

HISTORICAL STATISTICS OF CHILE: AN INTRODUCTION*

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Chile has a long tradition of collecting, publishing, and improving its historical statistics.¹ The objectives here are to provide an introduction to the economic historical statistics of Chile since 1830 and guide the reader to their most significant primary and secondary sources. Mention is also made of attractive historical statistics research projects.

The majority of Chile's historical statistics has been collected and published by the prestigious Instituto Nacional de Estadísticas (INE), the statistical and census bureau located in Santiago (previously also named Dirección de Estadística y Censos [DEC] and Servicio Nacional de Estadística y Censos [SNE]). The high quality of its staff and uninterrupted professional independence and integrity have made it one of the best in Latin America. Its predominantly annual publications on demography, trade, public finance, money and banking, employment-unemployment, social security, etc., are found in its archives, the National Library (which is particularly strong for pre-1930 data), the Library of Congress, and elsewhere in Santiago, and are listed/reviewed in Mamalakis (1967).

Specialized historical statistics are found in the publications and files of ministries and agencies or institutes. The ministries of agriculture, internal revenue (hacienda), mining, health and education, and public works, such public entities as the Chilean Development Corporation (CORFO)—in Santiago as well as in the provinces—the Central Bank of Chile, the railroads, and the Corporación del Cobre (to name only some) are renowned primary sources of historical statistics. The Presidency of the Republic also has produced classical documents containing historical data (A. Alessandri 1938; Aguirre 1939; Ríos 1945; González 1952; Ibañez 1958; J. Alessandri 1963; Frei 1970; Allende 1972).

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The numerous university libraries and specialized institutes are also valuable sources. The libraries of the faculty of economics and of the economics institutes of the University of Chile and the Catholic University contain many of Chile's first rate *memorias*—theses written to obtain a B.A. degree (e.g., Crocco 1947; Varela 1958; Meza 1962), mimeographed papers, and research documents containing historical statistics. Valuable unpublished doctoral theses exist in North American and European university libraries.

Publications of the United Nations and its specialized agencies, the Organization for Economic Cooperation and Development (OECD) in Paris, the International Bank for Reconstruction and Development, the Interamerican Development Bank, and the archives (embassy and consular records) and ministries of the nations with significant relations to Chile, contain historical statistics, as do such Chilean newspapers as *El Mercurio* (conservative), *El Siglo* (communist newspaper, now dormant), *La Nación* (government newspaper), *El Diario Ilustrado* (conservative, defunct), and others, and *Cuadernos de Economía*, Chile's best technical economic journal published by the Catholic University.

The most comprehensive, though far from complete, compilation of historical, economic statistics is the mimeographed four volume *Historical Statistics of Chile* (Mamalakis, 1967). Copies of this work (forthcoming in 1978–79) are found at the libraries of the University of Wisconsin-Milwaukee, Yale University's Economic Growth Center, the University of Pennsylvania, The Institute of Latin American Studies of the University of London, OECD's Development Centre, and the Planning Office (ODEPLAN) in Santiago.²

In spite of Chile's comparatively excellent stock of historical statistics, its numerous deficiencies are being corrected too slowly. Preparation of the missing or incomplete data requires not only excellent economic and historical training but often also specialized know-how in such fields as demography, accounting, and statistics. Above all, it requires long-term interest and substantial financial resources (not necessarily in this order), both of which are perennially in short supply.

NATIONAL ACCOUNTS

Systematic national accounts estimates are available in Chile for the period 1940–75. The "CORFO estimates," prepared by the Chilean Development Corporation for the years 1940–65, are found in their most complete form in Mamalakis (1967, 1:50–211). CORFO's classic collections of national accounts and supporting tables (1954; 1957, app. 1–57) cover only the period 1940–54. National accounts for the 1960–75 period, the "ODEPLAN series," were prepared by the Planning Office according to a new methodology and are found in ODEPLAN (1971a, 1973, 1974) and in Mamalakis (1967, vol. 1). Standard information in both sets includes the expenditure, industrial origin, income distribution, saving-investment, general government, and external transactions tables. Time series on the composition of private consumption expenditures are available only

for the years 1940–54 and CORFO did not publish income distribution data for 1954–60. Time series on depreciation, personal saving, net income, and constant prices have serious limitations.

Excellent supplementary studies on parts of the national accounts include Meza (1962) and Ward Cantwell (1963) on the public sector and Varela (1958) on income distribution. CORFO and ODEPLAN have produced for the 1940–75 period a monumental collection of studies, many annual, on investment, saving, industry, public sector, sectoral, and other national account components; most are found in the CORFO and ODEPLAN libraries and are incorporated in Mamalakis (1976). Historical national accounts for 1830–1940 and the colonial period are possible and would be useful. As a first step, estimates of some components could be prepared.

DEMOGRAPHY

Demographic data, primary and secondary, have been collected and/or published by the census bureau (INE 1972), CORFO (1954), the social security agencies, the Instituto de Economía (IDE 1976), the United Nations, the Catholic Church, and so forth. Demographic time series and benchmark data are abundant but of uneven quality. The total population series (Mamalakis 1967, 2:61) is the longest in Latin America. Basic items of all thirteen censuses (carried out in 1831–35, 1843, 1865, 1875, 1895, 1907, 1920, 1930, 1940, 1952, 1960, and 1970) are personal identification, sex, age, civil status, occupation, degree of education, and physical defects. The census bureau has published corrected series of total population including but not prior to the 1885 census. Disaggregated statistics, such as distribution of population by age, sex, province and so forth, remain uncorrected for their often numerous statistical errors and thus need to be used with caution. The coverage and limitations of the demographic statistics are described in Cruchaga (1929, pp. 457–540), Crocco (1947), SNE (1956, pp. 11–46), IDE (1963), Pereira (1965) and Mamalakis (1967, 2:1–19).

Historical statistics exist for birth and death rates; immigration and emigration; nationality; density of population; distribution of population by province (since 1835), by region (urban-rural, since 1865), by size of city, and so forth; daily per capita caloric intake; and others (Mamalakis 1967). Statistics on educational attainment and institutions (which often exist since 1840 but are not always comparable) cover primary, secondary, university, and vocational/technical education. These are contained in censuses as well as in other studies (Labarca 1939; Ibañez 1958; Mamalakis 1967; Frei 1970; Allende 1972). Detailed data (mostly for the post-1940 years) on labor force by industry, occupation and province, wages, salaries (minimum and actual), employment and unemployment are found, in addition to INE's monumental publications, in CORFO (1954), Mamalakis (1967), ODEPLAN (1971a, b), and IDE (1976). Corrected demographic data are found, almost randomly, in appendices of the census bureau's monthly *Synopsis Estadística* (see various issues of INE, 1972).³

AGRICULTURE

Agricultural statistics are among the most neglected in Chile. There exist some outstanding studies, such as Sepúlveda (1959) on wheat, Ballesteros and Davis (1963) and Ballesteros (1965) on production and input statistics, and MINAG (1957, 1963) for the period 1950–60; however, they are the exceptions. Continuous, reliable statistics for the 1835–1930 period are rare, and data for such an important agricultural component as livestock are of poor quality for almost all years. This can be explained in part by the well known emphasis, since 1940, on the issue of land tenure/reform with its polemic-political-social overtones, which only occasionally generated historical data-based studies (CIDA 1966; Frei 1970; Allende 1972).

Even so, the statistical and census bureau and the ministry of agriculture have generated a large flow of historical statistics. Agricultural censuses, of which there are four (1929–30, 1935–36, 1955, and 1964–65), contain data on agricultural land by producer, area, product type, and productivity (1964–65 census) according to use (also primary and secondary exploitation) and type of tenure; on irrigation, livestock, and type of agricultural machinery; and so forth (see in particular DEC 1965). A description and evaluation of these censuses are found in Mamalakis (1967, 3:199–208a). The ministry of agriculture has collected, but not published, extensive data on surface cultivated, production and yield of wheat, potatoes, oats (all since 1909), rice, and other products, and quantum indexes of agricultural livestock and forest production, all of which are found in Mamalakis (1967, vol. 3). Statistics on crops harvested and cattle bred are found in the annual DEC (1964). Agricultural production and related statistics, prepared according to different methodologies by DEC (INE), CORFO, and ODEPLAN, as well as data on absolute and relative prices and indexes are included in Mamalakis (1967, 3:A210–A305b).

Major gaps exist, among others, in the estimates of agricultural capital stock, investment, age distribution and slaughtering of livestock, prices paid to producers, and long-term statistics of type of tenure and its impact on productivity. Since Chile's floating population always has been large, a statistical problem arises from the movement of agricultural population and livestock along the borders with Argentina, Bolivia, and Peru.

INDUSTRY AND PRICES

Industry was important in Chile even in the nineteenth century (Carmagnani 1971; Mamalakis 1976, ch. 8). In addition to the statistical and census bureau (which has published four industrial censuses, the *Anuario de Industria* and other documents), industrial historical statistics have been collected and published by the prestigious Sociedad de Fomento Fabril (Society for Promotion of Industry), the United Nations, CORFO and its subsidiaries (iron and steel statistics by the Compañía Acero del Pacífico, energy statistics by the Empresa Nacional de Electricidad), and ODEPLAN (numerous studies on capital and labor intensity, demand patterns, energy use, ownership, and so forth).

Historical statistics are the best for industry's manufacturing segment, i.e., the part with industrial establishments employing five or more persons. They are poor to nonexistent for the critically important artisan segment, which includes establishments employing four or fewer persons. Historical statistics for the period 1860–1930 are found in Carmagnani (1971). Industrial production indexes, which generally start in 1910, have been prepared by UNECLA (1951), UN (1960), Ballesteros and Davis (1963) and Muñoz (1968a, b), with Muñoz's being the most comprehensive. The empirical study on industry's concentration ratios by Lagos (1966) is also excellent.

Statistics (cross section or time series) on: value of industrial production, value added per person employed in medium and large manufacturing and per worker, employee, and total of persons employed, incomes, value of gross production and value added, value of stocks, new investments in fixed capital; index of industrial production by important activities, of manufacturing products, and of industrial sales; province and type of industry; electricity consumed, as well as quantity and value of fuels, by type of industry, purchases of raw materials; and capital stock and ownership by nationality are found, along with the other statistics listed earlier in this section, in Mamalakis (1967, 3:330–454). Also found in the industry section of Mamalakis (1967, vol. 3) are previously published or unpublished series on the cost-of-living and wholesale price indexes, on the 1913–25 price index with prices of articles included in the index, on price index of imported goods, raw materials and auxiliary products, consumer and capital goods, and on unitary value indexes of imports, raw materials, auxiliary products, consumer, and secondary goods.

MINING

Because mining was so important as a source of foreign exchange and government revenues, Chile developed early a tradition of orderly collection and publication of relevant data. Production and often also price and value data by product exist for the colonial as well as the national period. Long time series of output exist for all important mineral (iron, gold, silver, lead, zinc, etc.) and nonmineral (coal, quartz, salt, borax, iodine, and so forth) products, including petroleum, but above all for copper and nitrate—Chile's two strategic mining exports (Mamalakis 1967, pp. 481–97; MINDEMI 1971). Historical statistics have been compiled by the census and statistics bureau, the ministry of mining, the Corporación del Cobre, the Corporación de Ventas de Salitre y Yodo, and the foreign-owned mining companies.

The copper sector, composed of large-, medium-, and small-scale production, has been subjected to numerous empirical studies (Reynolds 1965; RECHI 1965, app. 1–157; Mamalakis 1971a, 1976; CODELCO 1975). Long-term time series (mostly annual) are best for the large-scale segment and include value and quantity of production, profits, capital invested, taxes paid in Chile, legal cost of production, company exchange rates, and foreign exchange contribution (Mamalakis 1967, pp. 449–500a; CODELCO 1975, pp. 485–504). The best disaggregated data up to 1964 are found in Reynolds (1965, pp. 363–409) and

RECHI (1965, pp. 1–157). Copper production statistics date back to 1601 (Mamalakis 1967, p. 486) and have been compiled along with others since 1955 by the Copper Department (now Corporación de Cobre) in cooperation (until 1971) with Kennecott and Anaconda. The Copper Corporation claims that poor record keeping makes most copper data for the Allende years (1970–73) unreliable. The data on medium-scale copper mining are not very abundant or of good quality and on small-scale mining are scant. Major pre-1930 statistics for the nitrate sector and further references are found in Mamalakis (1971b), and excellent historical statistics on petroleum have been prepared and published by ENAP, the national petroleum company (Mamalakis 1967, p. 497).

The need for improved statistics for medium- and small-scale mining is great. Production accounts, profitability, rates of return, real wage rates, natural capital stock estimates, and other important historical statistics are missing but can be prepared.

THE PUBLIC SECTOR

Chile's public sector consists of the general government and the autonomous enterprises. The general government is in turn subdivided into the national government (central government, national health service, University of Chile, Technical State University, and social security institutions) and regional government. Comprehensive, long-term accounts for the public sector are missing even though there exist ample statistics on most of its component parts. Documents containing primary time series on the public sector are published by the Contraloría General de la República, the Ministerio de Hacienda, Municipalidad de Santiago, Servicio de Seguro Social, and the Instituto Nacional de Estadísticas.

Pre-1930 statistics, which are generally excellent and available since independence, are found in their original form in Molina (1898), Spottiswoode (1915), and DEC (1926), and uniformly revised in Humud (1969). Statistical data for the 1930–71 period are found in IDE (1956), Hacienda (1959), Meza (1962), Ward Cantwell (1963), IDE (1963), Frei (1970), and ODEPLAN (1971a). The most comprehensive collection of historical statistics for the public sector and its component parts is Mamalakis (1967, 4:675–728).

The quality of public sector data deteriorated markedly after 1930, being worst for the years between 1930 and 1950. Although there exist series for the 1950s (Meza 1962; Ward Cantwell 1963) and 1960s (ODEPLAN 1971a), they are not strictly comparable. The value of public sector statistics since 1940 has been significantly undermined by the rampant inflation. Special data problems exist for the autonomous enterprises, the capital accounts, and Allende's 1970–73 transition years.

MONEY AND BANKING

The two most valuable primary sources of historical statistics on money and banking since 1925 (the year Chile's Central Bank was founded) are the *Memoria Anual* (BCC 1925–75) and the *Boletín Mensual* (BCC 1976) of the Central Bank of

Chile. Excellent statistics for the total money supply and its components (deposit money, reserve money, paper money, coins in free circulation, credits, investments, bank reserves, and so forth) since 1925 have been prepared by Lüders (1968) and Arbildua and Lüders (1968) and are also included in Mamalakis (1967, 4:642–44). Excellent statistics concerning the parallel financial system since 1930 are found in Fuenzalida and Undurraga (1968). In addition to Lüders' aforementioned series on total money supply and quantity of money, statistics on nominal and real mortgage credit, banking credit, mortgage bonds in circulation and their average quotation, and interest on deposits and loans are found in Mamalakis (1967, 4:620–63). The best source and guide to the historical money and banking statistics of the pre-1930 period, which are abundant but of uneven quality, is Fetter (1931). The main weakness of Chile's money and banking statistics lies in the distortions imparted by the country's persistently high rate of inflation.

TRADE AND BALANCE OF PAYMENTS

Being a typical mineral export economy, Chile has a wide collection of trade, current account, and balance-of-payments statistics. The most important primary source of trade and balance-of-payments statistics for the pre-1925 years is the statistical and census bureau (e.g., DGE 1910), and for the 1925–75 period Chile's Central Bank (BCC 1925–75; BCC 1970; BCC 1976). The United Nations is also an important source.

The most important statistics for the pre-1930 period, including the value of exports since 1844, major export products (silver, copper, iron, nitrate, wheat, barley, beans, nuts, frozen meat, wood), major import products (foodstuffs, textiles, raw materials, machinery), indexes of the value of foreign trade (exports and imports) and of selected commodities, indexes of exports and sales of nitrate, regional and country distribution of exports and imports, are reproduced in Mamalakis (1967, 4:533–603). Also found there are such statistics as balance-of-payments investment availability accounts, terms of trade, and capacity to import, which begin either in 1925 or around 1942, and series on foreign debt, the exchange rate of the Chilean peso with the dollar and pound sterling, and customs duties, which are also available for most years of the 1835–1975 period.

A systematic, comprehensive evaluation and correction of Chile's external statistics does not exist. The efforts of the Central Bank to correct for under-invoicing of exports and over-invoicing of imports have reduced but not eliminated the underlying distortions. Data on factor payments, transfer, and capital accounts, so important to any economic historian, do not exist for the period 1835–1942.

Historical statistics can reveal the basic structure of an economy, and many of Chile's development problems have arisen from unwillingness to learn from the statistics available. The high price tag often carried by the preparation of historical statistics can be small compared to the potential social benefits that can be derived from their careful use.

NOTES

1. The index number problem is discussed meticulously in most of the primary sources cited here, but especially in those of the Central Bank of Chile and the National Statistics Institute.
2. The present article is distinct in size, form, substance, and objectives from my book, *The Growth and Structure of the Chilean Economy: From Independence to Allende* (1976) and the forthcoming *Historical Statistics of Chile*. As an introductory mini-guide surveying the classics of Chilean economic-statistical historiography, it is neither a collection of data, which *Historical Statistics* is, nor a major analytical opus, which the monograph on Chile pretends to be. Since the three publications satisfy different needs and fill distinct gaps, they complement but do not substitute for each other in displaying the physiognomy of Chile's economy.
3. Complementary demographic information is provided by Robert McCaa and René Salinas Meza in their respective demographic essays elsewhere in this issue.

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