Includes 49 electric power plants.

Source: Anuario Estadístico de Venezuela 1940, p. 229—233.

mum figure, i.e. the month with least employment in each state, the census total of employees amounts to only some 35,500.

Several deductions should be made for activities not related to factory-based manufacturing. The first one concerns non-manufacturing enterprises, above all 49 electric power plants.[20] These employed about 800 people and represented an invested capital of Bs 65—70 million and machinery for almost Bs 50 million.[21] In addition, a similar number of laundries

[20] For some examples of wide employment variations in states, and the reasons underlying these, see note 23.

[21] Data compiled from the various state reports show that 41 of the 49 electric power plants together employed 772 people. They represented an invested capital of Bs 66.8, a machinery capital of Bs 49.0 and a value added of Bs 11.3 million.

Table A 11 *Manufacturing Industries in 1936 by ISIC[a] Classification*

Major groups of manufacturing	ISIC no.	Establishments	Employees	Wages and salaries[b]	Value added[c]
				Bs million	
Food, beverage and tobacco	20—22	4611	28100	23.7	82.1
Textiles	23	36	2700	4.2	7.0
Clothing, footwear and made-up textiles[d]	24	1272	5700	8.6	17.2
Wood products and furniture	25—26	537	1800	2.8	7.0
Paper and paper products	27	5	100	0.1	0.1
Printing and publishing	28	79	1200	4.2	7.0
Leather and leather products, except wearing apparel	29	286	1800	2.0	4.9
Rubber products	30	4	200	0.3	0.5
Chemicals and chemical, petroleum and coal products[e]	31—32	131	1200	2.1	7.0
Non-metallic mineral prod.	33	466	2300	3.0	5.9
Basic metals	34	64	100	0.2	0.5
Metal products	35—38	267	900	1.6	3.8
Other manufacturing[f]	39	192	1300	3.4	14.0
All manufacturing[g]	*2—3*	*7950*	*47400*	*56.2*	*157.0*

a For interpretation, see Abbreviations, p. 221.

b Excludes the remuneration to salaried employees in the Federal District.

c Based on the values of sales at market prices (cf. notes c and d, table A 10).

d Includes rope making.

e Excludes petroleum refineries.

f Includes some electric power plants and some other establishments belonging to other ISIC groups.

g Excludes petroleum refineries but includes some electric power plants.

Source: Reclassification of the final results of the 1936 Industrial Census, *The Growth of World Industry, 1938—1958*, United Nations, New York 1960, p. 420.

[21] *cont.*

According to another compilation, 44 plants employed 785 persons (BCV 1949: 110). The two plants of the Federal District dominated the industry, accounting for nearly half the employment and almost two-thirds of the capital, the machinery and the value added (compare table A 15). In the national summary of the census, the 49 electric power plants were included in the group of miscellaneous industry together with 66 other enterprises (*Anuario Estadístico*, 1940:229). A comparison of the census totals for this group (see table A 10) with the figures mentioned above for power plants shows the insignificance of the remaining enterprises in the group.

and dye-works employing some 300 people in all, were included. Many establishments in the fishery industry — about a hundred altogether, employing over 800 people but practically no machinery — were most likely reported in the states of Falcón and Nueva Esparta. Also, many establishments in the coffee-processing industry (approximately 126 units and 729 employees) were in fact concerned with primary production activity rather than manufacturing. Perfumeries provide another example of activities that are difficult to define. Many of them may have operated predominantly retail shops rather than perfume-making workshops.

Secondly, a great number of craftsmen were included: cheesemakers, bakers, tailors, carpenters, shoemakers, clockmakers, jewellers, platers, smiths, and others. In all, an estimated 8,000 of the 48,000 employees of the census were engaged in the major artisan-dominated industries, characterized by few employees per working place and by an insignificant amount of machinery. They were:

over	2,100	*queserías*	with	5,100	cheesemakers employed
nearly	500	*sastrerías* and *modisterías*	with	1,700	tailors
some	400	*carpinterías*	with	600	carpenters
some	100	manioc grinding places	with	400	laborers
over	100	units for preparing chewing tobacco	with	300	laborers
some	74	*joyerías, platerías, relojerías*	with	100	gold- and silversmiths, incl. clockmakers[22]

Cheesemaking and manioc grinding were characteristic sidelines for the ranch and farm population in the llanos states. Well over half the cheesemakers and manioc and chewing tobacco laborers were reported for the state of Guárico. Tailor's shops and carpenter's shops were both frequent in all states, but the Federal District and Zulia each accounted for one-quarter of the former.

In some other industries, too, artisans accounted for a large proportion of the labor. The most important of these were the shoe and baking industries, each of which comprised around 300 establishments. The labor force in round figures was 2,300 and 1,500 employees respectively, of which roughly half in each case was reported for the Federal District. A distinguishing feature in these two industries, however, was the coexistence of some fairly capital-intensive factories, of which the largest were in Caracas, alongside the artisan shops. The two categories were impossible to separate statistically. Another major industry, more clearly dominated by artisans, was the *alpargata* (sandal) industry, made up of

[22] The industry group "Industrias de Fundición y Refinería de otros Metales" (Other Metal Smelting and Refining) was made up of these craftsmen's 74 workshops for precious metals, above all gold! The largest shops were located in Caracas, Ciudad Bolivar (gold smithery) and Maracaibo, whose industry probably also included one or two very small smelting works for non-precious metals.

Table A 12 *Seasonally Active Brown-Sugar Mills in 1936 by States*

State	Establishments	Employees	Capital	Machinery	Value added	Duration of operations[a], months
			Bs thousand			
Trujillo	83	2445	1789	585	774	2 ½
Guárico	334	1838	558	190	257	1
Yaracuy	28	1199	4872	447	2027	12
Mérida	91	1057	1218	256	575	3 ½
Miranda	67	988	2167	1092	1628	11 ½
Zulia	15	652	3233	702	1208	11 ½
Sucre	48	587	2144	293	599	8
Barinas	63	554	400	85	265	4
Apure	80	417	131	79	118	2
Monagas	54	366	623	114	487	11 ½
Venezuela,[b] total	*939*	*10824*	*23592*	*4958*	*9366*	*5*

a Calculated by dividing the total wages paid in 1936 by the average daily pay-roll.

b Includes a small number of mills in Aragua, Bolívar, Carabobo, Cojedes, and the Federal District. No mills were reported for e.g. Lara or Táchira, a state which in the 1953 census accounted for 1,380 mills!

Source: State reports from the 1936 Industrial Census (compare footnote 11).

barely 200 establishments and some 1,600 employees. Here, production was almost entirely based on manual methods and practically no machinery was involved. Nonetheless the *alpargaterías* often organized large numbers of hands. In many states an average employment of more than twenty persons was reported (see table A 14).

Thirdly, allowance should be made for a category of industries which often involved a labor force of more than ten employees per establishment as well as, for some activities, considerable capital in machinery. Characteristic for these industries, however, was that they operated during a limited part (or parts) of the year only. These seasonal manufacturing activities comprised for example 17 cotton gins employing over 100 persons, most of the potteries — in all nearly 300 with over 1,000 workmen — some 50 limekilns with about 200 workers and, above all, nearly a thousand *trapiches* or *papeloneras* producing *panela* and *papelon* (brown-sugar mills).

Regional data on the brown-sugar mills, abstracted from the census, is presented in table A 12. The trapiche workers, some 11,000 in all, represented almost one-quarter of the labor force in manufacturing as enumerated in the census. As they only worked in the mills for about five

Table A 13 *Manufacturing Industries with More than Twenty Employees per Enterprise, 1936* (state averages)[a]

L Employees, number
C Capital, Bs thousand

	L	C				L	C
Federal District			*Other Venezuela*				
			More than 100 employees				
4 cotton mills	963	9650	3 cotton mills	Carabobo		1623	89
4 cigarette factories	667	5690	3 sugar refineries	Zulia		1084	153
			1 cotton mill	Aragua		540	23
			50—99 employees				
5 cement & lime fact.	352	3013	6 misc. food plants[b]	Aragua		389	22
4 ice cream factories	215	760	5 sandal factories	Sucre		369	2
2 rubber boot plants	168	757	3 straw hat fact.	Carabobo		161	9
3 straw hat factories	167	849	2 paper mills	Aragua, Mir.		134	35
			20—49 employees				
35 printing-works	924	9463	21 cigar factories	Sucre		534	5
25 coffee processing	577	1213	12 shoe factories	Sucre		410	2
18 distilleries[c]	522	15665	12 sandal factories	Lara		311	4
14 laboratories	291	4548	14 distilleries[d]	Zulia		306	207
14 shirt factories	282	609	6 misc. food plants[e]	Yaracuy		282	25
10 mosaic tile fact.	205	1219	20 distilleries	Miranda		240	15
3 chocolate factories	144	585	5 sandal factories	N. Esparta		230	
5 hardware factories	142	916	5 sugar mills	Miranda		202	36
5 carriage-works	120	437	4 shirt & hosiery mills	Carabobo		179	21
5 glass & china works	118	3006	4 tanneries	Carabobo		145	60
4 candle factories	83	612	4 soap factories	Carabobo		117	32
			4 sack factories	Lara		115	
			5 sandal factories	Zulia		105	
			3 veg.oil plants	Carabobo		100	31
			4 felt hat fact.	Carabobo		88	2
			4 printing-works	Carabobo		84	7
			3 saw mills	Zulia		68	4
			3 tanneries	Zulia		61	2
		Total					
160 enterprises	5940	58992	156 enterprises			7877	795

a Excludes the brown-sugar industries in Trujillo, Yaracuy and Zulia, which on an average employed more than 20 people per mill.
b Includes a meat-packing plant and a dairy, the latter employing 45 persons.
c Includes a few breweries, which dominated the industry.
d Includes two breweries, which dominated the industry.
e One large sugar refinery accounted for the lion's share.

Source: Reports by states from the 1936 Industrial Census.

Appendix. Manufacturing Statistics, 1913—1953

Table A 14 *Manufacturing Industries in 1936 by Types and Size Groups*

E Enterprises
L Employees
(number)

C Capital invested
M Machinery value
V Value added
(Bs million)

ıtegories and ;e groups	Federal District					Other Venezuela[a]				
	E	L	C	M	V	E	L	C	M	V
ıctory-dominated industries	*443*	*9836*	*76.2*	*33.0*	*64.1*	*303*	*9875*	*90.1*	*34.3*	*36.6*
ıployees per enterprise:										
more than 100	8	1630	15.3	8.0	25.5	7	3247	25.6	8.9	10.6
50—99	14	902	5.4	2.7	2.8	16	1053	6.9	2.6	3.4
20—49	138	3408	38.3	17.3	21.4	133	3577	46.0	20.0	15.0
10—19	283	3896	17.2	5.0	14.4	147	1998	10.5	2.8	7.6
·tisan-dominated industries I	*249*	*1337*	*10.1*	*2.8*	*5.5*	*3200*	*16091*	*38.1*	*6.7*	*27.3*
Misc. with 0—9 employees[b]	163	770	3.3	1.7	2.9	2201	5300	17.1	1.4	18.3
Brown-sugar mills	9	168	3.2	0.5	1.0	930	10656	20.4	4.4	8.4
Repair shops[c]	77	399	3.6	0.6	1.6	69	135	0.6	0.2	0.6
·tisan-dominated industries II[d]	*216*	*1110*	*3.1*	*0.3*	*4.1*	*3429*	*8422*	*10.9*	*0.7*	*10.3*
ɔn-manufacturing industries	*27*	*578*	*38.8*	*41.7*	*7.5*	*167*	*1398*	*31.2*	*9.2*	*5.9*
Electric power plants	2	356	38.4	41.5	6.9	47	500	30.6	9.2	5.0
Others[e]	25	222	0.4	0.2	0.6	120	898	0.6	0.0	0.9
ıtal reported in Census[a]	*935*	*12861*	*128.2*	*77.8*	*81.2*	*7099*	*35786*	*170.3*	*55.3*	*80.1*

a Includes nine state enterprises in Aragua with an employment of 784 persons, a capital of Bs 3.6 million, machinery of Bs 1.4 million, and a value added (estimated) of Bs 2.3 million.

b Industries with 0-9 employees per enterprise (averages counted by states).

c Includes 27 engineering shops in the Federal District.

d Comprises more or less "pure" artisan industries: making of cheese, cassava and chewing tobacco, cotton ginning, tailor shops, carpenter shops, potteries, lime-kilns, and jeweller shops ("joyerías y relojerías").

e Fisheries, including fish salting, and laundries, including dye works.

General note: Figures for artisan-dominated and non-manufacturing industries are approximate.

Source: Author's calculations on data from the 1936 Industrial Census.

Table A 15 *Manufacturing Industries in the Federal District, 1936*

Industry	Enterprises	Employees	Capital[a]	Value added
			Bs thousand	
Ice-cream factories	25	215	760	466
Coffee processing	20	577	1213	1410
Maize husking	62	132	934	163
Bakeries	3	694	1883	2978
Chocolate factories	11	144	585	545
Confectionary	10	139	127	310
Food pastes	6	103	606	326
Miscell. food plants[b]	18	114	1354	497
Breweries, distilleries[c]	10	522	15665	8924[d]
Soft-drink plants	4	71	139	83
Cigarette factories	11	667	5690	22832[d]
Cigar manufacturing	4	76	173	136
Spinning and weaving	4	963	9650	2666
Hosiery factories	14	48	260	138
Shirt factories	11	282	609	559
Felt-hat manufacturing	3	115	475	541
Straw-hat factories	78	167	849	515
Shoe factories	9	1284	5734	4756
Sandal factories	7	77	58	163
Saw mills	5	80	1415	538
Carriage-works	27	120	437	401
Furniture factories	5	409	822	1623
Cardboard-box factories	35	67	245	121
Printing-works	4	924	9463	5611
Tanneries	5	69	338	315
Rubber-boot plants	2	168	757	534
Laboratories	14	291	4548	1529
Perfumeries	26	326	1515	1562
Soap shops	7	57	511	159
Candle factories	4	83	612	506
Glass-works, china fact.	5	118	3006	618
Cement plants, lime-works	5	352	3013	1324
Mosaic-tile manufacturing	10	205	1219	379
Marble works	5	67	1007	318
Metal products[e]	24	327	1787	1360
Miscellaneous	113	553	2014	2068
Manufacturing proper	*606*	*10606*	*79474*	*66974*
Artisan industries[f]	241	1332	3523	4714
Brown-sugar mills	9	168	3214	961
Engineering shops[g]	27	228	1482	922
Other repair shops	50	171	2128	712
Electric power plants	2	356	38400	6924
Total, Census reported	*935*	*12861[h]*	*128221*	*81207*

Table A 15 (*cont.*)

a The machinery capital normally made up half the invested capital. The share was less than one-third in the hat, sandal, carriage, furniture, china, and perfume industries as well as in the group of artisan industries. It was more than three-quarters in the rubber-products, mosaic-tile and electric power plants.

b Includes among others a milk pasteurization plant, a creamery, a vegetable oil plant, and a feed-meal plant.

c The largest were two or three breweries.

d Includes estimated 4 and 20 million bolivars respectively in indirect taxes.

e The largest were five hardware factories accounting for half the industry's employees, capital and value added. The industry also comprised five black-smith shops, two small metallurgical works and small factories turning out iron metal furniture and constructions.

f Comprises tailors, carpenters, laundries and dye-works, potteries, and gold-smiths.

g In the census included in the group of "repair shops".

h The salaried employees made up 8 per cent or 1,085.

Source: *Censo Industrial 1936 — Distrito Federal*, Caracas 1937.

months a year on an average, their labor input corresponds to less than 5,000 whole-year workers.[23]

A fourth category, which in a strict sense did not belong to manufacturing proper, was represented by the repair shops. In all, they amounted to 146 units, together employing more than 500 people. They included engineering shops, of which there were about sixty, and brazier shops, as well as repair shops for autos, bicycles, radios, and electrical apparatus. The repair shops, in particular, were remarkably concentrated to Caracas. Only some of the largest engineering shops in Caracas employed slightly over ten persons and had machinery of any significant value.

With these four categories deducted, manufacturing comprised slightly more than 3,000 enterprises and some 26,000 employees. This, however, still included a considerable portion of craft and home industry. As no data on the size structure were published it is very difficult to outline the

[23] The inclusion of this category of more or less ephemeral activities explains the wide monthly variations in the number of recorded employees for some of the states, e.g. Apure, a state where *queserías* and *trapiches* dominated the industrial structure. Here, a maximum of 1,305 employees was recorded for January and a minimum of 75 for October 1936 (*Estado Apure*, Caracas 1940, p. 56). In Trujillo the difference between highest and lowest employment corresponds fairly well to the number of employees reported for the state's brown-sugar mills but, in contrast to the case of Apure, the maximum (3,247 persons) was recorded for the last months of the year and the minimum (902 persons) for the first half-year (*Estado Trujillo*, Caracas 1940, p. 40). Of 192 industrial enterprises in Cojedes, only 36 were in operation for ten months or more in the year. Over half (110) worked less than five months (*Estado Cojedes*, Caracas 1938, p. 5).

levels in the continuum from the large-scale plant with power machinery to the single craftsman working for himself with simple implements. However, a rough grouping by employment scale could be made of the industries on the basis of calculated state averages of the employment per establishment (see tables A 13 and A 14).

Table A 16 *Factory Industry*[a] *in 1936 by States. Some Estimates*

State	Employees	Capital	Value added	Machinery	Total machinery[b]
		in millions of bolivars			
Federal District	9836	76.2	64.1	33.0	35.8
Carabobo	2904	27.8	11.4	10.8	11.7
Zulia	1913	38.4	11.6	14.4	15.1
Aragua[c]	1506	11.9	6.1	4.5	4.6
Sucre	1364	1.3	1.7	0.1	1.2
Lara	579	1.1	1.0	0.1	0.8
Yaracuy	501	2.6	0.8	1.5	1.7
Miranda	442	5.2	3.0	2.2	2.4
Bolívar, etc[d]	666	1.7	1.0	0.7	1.7
Others	—	—	—	—	1.8
Total	*19711*	*166.2*	*100.7*	*67.3*	*76.8*

a Industries with ten or more employees per enterprise (state averages).

b The total value of machinery reported in the 1936 census, except that for electric power plants and brown-sugar mills.

c Includes statistics for a small paper mill in Miranda.

d Bolívar, Nueva Esparta, Portuguesa, and Táchira.

Source: See table A 14.

Slightly more than 20,000 people were employed in the factory dominated industries, i.e. industries with an average employment of ten persons or more per establishment. The capital invested was around Bs 165 million. Naturally, numerous enterprises in this group of industries fell far below the averages and employed less than ten persons. The group also included some labor-intensive enterprises which, despite employing a good many workers, were really large artisan shops without any machinery involved. A particular case was the *alpargata* industry mentioned above which, although employing up to 50 persons or more per establishment, represented practically no machinery and hardly any invested capital at all. On the other hand, there were apparently many enterprises in small-scale industries, employing *more* than ten persons as well as involving machinery and other capital investments of appreciable value. It is not unreasonable

to assume that these factory enterprises roughly compensate for the artisan shops included in the first group, as far as employment and invested capital are concerned.

To the magnitudes above, designated as base estimates for factory industry, additions should be made for factories not covered by the census (see above): let us say 500 employees and about Bs 25 million for the petroleum refineries and 4,000—6,000 employees and Bs 10—15 million for other omitted establishments.[24] In category three above it is reasonable also to include those brown-sugar mills that worked for the whole or nearly the whole of the year, (particularly those in Yaracuy, Miranda, Zulia and Monagas; see table A 12). The mills of these four states represented a labor force of 3,200 employees and an invested capital of Bs 11 million. Nevertheless, even ofter these adjustments, factory industry accounted in 1936 for comparatively small magnitudes: an employment of some 28,000—30,000 people and an invested capital of a little over Bs 200 million.

Table A 17 *Estimated Factory Industry Employment and Capital, Selected Years, 1913—1936*

	1913	1920	1923	1930	1936
Employees, thousands	14	20	23	30	29
Capital, Bs million	50	80	100	200	220

Source: Text and tables A 3, A 5, A 7, A 8, A 20.

[24] Guesses on very weak foundations. The estimate described in note 19 implies additions to the census result of about 8,000 employees as a result of omitted establishments or for other reasons. Part of this, however, may be attributable to the artisan sector.

Table A 18 *Manufacturing Industries in Caracas[a], 1942. Establishments and Employment by Size Groups*

E Establishments
S Salaried employees (given only in Summary)
W Wage earners

Industry	Summary[c]			Size groups, Bs thousand of share capital													
				—19		20—49		50—99		100—199		200—499		500—999		1000—[c]	
	E	S	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W
Food industry	150	561	1691	54	253	45	430	22	259	17	373	7	197	5	179	—	—
Beverages	22	205	648	3	16	2	31	3	33	5	120	4	61	2	61	3	326
Tobacco	7	132	589	3	20	—	—	—	—	1	—	—	—	1	83	2	486
Textiles	21	122	2047	2	7	4	29	1	49	3	166	3	302	4	429	4	1065
Clothing	194	358	1673	122	479	35	320	18	281	10	225	7	229	1	45	1	94
Wood	182	136	1162	137	327	20	276	10	149	8	239	5	123	2	48	—	—
Paper	8	37	213	3	3	1	10	1	113	1	26	2	61	—	—	—	—
Printing, publ.	51	358	1055	15	35	12	118	4	70	11	307	3	115	3	171	3	239
Leather	159	272	1824	112	439	20	277	12	230	5	177	5	109	2	92	3	500
Chemical ind.	62	275	610	15	65	9	45	11	83	11	140	12	167	3	94	1	16
Constr. mtrls[b]	83	136	1362	49	341	18	254	5	123	4	102	4	149	1	35	2	358
Metal industry	85	86	774	42	95	26	241	9	101	2	42	2	42	3	138	1	115
Other manufact.	42	71	374	24	89	7	54	5	36	2	39	3	151	1	5	—	—
Total[c]	*1066*	*2749*	*14022*	*581*	*2169*	*199*	*2085*	*101*	*1527*	*80*	*1956*	*57*	*1706*	*28*	*1380*	*20*	*3199*

a That is *Departamento Libertador*, the county made up of the township of Caracas and five parishes to the south and forming the inland part of the Federal District. As a consequence, the table does not cover the rather few establishments of La Guaira, Maiquetía and other localities of *Departamento Vargas*, the coastal part of the Federal District. Neither are the establishments of the eastern suburbs of Caracas covered(e.g. Chacao and Petare), as they belong administratively to the Sucre district of the state of Miranda.
b May include some construction enterprises.
c The totals of the "summary" as well as of the group "1000-"differ from the data given in the source. An electric power plant, in 1942 employing 277 wage earners and 223 salaried employees, was excluded (considered non-manufacturing activity).

Source: Rearrangement of data derived from an inquiry made by Dirección General de Estadística, Ministerio de Fomento, and published in *Compendio Estadístico de Venezuela*, Cuadernos Verdes no. 30 del Comité Organizador, Tercera Conferencia Interamericana de Agricultura, Caracas 1945. Supplementary details from the inquiry on wages and salaries were given in *Ingreso Nacional de Venezuela*, Banco Central de Venezuela, Caracas 1949.

Table A 19 *Manufacturing Industries in 1953*

ISIC no.	Industry	Establishments	Employees[a]	Persons engaged[a]	Wages and salaries[b]	Fixed assets	Value added[c]
				Bs million			
20.	Food manufacturing	5958	40179	70906	98.1	533.0	271.7
21.	Beverages	236	5635	5804	40.8	239.6	199.6[d]
22.	Tobacco	68	890	948	9.9	22.2	39.8
23.	Textiles	296	8022	8445	41.6	134.1	99.0
24.	Wearing apparel	3860	9098	13721	35.3	35.8	90.3
25.	Wood products	793	2667	3614	11.5	34.5	30.1
26.	Furniture	855	4246	5301	21.9	29.6	52.7
27.	Paper products	37	909	946	5.7	20.6	14.5
28.	Printing and publish.	358	3684	4020	27.6	46.3	55.7
29.	Leather	148	1075	1293	4.9	13.8	14.7
30.	Rubber	104	1008	1103	8.3	23.3	35.1
31.	Chemical ind.	171	3895	4036	26.1	88.7	104.3
32.	Petroleum products[e]	3	18	20	0.1	0.6	0.3
33.	Non-metallic minerals	674	6497	7261	44.9	191.0	119.5
34.	Basic metals	6	298	304	1.9	7.8	4.6
35.	Metal products	548	2347	3001	12.6	25.0	29.2
36.	Machinery	47	120	184	3.6	3.4	1.3
37.	Electrical products	357	253	643	1.0	2.9	4.0
38.	Transport equipment	1050	3218	4503	18.5	28.8	40.7
39.	Miscellaneous	476	1477	2011	7.4	18.9	22.5
Total[e]		*16045*	*95536[f]*	*138064[g]*	*421.7*	*1500.0*	*1229.6*

a As of Nov. 17, 1953. The enumeration resulted in figures, which were probably below the unrecorded calendar year averages. For many enterprises that probably had reduced operations during the week of the reference day, a poor consistency was found between the returns for the whole year, e.g. volume of production, and the returns for employment (see source, p. xvi and xxi).

b Excludes compensation to directors and business partners (totally Bs 40.6 million).

c At market prices. Thus including indirect taxes.

d Includes an estimated Bs 60—70 million in indirect taxes.

e Excludes petroleum refineries.

f Of these 83,796 were wage earners, 10,038 salaried employees and 1,702 directors and business partners (remunerated).

g Includes, besides employees, 42,528 working proprietors (own-account workers) and unpaid family workers.

Source: II Censo Industrial de Venezuela. Resúmen General de la República, Caracas 1961.

Table A 20 *Venezuela's Manufacturing Industry, 1909—1966. Some Data Series and Estimates*

Year	Enterprise foundings		Capital subscribed	Imports of capital goods		Employees	Production indices
	Nation	D.F.[a]	D.F.[a]	Industrial equipment	Artisan implements	Factory industry	1953 = 100
			in millions of bolivars			thousands	
	1	2	3	4	5	6	7 8
—1908	6	2	33.8[b]				
1909	1	1	5.3	1.0	0.2		
1910			1.0	1.4	0.2		
1911	1	1	12.6	1.8	0.2		
1912	1		8.7	2.8	0.2		
1913			3.0	6.5	0.3	14	
1914	1		1.7	4.1	0.4		
1915	1	1	-9.2	4.6	0.2		
1916	1		3.9	5.3	0.2		
1917			-1.6	4.2	0.5		
1918			—	3.9	0.3		
1919			1.6	4.4	0.6		
1920	4	1	6.2	6.5	1.4	20	
1921	1	1	0.7	3.3	0.9		
1922			-0.2	2.4	0.5		
1923			2.3	4.8	0.9	23	
1924			1.7	5.9	0.8		
1925	4	3	3.2	8.1	2.1		
1926	2	1	5.4	15.3	4.1		
1927	4	2	1.3	19.8	3.6		
1928			7.5	16.4	2.1		
1929	3	1	-1.3	23.6	3.4		
1930	1	1	-1.4	12.2	2.4	30	
1931	1		5.0	3.5	7.1		
1932			-0.5	3.8	0.6		
1933			0.0	5.3	0.9		
1934	1		-1.6	5.1	0.1		
1935	4	3	6.2	0.9	0.3		
1936	1		-5.1	1.1	1.9	29	18
1937	2	1	0.6	2.7	2.4		19
1938	8	2	14.7	18.6	4.0		20
1939	4	3	-0.2	2.9	1.9		18
1940	7	5	5.7	13.5	3.3		25
1941	8	4	7.2				26
1942	5	2	11.9				31
1943	9	4	21.0				34
1944	11	6	27.3				37
1945	7	3	24.9				40
1946	16	8	57.1				46
1947	11	5	55.4				50

1948	18	11	47.0	Gross fixed investments (Bs million)		55	45
1949	17	13	62.7			59	51
1950	14	9	82.9	226	80	64	61
1951	18	8	56.4	253		73	71
1952	21	9	80.1	280		88	85
1953	22	9	116.1	287		100	100
1954	25	12	165.3	341		120	117
1955	27	16	142.2	318		134	136
1956	28	10	145.0	358		144	151
1957	32	17	219.4	493		169	178
1958	30	13	214.7	549		182	190
1959	42	16	422.0	853		208	219
1960	34	12	297.0	626		212	221
1961	21	9	194.5	623	157		236
1962	21	7	245.2	609			258
1963	22	13	309.5	514	151		278
1964	23	7	545.7	674			316
1965	14	7	422.7	777			343
1966	5	1		793	200		347

a The Federal District. Col. (2) also includes the Sucre district of the state of Miranda, into which the Caracas urban agglomeration sprawled after World War II.
b 1901—1908.

Sources and clarifications:

Col. (1) and (2) — Concern the founding years of those 572 manufacturing establishments in 1966 which employed 50 or more persons (except ten, not supplying information). Compilation by the author of unpublished individual data from Cordiplan's II Industrial Survey of 1966.

(3) — The net capital subscribed of incorporated enterprises in industry, excluding electric energy generation. Data are from BCV, *Memoria 1958,* table D-1 and BCV, *Informe Económico,* 1963: table D-1 and 1965: table A2-1. The capital subscribed in the Federal District still made up the lion's share of the national total in the sixties.

(4) and (5) — Import figures, from *Estadística Marítima y Mercantil 1909—1940,* were derived from Rangel, *Capital y Desarrollo,* 1969 and 1970. By multiplying the import values for industrial equipment by two and those for artisan implements by four, Rangel constructs a series of estimates for real investments in manufacturing industry, including crafts.

Investment figures 1950—1966 are in constant prices (of 1957) and were taken from BCV, *La economía venezolana en los últimos treinta años,* Caracas 1971, p. 203.

(6) — Factory industry is defined as establishments engaging five or more persons for 1950—1966 and ten or more for 1913—1936. Sources used:
for 1913—1936: Table A 17; for 1950: ECLA 1966 (Stat. app.).
for 1961: Cordiplan's I Industrial Survey of 1961.
for 1963: III Economic Census of 1963.
for 1966: Cordiplan's II Industrial Survey of 1966.

(7) — BCV, *Indices de producción de la industria manufacturera* (mimeo.), Caracas (1962 ?), p. 31—33, 45.

(8) — Properly, an index of the growth of value added. See BCV, *La economía venezolana en los últimos treinta años,* Caracas 1971, p. 145.

Table A 21 *Estimates of the Gross Domestic Product Composition by Industries, 1925 and 1936* (per cent)

Industry	1925	1936		
	Rangel 1	Rangel 2	Córdova 3	Ferrán 4
Primary sector	*44.2*	*53.5*	*55.5*	*41.8*
Agriculture	34.7	18.8	24.9	21.0
Petroleum	9.5	34.7	30.6	20.8
Secondary sector[a]	*19.2*	*16.8*	*15.4*	*11.7*
Factory industry			5.9[b]	
Artisanry			9.0	
Tertiary sector	*36.6*[c]	*29.8*[c]	*29.1*	*46.4*
Commerce			10.7	
Transportation			3.6	
Services			14.8	
Total GDP[d]	*767*	*1866*	*3977* —	*5166*

a Includes manufacturing, electric power plants and construction.

b Includes a considerable proportion of artisanry (see the text about the 1936 Economic Census, the basis for Córdova's estimate).

c Apparently, for some reason government services were not included.

d In millions of bolivars.

General note: Rangel's estimates are in 1936 prices and the other two in 1957 prices. All three were orginally based on BCV's assessment of the national income in 1936 (see BCV 1949).

Sources:

1, 2. Domingo Alberto Rangel, *Capital y Desarrollo*, 2 (1970):149.

3. Armando Córdova, "Consideraciones acerca del tipo de desarrollo alcanzado por la economía venezolana", *Economía y Ciencias Sociales*, V:2 (1963):45.

4. Estimates by Bernardo Ferrán, BCV, taken from Alamo Blanco & Ganz, "Economic Diagnosis and Plans", in Lloyd Rodwin, *Planning Urban Growth and Regional Development. The Experience of the Guayana Program of Venezuela*, 1969:61.

Abbreviations

1. Institutions, etc.

AD	Acción Democrática (Democratic Action). Venezuelan political party which has held the Presidency in (1946—)1948, 1959—1969 and from 1974. Favors a mixed economy, nationalization of foreign-dominated industries and committed to state welfarism. The party of Rómulo Betancourt, President, 1959—1964.
API	American Petroleum Institute, Washington, D.C.
BAP	Banco Agrícola y Pecuario (Agricultural and Livestock Bank).
BCV	Banco Central de Venezuela. The Central Bank.
bpd	barrels per day (for petroleum and petroleum products). 1 bpd of Venezuelan crude oil (spec. gravity 0.9) is approximately equal to 52 metric tons per annum.
Bs	*bolívares* (bolivars). The national currency unit. The free market exchange rate to US $ 1 vas Bs 4.2 in early 1975, Bs 4.50 in 1964—1973 and Bs 3.35 in 1941—1963.
Cordiplan	Oficina Central de Coordinación y Planificación. Central planning agency of the Presidency.
CVF	Corporación Venezolana de Fomento (Venezuelan Development Corporation). Largely autonomous government entity within the Ministerio de Fomento, responsible for a wide range of development projects, particularly in manufacturing industry.
CVP	Corporación Venezolana del Petróleo.
D.F.	Distrito Federal (the Federal District).
ECLA	United Nations Economic Commission for Latin America.
FAO	United Nations Food and Agriculture Organization.
GDP	Gross Domestic Product.
GNP	Gross National Product.
IBRD	International Bank for Reconstruction and Development.
IDB	Inter-American Development Bank.
ISIC	United Nations' International Standard Industrial Classification.

Abbreviations

MAC	Ministerio de Agricultura y Cría (Ministry of Agriculture and Livestock).
MF	Ministerio de Fomento (Ministry of Development).
MMH	Ministerio de Minas e Hidrocarburos (Ministry of Mines and Hydrocarbons).
PAU	Pan American Union.
OECD	Organization for Economic Cooperation and Development.
OPEC	Organization of Petroleum Exporting Countries.
UCV	Universidad Central de Venezuela. Largest and most prestigious university, located in Caracas.
USDC	United States Department of Commerce.
USDS	United States Department of State.
USTC	United States Tariff Commission.

2. Statistical series

AEA	*Anuario Estadístico Agropecuario*, Ministerio de Agricultura y Cría.
AE	*Anuario Estadístico de Venezuela*, Dirección General de Estadística y Censos Nacionales, Ministerio de Fomento.
BCE	*Boletín de Comercio Exterior*, do.
BME	*Boletín Mensual de Estadística*, do.
BTEI	*Boletín Trimestral de Estadística Industrial*, do.
EMM	*Estadística Mercantil y Marítima*, do.
PODE	*Petróleo y Otros Datos Estadísticos*, Ministerio de Minas e Hidrocarburos.
UNSY	United Nations' *Statistical Yearbook*.

3. Symbols used in tables

—	Nil.
0.0	Less than half of unit employed.
( )	Less reliable figure.
...	Data not available.

References Cited

The following is a list of the sources and literature referred to in the footnotes and tables of the study, where as a rule the works were cited by author and printing year only (the date was normally dropped after the first reference in those cases when, in a chapter, the work was cited more than once).

For short bibliographies on the Venezuelan manufacturing development, see Orlando Araujo, *Situación industrial de Venezuela,* Imprenta Universitaria, Caracas 1969, p. 105—117 (selective bibliography with valuable annotations) and *Cuadernos de Información Económica,* II:7 (Oct.—Nov. 1950):129—130 (Venezuelan works from the 1936—1950 period).

Acedo Mendoza, Carlos, *Venezuela: Ruta y destino,* 2 vols., Barcelona 1966.

Aguerrevere, P. I., "Industrial Development in Venezuela", in *Proceedings of the United Nations Scientific Conference on the Conservation and Utilization of Resources,* New York 1949.

Ahumada, Jorge, "Hypotheses for Diagnosing Social Change: The Venezuelan Case", in Frank Bonilla & José A. Silva Michelena (eds.), *A Strategy for Research on Social Policy,* Caracas 1967. Vol. 1 of *The Politics of Change* (see do.).

Alexander, Robert J., *The Venezuelan Democratic Revolution. A Profile of the Regime of Rómulo Betancourt,* New Brunswick, N.J.

Alexandersson, Gunnar, *Geography of Manufacturing,* Englewood Cliffs, N.J. 1967.

—, "Dairies in Norden in the mid-1960's", *Geographisches Taschenbuch 1966—1969,* Wiesbaden 1969.

Allix, André & Gibert, André, *Géographie des Textiles,* Paris 1956.

Andic, Fuat and Suphan, "The Economy of the Netherlands Antilles", in T. G. Mathews & F. M. Andic (eds.), *Politics and Economics in the Caribbean,* Institute of Caribbean Studies, Rio Piedras, P.R. 1971.

Anuario Estadístico Agropecuario (AEA), Ministerio de Agricultura y Cría, Caracas. Selected years 1962—1973.

Anuario Estadístico de los Andes-Venezuela 1966, Instituto de Investigaciones Económicas, Universidad de los Andes, Mérida.

Anuario Estadístico de Venezuela (AE), Dirección General de Estadística y Censos Nacionales, MF, Caracas. The volumes for 1908—1912, 1938, 1940, 1942—1972.

References

API (American Petroleum Institute), *Petroleum Facts and Figures. 1971 Edition,* Washington, D.C. 1971.

Araujo, Orlando, "Caracterización histórica de la industrialización de Venezuela", *Economía y Ciencias Sociales,* VI:4 (1964):5—27.

—, *Situación industrial de Venezuela,* UCV, Caracas 1969.

Arcila Farías, Eduardo, *Economía colonial de Venezuela,* Mexico, D.F. 1946.

—, "Evolución de la economía en Venezuela", in *Venezuela independiente 1810—1960,* Fundación Eugenio Mendoza, Caracas 1962.

Arellano Moreno, A., *Orígenes de la economía venezolana,* Madrid 1960.

Arnold, R. M., "Growth of the Dairy Industry in Jamaica, 1940—1953", *Tropical Agriculture,* 32:1 (Jan. 1955):38—44.

Arnold, Ralph, Macready, George A. & Barrington, Thomas W., *The First Big Oil Hunt: Venezuela, 1911—1916,* New York 1960.

Artle, Roland, "Urbanization and Economic Growth in Venezuela", *The Regional Science Association Papers,* 27 (1971):63—93.

Aspectos de la industria petrolera en Venezuela, Sociedad Venezolana de Ingenieros de Petróleo, Caracas 1963.

Baer, Werner, *Industrialization and Economic Development in Brazil,* Homewood, Ill. 1965.

—, "Import Substitution and Industrialization in Latin America: Experiences and Interpretations", *Latin American Research Review,* VII:1 (Spring 1972):95—122.

Balassa, Bela, "Regional Integration and Trade Liberalization in Latin America", *Journal of Common Market Studies,* 10:1 (1971):58—77.

Balestrini C., Cesar, *Economía minera y petrolera,* UCV, Caracas 1959.

Baloyra, Enrique A., "Oil Policies and Budgets in Venezuela, 1938—1968", *Latin American Research Review,* IX:2 (Summer 1974):28—72.

Baptista, Federico G., *Historia de la industria petrolera en Venezuela,* Creole Petroleum Corporation, Caracas 1961.

Barajas Manzano, Javier, *Aspectos de la industria textil de algodón en México,* Mexico, D.F. 1959.

BCV (Banco Central de Venezuela), *Informe Económico,* various years since 1962.

—, *Memoria,* selected years 1950—1961.

—, *Ingreso Nacional de Venezuela,* Caracas 1949.

—, "Indices de producción de la industria manufacturera", Caracas 1962 [?] (mimeo.).

—, *La economía venezolana en los últimos veinticinco años,* Caracas 1966.

—, *La economía venezolana en los últimos treinta años,* Caracas 1971.

Beaumont, H. D., *Report on the Economic and Commercial Conditions of Venezuela,* Department of Overseas Trade, London 1921.

Bedoya de Alvarez, Gloria & Rincón, Francisco J., "Industria del queso y la mantequilla en Venezuela", CVF, Caracas 1962 (mimeo.).

Bell, P. L., *Venezuela: A Commercial and Industrial Handbook,* US Department of Commerce, Washington, D.C. 1922.

Bennion, E. G., "Venezuela", in Seymour E. Harris (ed.), *Economic Problems of Latin America,* New York 1944, 421—454.

Betancourt, Rómulo, *Venezuela — Política y petróleo,* Caracas 1967.

Bjering, K. B., *Den internationella petroleumhandeln under mellankrigsåren 1925—1938,* Göteborg 1967.

References

Boletín de Comercio Exterior (BCE), Dir. General de Estadística y Censos Nacionales, MF, Caracas. Various numbers.

Boletín del Ministerio de Fomento, IV:7 (Jan. 1913).

Boletín Trimestral de Estadísticas Industriales (BTEI), Dirección General de Estadística y Censos Nacionales, MF, Caracas. A few numbers 1967—1968.

Bonilla, Frank, *The Failure of Elites,* The MIT Press, Cambridge, Mass. 1970. Vol. 2 of *The Politics of Change in Venezuela* (see do.).

Bradley, J. R., *Fuel and Power in Latin America,* US Department of Commerce, Washington 1931.

Brito Figueroa, Federico, *La estructura económica de Venezuela colonial,* UCV, Caracas 1963.

—, *Historia económica y social de Venezuela,* 2 vols., UCV, Caracas 1966.

—, *Venezuela siglo XX* (vol. 2 of the foregoing work), Casa de las Américas, La Habana 1967.

—, *Venezuela contemporanea. País colonial?,* Caracas 1972.

Broehl jr, Wayne G., *The International Basic Economy Corporation,* US Business Performance Abroad, no. 13, National Planning Association, Washington, D.C. 1968.

Butman, Arthur B., *Shoe and Leather Trade in Brazil, Venezuela, and Barbados,* US Department of Commerce and Labor, Washington 1910.

Buvat Irazábal, Daniel, "Análisis general de la industria de conservas de carne", CVF, Caracas 1961 (mimeo.).

Bürger, Otto, *Venezuela. Ein Führer durch das Land und seine Wirtschaft,* Leipzig 1922.

Carden, Lionel, *The Cotton Manufacturing Industry in Mexico,* London 1898.

Carmagnani, Marcello, *Sviluppo industriale e sottosviluppo economico. Il caso chileno, 1860—1920,* Torino 1971.

Carnevali, Leopoldo *et al., Tocino, jamones y embutidos,* CVF, Caracas 1960.

Carnoy, Martin, *Industrialization in a Latin American Common Market,* Brookings Institution, Washington, D.C. 1972.

Carrillo Batalla, Tomás Enrique, *El desarrollo del sector manufacturero industrial de la economía venezolana,* UCV, Caracas 1962.

—, *Desarrollo económico de Venezuela,* Caracas 1963.

—, *Población y desarrollo económico,* Caracas 1967.

Carta Semanal, MMH, Caracas. Selected issues.

Castillo, Pedro M., "Reseña del curso del dólar", *Revista de Fomento,* May 1939.

Censo Agropecuario (CA) 1961, Dir. General de Estadística y Censos Nacionales, MF, Caracas.

Censo Económico 1963. Resultados definitivos (CE), 4 vols., Dir. General de Estadística y Censos Nacionales, MF, Caracas.

Censo Económico 1963. Resultados provisionales (CEP), 2 vols., Dir General de Estadística y Censos Nacionales, MF, Caracas.

II Censo Industrial de Venezuela (1953). Resúmen general de la República, Dir. General de Estadística y Censos Nacionales, MF, Caracas 1961.

Censos industrial, comercial y empresas que prestan servicios 1936, 23 vols., Dir. (General de Estadística, MF, Caracas 1937—1941.

References

Chaves, Luis Fernando, "The Functional Structure of the Venezuelan Cities", Warsaw 1970. Unpubl. diss., kindly made available to the author by Rigoberto García.

Chen, J. Chi-yi, *Estrategia del desarrollo regional. Caso de Venezuela,* Caracas 1967.

—, *Movimientos migratorios en Venezuela,* Caracas 1967.

Clark, W. A. Graham, *Cotton Goods in Latin America,* 4 vols., Special Agents Series nos. 31, 36, 40 and 44, US Department of Commerce and Labor, Washington, D.C. 1909—1911. (Part I — Cuba, Mexico and Central America [1909]; Part II — Brazil, Colombia and Venezuela [1910]; Part III — Argentina, Uruguay and Paraguay [1910]; Part IV — Chile, Bolivia, Peru, Ecuador, Jamaica and Porto Rico [1911]).

Cobos, Eduardo, *La industria algodonera en Iberoamérica,* Madrid 1953.

Collver, O. Andrew, *Birth Rates in Latin America. New Estimates of Historical Trends and Fluctuations,* Berkeley 1965.

Compendio Estadístico de Venezuela, 'Cuadernos Verdes', no. 30, Third Inter-American Conference on Agriculture, Caracas 1945.

Cook, Hugh L., "Some Structural Characteristics of the Venezuelan Milk Industry", *Journal of Farm Economics,* 47 (1965):132—147.

Cordiplan, "Venezuela — encuesta industrial 1961", Caracas 1963 (mimeo.).

—, "II Encuesta Industrial 1966. Documento básico", Caracas 1968 (mimeo.).

—, "II Encuesta Industrial 1966. Perfiles industriales", Caracas 1969 (mimeo.).

—, *IV Plan de la Nación 1970—1974,* Caracas 1971.

Córdova, Armando, "La estructura económica tradicional y el impacto petrolero en Venezuela", *Economía y Ciencias Sociales,* V:1 (1963):7—28.

—, "Consideraciones acerca del tipo de desarrollo alcanzado por la economía venezolana", *Economía y Ciencias Sociales,* V:2 (1963):5—46.

Córdova, Armando & Silva Michelena, Héctor, *Aspectos teóricos del subdesarrollo,* Instituto de Investigaciones Económicas, UCV, Caracas 1967.

Corfield, George S., "Recent Activities in Venezuela's Petroleum Industry", *Economic Geography,* 24:1 (Jan. 1948):114—8.

The Cotton-Growing Countries. Production and Trade, International Institute of Agriculture, Rome 1922.

The Cotton-Growing Countries. Present and Potential, International Institute of Agriculture, London 1926.

(The) Cotton Year Book (London), selected years 1917—1939.

CVF (Corporación Venezolana de Fomento), *Memoria.* Various years since 1947.

—, *Mataderos industriales,* Caracas (1965 ?).

Dalton, Leonard V., *Venezuela,* London 1912.

D'Ascoli, Carlos A., *Esquema histórico-económico de Venezuela (del mito del dorado a la economía del café),* BCV, Caracas 1970.

Darmstadter, J., Teitelbaum, P. D. & Polach, J. G., *Energy in the World Economy. A Statistical Review of Trends in Output, Trade and Consumption,* Baltimore 1971.

Dean, Charles J., *Commercial and Industrial Development of Venezuela,* Trade Information Bulletin 783, US Department of Commerce, Washington 1931.

Dean, Warren, *The Industrialization of São Paulo, 1880—1945,* University of Texas Press, Austin 1969. — Referred to as W. Dean or Dean 1969.

References

De Armas Chitty, J. A., *Caracas, origen y trayectoria de una ciudad,* Creole Petroleum Corporation, Caracas 1967.

De la Plaza, Salvador, *Desarrollo económico e industrias básicas,* UCV, Caracas 1962.

Díaz Alejandro, Carlos F., *Essays on the Economic History of the Argentine Republic,* New Haven and London 1970.

DiTella, Guido & Zymelman, Manuel, *Las etapas del desarrollo económico argentino,* Buenos Aires 1967.

Dorfman, Adolfo, *El desarrollo industrial de América Latina,* Santa Fé 1942.

—, *La industrialización en la América Latina y las políticas de fomento,* Fondo de Cultura Económica, Mexico, D.F. 1967.

Dryden Witte, Ann, *"Employment in the Manufacturing Sector of Developing Economies: A Study of Mexico, Peru and Venezuela",* Raleigh, N.C. 1971 (mimeo., diss.).

ECLA (United Nations Economic Commission for Latin America), *The Economic Development of Latin America and Its Principal Problems,* Lake Success, N.Y. 1950. Written by Raúl Prebisch.

—, "Recent Facts and Trends in the Economy of Venezuela". Prepared for Fourth Session of the Economic Commission for Latin America in Mexico City, 1951 (mimeo., E/CN, 12/217/ Add. 11, 6 April 1951).

—, *Analyses and Projections of Economic Development, III: The Economic Development of Colombia,* Geneva 1957.

—, *Analyses and Projections of Economic Development, VI: The Industrial Development of Peru,* Mexico, D.F. 1959.

—, *External Financing in Latin America,* New York 1965.

—, "La industria textil en América Latina, X: Venezuela", New York 1965 (mimeo.). Referred to as ECLA 1965 mimeo.

—, *The Process of Industrial Development in Latin America,* New York 1966.

—, "The Process of Industrialization in Latin America. Statistical Annex", Latin American Symposium on Industrial Development, Santiago, Chile 1966 (mimeo.).

—, "The Measurements of Latin American Real Income in US Dollars", *Economic Bulletin for Latin America,* 12:2 (Oct. 1967):107—142.

—, "Investment in Petroleum Industry in Latin America", *Economic Bulletin for Latin America,* 13:2 (Nov. 1968):3—30.

—, "Industrial Development in Latin America", *Economic Bulletin for Latin America,* 14:2 (1969):3—77.

—, *Income Distribution in Latin America,* New York 1971.

Edwards, Gertrud G., "Foreign Petroleum Companies and the State in Venezuela", in Raymond F. Mikesell, *Foreign Investment in the Petroleum and Mineral Industries,* Baltimore 1971.

Estadística Mercantil y Marítima (EMM), MF, Caracas. Selected years 1928—1957.

Estadísticas Industriales 1972. Beneficio de Ganado, Dir. General de Estadística y Censos Nacionales, MF, Caracas.

Ewing, W. W., *Markets for Construction Materials and Machinery in Venezuela,* Special Agents Series no. 144, US Department of Commerce, Washington, D.C. 1917.

Falcón Urbano, Miguel A., *Desarrollo e Industrialización de Venezuela: un enfoque metodológico,* UCV, Caracas 1969.

References

FAO (United Nations Food and Agriculture Organization), *Livestock in Latin America. Status, Problems and Prospects — I. Colombia, Mexico, Uruguay and Venezuela,* New York 1962. Prepared jointly with ECLA.

Fox, Robert W., *Urban Population Growth Trends in Latin America,* IDB, Washington, D.C. 1975.

Friedmann, John, *Regional Development Policy. A Case Study of Venezuela,* The MIT Press, Cambridge, Mass. 1966.

Fryer, D. W., *World Economic Development,* New York 1965.

Furtado, Celso, *Economic Development of Latin America. A Survey from Colonial Times to the Cuban Revolution,* Cambridge 1970.

Galey, John, "Venezuela", in Richard Morse (ed.), *The Urban Development of Latin America, 1750—1920,* Stanford Univ. 1971, 110—115.

Garaicoechea, Manuel Felipe, *El comercio exterior y la estrategia del desarrollo económico venezolano,* UCV, Caracas 1969.

Giacottino, Jean-Claude, "Les Antilles Néerlandaises", *Problèmes d'Amérique latine* (Paris), 25 Oct. 1972:47—49.

Gómez Acosta, Enrique C., "Les transformations dans l'épace vénézuélien", IEDES, Paris 1971. Unpubl. diss.

Gormsen, Erdmann, *Barquisimeto. Eine Handelsstadt in Venezuela,* Heidelberger Geographische Arbeiten, Heft 12, Mannheim 1963.

Griffin, Keith, *The Political Economy of Agrarian Change,* London 1974.

The Growth of World Industry, 1938—1958, United Nations, New York 1960.

Grunwald, Joseph & Musgrove, Philip, *Natural Resources in Latin American Development,* The Johns Hopkins Press, Baltimore 1970.

Harris, William George, "The Impact of the Petroleum Export Industry on the Pattern of Venezuelan Economic Development", University of Oregon 1967. Unpubl. diss.

—, "The Impact of the Petroleum Export Industry on the Pattern of Venezuelan Economic Development", in Raymond F. Mikesell, *Foreign Investment in the Petroleum and Mineral Industries,* Baltimore 1971.

Hartshorn, J. E., *Oil Companies and Governments,* London 1967.

Hill, George W., "Central Tacarigua. Un estudio sociológico", *Cuadernos de Información Económica,* 11:1 (Jan.—Febr. 1959):73—132.

Hirschman, Albert O., *The Strategy of Economic Development,* Yale Univ. Press, New Haven 1958.

Hirschman, Albert O., "The Political Economy of Import Substituting Industrialization in Latin America", *Quarterly Journal of Economics,* February 1968.

Hiss, Philip Hanson, *Netherlands America. The Dutch Territories in the West,* London 1943 (?).

Hoetink, H. (ed.), *Encyclopedie van de Nederlandse Antillen,* Amsterdam 1969.

Hughlett, Lloyd J. (ed.), *Industrialization of Latin America,* New York 1946.

Hunziker, O. S. & Hodgson, R. E., "The Dairy Industry of Venezuela", US Department of Agriculture, Washington, D.C. 1942 (mimeo.).

Hurtado, Héctor, "Introducción" of the chapter "Análisis de la política de desarrollo de la industria láctea en Venezuela", in Leonardo Montiel Ortega, *Política de ajustes al desarrollo industrial venezolano,* MF, Caracas 1967, 35—39.

IBRD (International Bank for Reconstruction and Development), *The Economic Development of Venezuela,* The Johns Hopkins Press, Baltimore 1961.

References

IDB (Inter-American Development Bank), *Economic and Social Progress in Latin America. Annual Report,* Washington, D.C. Various years.

International Cotton Bulletin (Manchester), selected numbers 1922—1954.

International Cotton Industry Statistics (Zürich), various years since 1958.

International Review of Cotton and Allied Textile Industries (Manchester), 1955—1957.

James, Preston E., *Latin America,* 1st ed., London 1941 (?).

Jensen, J. Granville, "The Cotton Textile Industry in Mexico, a Macro-Study in Industrial Location", in Richard Highsmith, Jr. (ed.), *Case Studies in World Geography: Occupance and Economic Types,* Englewood Cliffs, N.J. 1961.

Kertesz, A., *Die Textilindustrie sämtlicher Staaten,* Braunschweig 1917.

Kirwin, R. J., *Economic Conditions in Venezuela* (Nov. 1929), Department of Overseas Trade, London 1930.

—, *Economic Conditions in Venezuela* (Aug. 1932), Department of Overseas Trade, London 1932.

Lagos Escobar, Ricardo, *La industria en Chile: antecedentes estructurales,* Instituto de economía, Universidad de Chile, Santiago 1966.

Lairet, Salvador, *El algodón y la industria textil,* 'Cuadernos Verdes', Third Inter-American Conference on Agriculture, Caracas 1945.

Landaeta Rosales, Manuel, *Gran recopilación geográfica, estadística e histórica de Venezuela,* Caracas 1889.

Lasuén, J. R., "Multi-Regional Development. An Open-System Approach", in Torsten Hägerstrand & Antoni Kuklinski (eds.), *Information Systems for Regional Development — A Seminar: General Papers,* Lund Studies in Geography, Ser. B, no. 37, Lund 1971.

Lewthwaite, Gordon R., "Commonwealth and Common Market: The Dilemma of the New Zealand Dairy Industry", *The Geographical Review,* 61:1 (Jan. 1971).

Lieuwen, Edwin, *Petroleum in Venezuela. A History,* University of California Press, Berkeley 1955 (2nd printing).

—, *Venezuela,* London 1961.

L'industrie textile dans le monde. Problèmes économiques et sociaux, 2 vols., Bureau International du Travail, Genève 1937.

Little, Ian, Scitovsky, Tibor & Scott, Maurice, *Industry and Trade in Some Developing Countries: A Comparative Study,* London 1970.

Lollet Calderín, Carlos Miguel, "El desarrollo regional de la industria en Venezuela", *Cuadernos CVF,* 1:2 (1964):23—28.

Loohuis, J. G., "De Aardolie-Industrie op Curaçao", in *Gedenkboek Nederland — Curaçao, 1634—1934,* Amsterdam 1934.

López, José Eliseo, *La expansión demográfica de Venezuela,* Mérida 1963.

Luzardo, Rodolfo, *Venezuela, Business and Finances,* Englewood Cliffs, N.J. 1957.

—, *Notas histórico-económicas 1928—1963,* Caracas 1963.

Maby, A. C., *Venezuela. Economic and Commercial Conditions in Venezuela,* Overseas Economic Surveys, London 1951.

Macario, Santiago, "Protectionism and Industrialization in Latin America", *Economic Bulletin for Latin America,* IX:1 (March 1964).

Macgregor, J. P., *Economic Conditions in Venezuela,* Publ. no. 610, Department of Overseas Trade, London 1935.

MacPhail, Donald D., "Puerto Rican Dairying: A Revolution in Tropical Agriculture", *The Geographical Review,* 53 (1963):224—246.

References

Malavé Mata, Héctor, *Petróleo y desarrollo económico en Venezuela,* UCV, Caracas 1962.

Manners, Gerald, *The Geography of Energy,* London 1964.

Marchand, Bernard, *Vénézuela, travailleurs et villes du pétrole,* Institut des Hautes Études de l'Amérique Latine, Paris 1971.

Maresch, Frederick & Montel, John E., *Principal Manufacturing Industries in Venezuela,* World Trade Information Service, part 1, no. 58:70, US Department of Commerce, Washington, D.C. 1958.

Marrero, Levi, *Venezuela y sus recursos,* Madrid 1964.

Martínez, Aníbal R., *Our Gift, Our Oil,* Dordrecht 1966.

—, *Chronology of Venezuelan Oil,* London 1969.

—, "La industria petrolera venezolana hasta el año 1921", *El Farol,* no. 239 (Oct.—Dec. 1971).

—, *Recursos de hidrocarburos de Venezuela,* Caracas 1972.

Mathiason, John R., "The Venezuelan Campesino: Perspectives on Change" in Frank Bonilla & José A. Silva Michelena (eds.), *A. Strategy for Research on Social Policy,* vol. 1 (1967).

Maza Zavala, Domingo Felipe, *Hacia la independencia económica,* Caracas 1960.

—, *Aspectos del desarrollo económico de Venezuela,* UCV, Caracas 1962.

—, *Venezuela, una economía dependiente,* Instituto de Investigaciones, UCV, Caracas 1964.

—, *Condiciones generales del Area Metropolitana de Caracas para la industrialización,* Edic. Cuatricentenario de Caracas, Caracas 1966.

Mayobre, José Antonio & Losada, Benito Raúl, *La desulfuración en Venezuela: una decisión nacionalista,* Caracas 1970.

McGreevey, William Paul, "Recent Research on the Economic History of Latin America", *Latin American Research Review,* III:2 (Spring 1968):89—117.

Mejía Alarcón, Pedro Esteban, "Notas sobre refinación de petróleo en Venezuela", *Economía y Ciencias Sociales,* VII (1966):80—107.

—, *La industria del petróleo en Venezuela,* Instituto de investigaciones económicas y sociales, UCV, Caracas 1972.

Méndez-Arocha, A., *Bases para una política energética venezolana,* BCV, Colección de estudios económicos 2, Caracas 1975.

MF (Ministerio de Fomento), *Memoria,* various volumes.

—, *Estadística del Petróleo. Datos para los años 1936, 1937 y 1938,* Caracas 1940.

—, *Venezuela industrial 1963,* Caracas 1964.

Mining and Manufacturing Industries in Venezuela, United States Tariff Commission, Washington, D.C. 1949.

Miller, E. Willard, "Petroleum in the Economy of Venezuela", *Economic Geography,* 16 (1940):204—210.

—, *A Geography of Manufacturing,* Englewood Cliffs, N.J. 1962.

Mitchell, Harold, *Caribbean Patterns. A Political and Economic Study of the Contemporary Caribbean,* Edinburgh & London 1967.

MMH (Ministerio de Minas e Hidrocarburos), *Memoria,* various years.

Moll, Roberto, *Lecciones de economía venezolana,* Caracas 1944. Second ed. in 1956 (published as nos. 93—94 of *Revista de Fomento,* July—Dec. 1956).

Montiel Camacho, H. D., *La explotación del petróleo en Venezuela y la capitalización nacional,* Mexico, D.F. 1967.

Montiel Ortega, Leonardo, *Nacionalismo e Industrialización,* Caracas 1962.

References

—, *Política de ajustes al desarrollo industrial venezolano,* MF, Caracas 1967.

Mosk, Sanford A., *Industrial Revolution in Mexico,* Berkeley 1950.

Muller-Karger, Edgar, "The Industries of Venezuela", Inter-American Development Commission, Washington, D.C. 1948 (mimeo.).

Myrdal, Gunnar, *Economic Theory and Under-developed Regions,* London 1957.

Mörner, Magnus, *Leve revolutionen! Tradition och dynamik i latinamerikanskt samhällsliv,* Stockholm 1960.

Nelson, W. L., Thery Fombona, Gustavo & Noriega Zalázar, Domingo, *Petróleo crudos de Venezuela y otros países,* 2nd ed., MMH, Caracas 1959.

Nordlohne, Edgar, *De economisch-geografische structuur der Nederlandse Benedenwindse Eilanden,* Haarlem 1951.

Odell, Peter R., *An Economic Geography of Oil,* London 1963.

—, "The Development of the Middle Eastern and Caribbean Refining Industries 1939—1963", *Tijdschrift voor Econ. en Soc. Geografie,* 54 (Oct. 1963):208—213. Referred to as 1963b.

—, "Oil and State in Latin America", *International Affairs,* 40:4 (Oct. 1964):659—673.

—, *Problems of Regional Economic Planning in Developing Countries with Special Reference to Venezuela and Puerto Rico,* Town and Country Summer School, Belfast 1967.

—, "The Oil Industry in Latin America", in Edith Penrose, *The Large International Firm in Developing Countries,* London 1968.

—, *Oil and World Power. A Geographical Interpretation,* 3rd ed., Middlesex 1974.

Odell, Peter R. & Preston, David A., *Economies and Societies in Latin America. A Geographical Interpretation,* Budapest 1973.

OECD (Organisation for Economic Cooperation and Development), *Prospects of the Market for Dairy Products,* Paris 1968.

Oil and Gas Journal (Tulsa, Oklahoma), selected numbers.

Orta, Celio S., "La agricultura y el desarrollo económico del país", in *Perfiles de la economía venezolana,* UCV, Caracas 1964.

Ospina Vásquez, Luis, *Industria y protección en Colombia 1810—1930,* Bogotá 1955.

Páez Celis, Julio, "Evaluación de las omisiones de los censos de los años 1936, 1941 y 1950...", *Revista de Fomento,* no. 97 (March 1962).

Parra, Alirio, "La industria petrolera y sus obligaciones fiscales en Venezuela", in *Aspectos de la industria petrolera en Venezuela,* Sociedad Venezolana de Ingenieros de Petróleo, Caracas 1963.

Parsons, James J., *Antioqueño Colonization in Western Colombia,* rev. ed., University of California Press, Berkeley & Los Angeles 1968.

Patten, George, "Dairying in Nicaragua", *Annals of the Association of American Geographers,* 61:2 (June 1971):303—315.

PAU (Pan American Union), *Venezuela,* Washington, D.C. 1911.

Payne, W. J. A., "The Problem of Milk Production in Tropical Countries — I. Introduction", *Tropical Agriculture,* 34:2 (April 1957):137—143.

Peltzer, Ernesto, *Ensayos sobre economía, BCV,* Caracas 1965.

Penrose, Edith T., *The Large International Firm in Developing Countries: The International Petroleum Industry,* London 1968.

Perales Frigols, Pablo, *Geografía Económica del Estado Lara,* Caracas 1954. (Published as nos. 79—82 of *Revista de Fomento*).

References

Pérez Alfonso, Juan Pablo, *Venezuela y su petróleo — Lineamientos de una política,* Imprenta Nacional, Caracas 1960.

—, *Petróleo y dependencia,* Caracas 1971.

Pérez Perazzo, Gabriel & Castillo Blanco, Miguel, *Industria de hilados y tejidos planos,* Estudios preliminares sobre industrias no. 9, CVF, Caracas 1961.

Perfiles de la economía venezolana, UCV, Caracas 1964. (Published as special number of *Boletín bibliográfico,* I:3 [1963]).

Pernaut, Manuel S. J., *Diez años de desarrollo económico y social de Venezuela,* Edic. del Cuatricentenario de Caracas, Caracas 1966.

Petróleo y Otros Datos Estadísticos (PODE), MMH, Caracas. Various years since 1962.

Petroleum Times, London. Selected numbers for 1929 and 1975.

Phelps, D. M., "Industrial Expansion in Temperate South America", *The American Economic Review,* 25 (June 1935):273—282.

Pogue, Joseph E., *Oil in Venezuela: An Economic Study,* Chase Manhattan Bank, New York 1949.

Polanco Martínez, Tomás, *Historia económica de Venezuela,* Caracas 1968.

Posada Callejas, J. (ed.), *Libro azul de Venezuela,* Caracas 1921.

Powell, John Duncan, *Political Mobilization of the Venezuelan Peasant,* Cambridge, Mass. 1971.

Pratt, W. E. & Good, Dorothy (eds.), *World Geography of Petroleum,* Princeton, N.J. 1950.

Prebisch, Raúl, *The Economic Development of Latin America and Its Principal Problems,* ECLA, Lake Success, New York 1950. See ECLA 1950.

—, *Towards a Dynamic Development Policy for Latin America,* United Nations, New York 1964.

Quintero, Rodolfo, *La cultura del petróleo,* UCV, Caracas 1968.

Ramírez Avendaño, Alberto, "Aspectos zoo-económicos de la industria lechera en Venezuela", *Cuaderno de Información Económica,* VII:4 (1955):3—26.

Randell, Harold M. & Grab, Frederic D., "Industrial Development in Venezuela", in *Commerce Reports,* no. 5, 1930, US Department of Commerce, Washington.

Rangel, Domingo Alberto, *La industrialización de Venezuela,* Caracas 1958.

—, *El proceso del capitalismo contemporáneo en Venezuela,* UCV, Caracas 1968.

—, *Capital y Desarrollo,* vol. I, *La Venezuela agraria,* Instituto de investigaciones económicas y sociales, UCV, Caracas 1969.

—, *Capital y Desarrollo,* vol. II, *El rey petróleo,* Instituto de investigaciones económicas y sociales, UCV, Caracas 1970.

—, *La oligarquía del dinero,* 3rd ed., Caracas 1972. Vol. 3 of *Capital y Desarrollo.*

Redfield, A. H., "The Petroleum Trade of the Netherlands West Indies", *International Petroleum Trade,* 7:11 (1938), suppl.

Rengifo Lleras, Carlos E., "Simbiosis entre hombre petróleo y máquina", *El Farol,* 1975 (La calidad de la vida 3):42—49.

Rippy, Fred J., *British Investments in Latin America, 1822—1949,* Minneapolis 1959.

Rivera, Enudio A., *Estado Actual de la Ganadería en Venezuela,* 'Cuadernos Verdes', Third Inter-American Conference on Agriculture, Caracas 1945.

Robinson, David J., "The City as Centre of Change in Modern Venezuela", in *Cities in a Changing Latin America,* Latin American Publ. Fund, London 1969.

Robinson, David J., "Historical Geography in Latin America", in Alan R. H. Baker, *Progress in Historical Geography,* Cambridge 1972.

References

Rodwin, Lloyd, *Planning Urban Growth and Regional Development. The Experience of the Guayana Program of Venezuela,* Cambridge, Mass. 1969.

Romero, A. M. & Zealand, George F., "The Textile Industry", in Lloyd J. Hughlett (ed.), *Industrialization of Latin America,* New York 1946.

Rourke, Thomas, *Tyrant of the Andes. The Life of Juan Vicente Gómez,* London 1937.

Rudolph, William E., "Agricultural Possibilities in northwestern Venezuela", *The Geographical Review,* 34 (1944):36—56.

Runblom, Harold, *Svenska företag i Latinamerika. Etableringsmönster och förhandlingstaktik 1900—1940* (Summary: *Swedish Enterprises in Latin America before the Second World War. The Course of Their Establishment and Their Tactics in Negotiations),* Uppsala 1971.

Salera, Virgil, "Broadening the Industrial Front in Venezuela", *Inter-American Economic Affairs,* 8:4 (Spring 1955):69—86.

Sardá, Juan, "Industrial Development in Venezuela", *Inter-American Economic Affairs,* 7:4 (Spring 1954):36—48.

Santos, Milton, "Région bipolaire ou division spatiale de la force urbaine: le cas de Coro et Punto Fijo en Venezuela", *Bulletin de l'Association dé Géographes Français, 382—383* (June—Nov. 1970):223—229.

Scott, Albert L., Blanchard, Fessenden S. & Jacobs, Julian, *The Cotton Textile Industry in Latin America,* Pamphlet Series no. 6, The Latin American Economic Institute, New York 1944 (?).

Scitovsky, Tibor, "Prospects for Latin American Industrialization within the Framework of Economic Integration: Bases for Analysis", in IDB, *The Process of Industrialization in Latin America,* Round Table, Guatemala, April 1969.

Shell (Compañía Shell de Venezuela), *Cardón. Una descripción de la refinería Shell de Cardón, Estado Falcón,* Caracas 1958 (?).

Shepherd, Geoffrey *et al.,* "El mercadeo de los productos agropecuarios al por mayor y al detal", Consejo de Bienestar Rural, Caracas 1962 (mimeo.).

Shoup, Carl S. *et al., The fiscal system of Venezuela. A report,* Baltimore 1959.

Silva Michelena, José A., *The Illusion of Democracy in Dependent Nations,* The MIT Press, Cambridge, Mass. 1971. Vol. 3 of *The Politics of Change in Venezuela* (see do.).

Statistical Yearbook (UNSY), United Nations Statistical Office, Department of Economic and Social Affairs, New York. Selected years since 1948.

Statistisch Jaarboek — Nederlandse Antillen 1971, Departement van Sociale u Economische Zaken, Bureau voor de Statistiek, Curaçao.

Stein, Stanley J., *The Brazilian Cotton Manufacture. Textile Enterprise in an Underdeveloped Area, 1850—1950,* Harvard University Press, Cambridge, Mass. 1957.

Survey of Current Business, US Department of Commerce, Washington, D.C. Selected numbers.

Sutcliffe, R. B., *Industry and Underdevelopment,* London 1971.

Taylor, Wayne C. & Lindeman, John (with the collaboration of Víctor López R.), *The Creole Petroleum Corporation in Venezuela,* US Business Performance Abroad, National Planning Association, Washington, D.C. 1955.

The Politics of Change in Venezuela, 3 vols, 1967—1971. Ed. by Frank Bonilla and José A. Silva Michelena. See Ahumada 1967, Bonilla 1970 and Silva M. 1971.

References

Thiesenhusen, William C., "A Suggested Policy for Industrial Reinvigoration in Latin America", *Journal of Latin American Studies,* 4:1 (May 1972):85—104.

Tinoco, Pedro R., hijo, *Petróleo. Factor del desarrollo,* Caracas 1970.

Toledo de Salas, Inírida, *Agrupación 23 — industria textil,* anexo II del programa de la industria manufacturera del plan de la nación 1965—1968, Cordiplan, Caracas 1965 [?] (mimeo.).

Tornes, Kristin, "Venezuela — en underutviklet oljegigant", *Internasjonal Politikk,* no. 3 (July—Sept.) 1974:665—677.

—, "Economy, Classes and Educational Choices. Perspectives on Venezuelan Development", Institute of Sociology, Univ. of Bergen, 1975 (mimeo).

Tovar, Ramón A., *Venezuela. País subdesarrollado,* Caracas 1964.

Tucker, Mitchell, "The Petroleum Industry", in Lloyd J. Hughlett (ed.), *Industrialization of Latin America,* New York 1946.

UN (United Nations, Department of Economic Affairs), *Venezuela,* Public Finance Surveys, New York 1951.

UNSY, see *Statistical Yearbook (UNSY).*

Uribe Ortega, Graciela, *La localización de la industria manufacturera en Chile,* Universidad de Chile, Santiago 1966 (?).

USDC (United States Department of Commerce), *Investment in Venezuela. Conditions and Outlook for United States Investors* (prepared by George Wythe and associates), Washington, D.C. 1953.

—, *Principal Manufacturing Industries in Venezuela* (prepared by F. Maresch & J. E. Montel), World Trade Information Service, part 1, no. 58:70, Washington, D.C. 1958.

—, *Principal Manufacturing Industries in Venezuela,* Overseas Business Reports, no. 65:45, Washington, D.C. 1965.

USDS (United States Department of State), *Energy Resources of the World,* Publ. no. 3428, Washington, D.C. 1949.

Uslar Pietri, Arturo, *Sumario de economía venezolana,* 3rd ed., Caracas 1960.

USTC (United States Tariff Commission), *Commercial Policies and Trade Relations of European Possesions in the Caribbean Area,* Report no. 151, Washington, D.C. 1943.

—, *Recent Developments in the Foreign Trade of Venezuela,* Washington, D.C. 1945 (mimeo.).

—, *Economic Controls and Commercial Policy in Venezuela,* Washington, D.C. 1948.

—, *Agricultural, Pastoral, and Forest Industries in Venezuela,* Washington, D.C. 1949. — Referred to as USTC 1949a.

—, *Mining and Manufacturing Industries in Venezuela,* Washington, D.C. 1949. — Referred to as USTC 1949b.

Valbuena de Lasi, Carmen C., "Un cuarto de siglo de actividad petrolera en Venezuela, 1940—1964", *Revista del Banco Central,* nos. 242—244 (April—June 1965).

Vallenilla, Luis, *Auge, declinación y porvenir del petróleo venezolano,* Caracas 1973.

Van der Hoeven, H., *et al.,* "Refinación", in *Aspectos de la industria petrolera en Venezuela,* Sociedad Venezolana de Ingenieros de Petróleo, Caracas 1963.

Veloz, Ramón, *Economía y Finanzas de Venezuela,* Caracas 1945.

Veloz Goiticoa, N., *Venezuela — 1924,* MF, Caracas 1924.

Vila, Marco-Aurelio, *Aspectos Geográficos del Estado Zulia,* Corporación Venezolana de Fomento (CVF), Caracas 1952.

References

—, *Area Metropolitana de Caracas,* Caracas 1965. — Referred to as Vila 1965a.

—, *Aspectos Geográficos del Estado Sucre,* CVF, Caracas 1965. — Referred to as Vila 1965b.

—, *Aspectos Geográficos del Estado Carabobo,* CVF, Caracas 1966. — Referred to as Vila 1966a.

—, *Aspectos Geográficos del Estado Aragua,* CVF, Caracas 1966. — Referred to as Vila 1966b.

—, *Aspectos Geográficos del Distrito Federal,* CVF, Caracas 1967. — Referred to as Vila 1967a.

—, *Aspectos Geográficos del Estado Miranda,* CVF, Caracas 1967. — Referred to as 1967b.

—, *La Peninsula de Paraguaná: posibilidades socio-económicas,* CVF, Caracas 1970(?).

Vila, Marco-Aurelio & Pericchi L., Juan J., *Zonificación geoeconómica de Venezuela,* 4 vols., CVF, Caracas 1968.

Vilela Luz, Nícia, *A luta pela industrialização do Brasil, 1808 a 1930,* São Paulo 1961.

Wagley, Charles (ed.), *Social Science Research on Latin America,* New York 1964.

Weil, Thomas E. *et al., Area Handbook for Venezuela,* Washington, D.C. 1971.

Whyte, R. O., *Milk Production in Developing Countries,* New York 1967.

Wilkie, James (ed.), *Statistics and National Policy,* suppl. 3 of *Statistical Abstract of Latin America,* UCLA, Los Angeles 1974.

Wylie, Kathryn, "Venezuela's Agricultural Problem", *Foreign Agriculture* VI (1942): 227—53.

Wythe, George, "The New Industrialism in Latin America", *The Journal of Political Economy,* 45 (April 1937).

—, "The Rise of the Factory in Latin America", *The Hispanic American Historical Review,* 25 (Aug. 1945):295—314.

—, *Industry in Latin America,* 2nd ed., New York 1949.

Wythe, George *et al.,* "Principal Manufacturing Industries", in *Investment in Venezuela. Conditions and Outlook for United States Investors* (same authors), US Department of Commerce, Washington, D.C. 1953. See USDC 1953.

Zuloaga, Guillermo, "Venezuela", in W. E. Pratt & Dorothy Good (eds.), *World Geography of Petroleum,* Princeton University Press, Princeton, N.J. 1950.

—, *Petroleum Geography of Venezuela,* Caracas 1960.

Frank, Andre Gunder, *Capitalism and Underdevelopment in Latin America,* New York 1967.

Index

(chapters 1–6)

Abadan refinery, Iran, 91, 110
Acarigua, 172
Acción Democrática (AD), 31, 152, 154
Accounts, national economic, 30
Achaguas, 147
Agriculture, 23, 30, 32—34, 36—37, 63, 145, 150
Alpargatas, 59—60, 65
Amuay, 102—106, 108, 115, 172—173
Andes region, 22, 26, 147, 149, 159, 166
Antímano, 164, 167
Anzóategui, state of, 41, 69, 98, 109
Apparel, 170—171, 183
Appreciation, *see* Currency, national
Apure, state of, 107, 147
Aragua, state of, 42, 67, 69, 119, 126, 127, 142, 148—150
Aragua de Barcelona, 147—149, 171
Araure, 172
Argentina, 24—25, 44—47, 57—58, 80, 96, 123, 130, 133, 135, 138—142, 146
Artisanry, 26, 30, 33—34, 45, 59, 61—63, 117—118, 121, 128
Aruba, 75, 78, 80, 82, 87, 89—97, 105
Asphalt, 103, 105—106, 107
Automobiles, 113, 171, 191

Bachaquero, 41, 74
Bajo Grande, 103, 106, 114
Barcelona, 41, 109, 116, 165, 167, 172
Barinas, 103, 107—109, 147
Barquisimeto, 40, 42, 147—148, 150, 158, 160, 165, 172—173
Beverages, 57, 61, 65, 68, 161, 163—164, 171, 181
Bolívar, state of, 69, 147
Bolívar coastal fields, 73—74, 76, 84, 89, 93, 105—106
Bolivia, 96, 163
Boscán, 106
Branger, 126, 128, 142—143
Brazil, 22, 24, 27, 44—48, 57—58, 68, 80, 82, 96, 124, 129—130, 132—133, 137—141, 163
Breweries, 60, 67, 112, 161—168, 181
Buenos Aires, 48
Building materials, 57, 187
Bunker oils, 86, 88—89
Butter, *see* Dairy industry

Cabimas, 41, 73, 84—85, 97, 107
Cabudare, 172
Cagua, 149, 172
Caja Seca, 159
Calabozo, 149
Campesinos, 36
Canada, 80, 82, 154
Candles, 60, 109, 112
Carabobo, state of, 42, 63, 67, 69, 118, 126—127, 142, 171
Caracas, 22, 26, 40, 42, 60—63, 65—67, 69, 108, 118, 120, 124, 142—144, 147—153, 157—158, 160—162, 164—168, 170, 172
Cardón, 102—106, 108, 115, 172—173
Caribbean Petroleum Co., 72—73, 83
Caripito, 84—85, 96—99, 103, 110, 114
Carora, 160
Carúpano, 63
Castro, Cipriano, 62
Catia La Mar, 42, 108
Cattle, 26, 145—148, 157, 159—160
Caucaguita, 149
Cement, 60, 113, 187
Central America, 48, 80
Cervecería Nacional, 164, 167
Cervecería Polar, 164, 167
Charallave, 147—148
Cheese, *see* Dairy industry
Chemicals, 68—69, 113, 171, 186
Chevron, 103, 106

Chile, 24—25, 44—47, 57—58, 97, 123, 130, 132—133, 138—141, 153, 163
Chocolate, 171, 179
Cigarettes, 60—62, 65—66, 171, 181
Cigars, 60, 65, 181
Ciudad Bolivar, 164—166
Ciudad Ojeda, 41
Climate, 61
Clothing industry, 57, 68, 182—183
Cocoa, 22—23, 28, 35—36
Coffee, 22—23, 26, 28, 35—36, 62
Colombia, 24, 26, 46—48, 58, 87, 93, 123, 130, 133, 137—142, 163, 166
Colón, 85
Commerce, 26, 30, 32—34, 37, 61, 63
Communications, 26
Concepción, 152
Confectionary, 170, 179
Construction industry, 30, 32
Contraband, 130, 133, 146
Conuco system, 22
Cordage, 60, 171, 182
Coro, 104, 115
Crafts, *see* Artisanry
Creole Petroleum Corporation, 76, 102—106, 108—110
Cuba, 25, 28, 45, 57, 130, 138—142, 163
Cúcuta, 166
Cumaná, 61—63, 65, 67, 121, 123—125, 127, 142, 172—173
Cumarebo, 76, 93
Curaçao, 65, 75, 78, 80, 82, 87—97, 105
Currency, national, 35, 64, 132, 133
CVF, 137, 141, 147, 149, 153
CVP, 103, 108

Dairy industry, 60—61, 85, 150—161, 171, 177—178
Denmark, 154
Depression, Great, 35, 45, 77, 88, 131
Diesel oils, 85, 105, 109, 112, 113
Distilleries, 67, 162
Distrito Federal, *see* Federal District
Druif, 90
Duties, *see* Tariffs

Eastern oilfields, 76—77, 84, 96, 98
Ecuador, 26, 118, 130, 138—140, 163
El Chaure (Puerto La Cruz), 103, 109
El Cubo, 85
Electrical goods, 171, 190
Electrical power, 61—62, 120, 124, 142
El Encantado, 120
El Mene de Acosta, 85
El Mene de Mauroa, 72, 85
El Palito, 103, 107—109, 114, 172
El Salvador, 138—140
El Tablazo, 107
El Tigre, 41
El Tocuyo, 118
El Vigía, 147, 149, 155, 159
Encontrados, 152
England, *see* Great Britain
Europe, 22, 57, 75, 80, 82, 89, 91, 94, 97
Exchange rates, *see* Currency, national
Export, 22, 28, 36, 60, 62, 65
External economies, 58, 64
Exxon, *see* Standard Oil of New Jersey

Falcón, state of, 41, 72, 85, 115, 148
Federal District, 42, 63, 67, 69, 127, 131, 153, 167, 171
Fish processing, 171, 177
Food industries, 44, 57, 61, 67—69, 145—168, 177—180
Foreign investment, 28, 62—63, 65, 120, 141, 149, 165
Foreign ownership, 62, 66
France, 82
Fuel oils, 85—86, 88—89, 100—113
Furniture, 171, 183

Gas oil, 105, 108
Gasoline, 85—86, 88, 91, 101—102, 105, 107—109
GDP, 27, 30, 33—34, 36, 37, 58
Germany, 23, 82, 162, 166
Glass, 60, 171, 187
GNP, *see* GDP
Gómez, Juan Vicente, 60, 62, 67, 71—76, 83, 87, 89—90, 96, 124—125, 141, 146, 151, 166
Government services, 30, 32
Grain mills, 171, 179
Great Britain, 23, 25, 62, 66, 72, 82, 88, 94, 118, 146
Gross domestic product, *see* GDP
Guacara, 172
Guarenas, 148, 172
Guárico, state of, 41, 119, 147
Guanta, 41, 172
Gulf Oil Company, 74—76, 84, 89, 103, 109
Guyana, 82

Haiti, 82, 130
Highways, 23, 147, 149, 159, 162, 164, 166
Hydrocarbons Law (1943), 31, 77, 99

Ice-cream, *see* Dairy industry
Immigration, 23, 39, 161, 166
Imports, 23, 36, 46—48, 59, 62—63, 65, 129—130, 152, 154, 162
Import substitution, 47—48, 69, 165
Income, 22, 24, 26—27, 35—38, 57, 64
Infrastructure, 23, 57—58, 61, 64, 120, 124

Index

Irak, 86
Iran, 72
Israel, 37

Japan, 82, 132
Jusepín, 96

Kerosene, 86, 94
Knitting, 121, 122, 129, 131, 144, 171, 182
Kuwait, 74

La Arriaga, 84, 97
Labor force, 29, 33, 36, 45, 58
La Fría, 147—149, 160
Lago, 74—76, 83, 88, 91, 96
La Guaira, 23, 42, 60—63, 119, 152, 166
Lagunillas, 41, 74, 84, 93
La Paz, 105—107
Lara, state of, 42, 69, 148, 151, 158, 160
La Rosa, 73, 83—84
La Salina, 83—85, 96—98, 106—107
Las Piedras, 89, 115
Latifundios, 21, 150
La Victoria, 121, 126, 172
Leather, 59, 60, 61, 171, 185
Level of living, 22, 26
Linkages, economic, 112—114
Livestock, *see* Cattle
López Contreras, Eleazar, 96, 99, 133
Los Barrosos, 73
Los Teques, 148—149, 158, 172
Lubricants, 91, 103, 105, 113
Lumber, 171, 183

Macarao, 118—119, 148
Machinery, 65, 68, 171, 190
Machiques, 152, 158—159, 160, 173
Maiquetía, 60, 42, 162, 164, 167
Malt beverage industry, 161—168, 181
Maracaibo, 40—41, 60, 62—63, 67, 77, 84, 90, 106, 114, 121, 124—125, 142, 146, 148—150, 152, 158, 161—162, 164—167, 172
Maracaibo Basin, 72—77, 86—87, 89, 93
Maracaibo, Lake, 41, 61, 72—77, 83, 87, 94—95, 101, 106—107
Maracay, 40, 42, 61, 65, 66, 67, 124—128, 133, 141—144, 146, 148, 151—152, 165, 168, 172
Mariara, 172
Marigüitar, 173
Market, domestic, 42, 48, 57, 62, 64, 124, 128, 141, 163, 165
Matches, 60, 62, 66
Maturín, 41, 165, 172
Meat-packing, 57, 60—62, 66, 145—150, 171, 177
Medina Angarita, Isaias, 99
Mene Grande field, 73—76, 83, 86, 98, 107, 114
Mene Grande Oil Company, 76, 98, 100, 109
Mérida, state of, 26, 121, 127
Metals, 22, 66, 68—69, 171, 188—189
Mexico, 24, 27, 44—48, 57—58, 68, 72—74, 87, 93—94, 96—97, 117—118, 129—130, 137—142, 163
Middle East, 79—80, 91, 94, 110
Migration, internal, 39, 41
Milk, *see* Dairy industry
Minerals, non-metallic, 68—69, 187
Mining, 30, 32, 37
Miranda, state of, 42, 69, 148, 167, 171
Mobil Oil Company, 103, 107, 109
Monagas, state of, 41, 76
Morón, 103, 108, 115, 172

Naphta, 105, 109
Natural gas, 106, 113
Netherlands, 154
Netherlands Antilles, 83, 86—97
North America, *see* United States

Oficina, 98
OPEC, 31, 80
Oil companies, 29, 31, 62, 64, 71—116
Oil industry, 27—29, 34, 41, 63—64, 71—116
Oil refining, 30, 57, 61, 68—69, 81—116
Oil revenues, 29, 31, 42, 77
Oranjestad, 90

Panama, 78
Paper, 60—61, 68—69, 113, 171, 184
Paraffin wax, 103, 109, 112, 113
Paraguaná Peninsula, 89, 102—106, 115—116
Paraguay, 130
Per capita income, *see* Income
Pérez Jiménez, Marcos, 81, 137
Peru, 46—48, 57—58, 94, 117—118, 130, 135, 138—141, 163
Petrochemical industry, 107, 113, 186
Petroleum, *see* Oil
Pharmaceuticals, 170—171, 186
Phillips Petroleum Company, 103, 109
Plastic products, 170—171, 192
Population, 25, 38—42, 50
Pozuelos, 41, 116
Price levels, 25, 36, 58
Printing industry, 171, 184
Productivity, 36—37
Protection (trade), 47—48, 58, 62, 64—66, 123—125, 132—137
Puerto Cabello, 23, 60—63, 65, 107, 115, 119, 146, 148, 164, 166, 168, 172
Puerto La Cruz, 41, 98, 100, 102—103, 109, 116, 148, 172
Puerto Ordaz, 172—173
Puerto Rico, 78
Punto Fijo, 115, 172

Quebrada Arriba, 160
Quiriquire, 76, 84, 93, 98

Railroads, 23, 66, 119
Rayons, 126, 135—136, 142—143
Richmond, 106
Rubber, 66, 171, 185

San Carlos, 159, 173
San Cristóbal, 148, 165, 167, 172—173
San Fernando de Apure, 146
San Joaquín, 172
San Lorenzo, 61, 83—85, 87, 96—98, 103, 107, 114
San Nicolas (Aruba), 89—95
San Roque, 103, 109
Santa Bárbara, 152, 158—159, 173
Santa Rita, 147—148
São Paulo, 23, 44, 48, 164
Saudi Arabia, 72, 74
Schottegat, 88
Service industries, 30, 32—34, 36—37, 63
Shell, 72—76, 83—90, 93—97, 100, 102—108
Shoes, 62, 183
Sinclair, 100, 103, 107, 109
Soap, 60, 112
Socony Vacuum, 98
Soviet Union, 72, 81
Spain, 22, 118
Standard Oil of California, 74
Standard Oil of Indiana, 74—76, 83—85, 89—90
Standard Oil of New Jersey, 74—76, 84, 93—97, 100
St. Croix (Virgin Islands), 78, 105
Subsidio lechero, 153—154
Subsistence agriculture, 22, 150
Sucre, state of, 63, 67
Sugar mills, 22, 57, 60—61, 65, 67, 85, 112, 171, 180
Sweden, 66

Táchira, state of, 26, 160
Tampico, 89
Tanneries, 60—61, 65, 171, 185
Tariffs, 64—67, 123, 132—134, 163
Tariff revenues, 1905—1941 (table), 64
Texaco, 103, 109
Textiles, 57, 60—61, 65, 67—69, 171, 182—183
Tía Juana, 74
Tinaco, 149
Tobacco, 22, 57, 171, 181
Toilet goods, 171, 186
Transportation, 30, 32—34, 57, 61, 68
Trinidad, 65, 78, 84
Trujillo, state of, 26
Tucupita, 103, 109
Turiamo, 104
Turmero, 148, 152, 172

United States, 25, 35, 67, 72, 74—75, 80—81, 88—89, 94, 97, 101—102, 107, 119, 141
Urbanization, 26, 39—43, 57, 62, 69
Uruguay, 25, 44—48, 57—58, 97, 130, 138—140, 163

Valencia, 26, 40, 42, 60—63, 65—67, 108, 115, 119—121, 124—128, 131, 142—144, 148, 150—153, 158, 160, 164, 168, 172
Venezuelan Sun, 106—107
Willemstad, 87—95
World War I, 22—23, 25, 44, 45, 61
World War II, 29, 47, 91, 152

Yaracuy, state of, 119, 126

Zulia, state of, 41—42, 61, 63, 67, 69, 85, 147—148, 151—152, 159, 166