

**Economic History Association**

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In doing so, the authors necessarily reveal their own interpretation of these events. Implicit in their account of the industry's development is the argument that the extraordinary commercial success of I.B.M., for whom they served as expert witnesses during the antitrust trial, has not been the result of any unlawful exercise of market power intended to exclude or to intimidate competitors. They suggest that, on the contrary, I.B.M. has earned its dominant position in the industry by virtue of the excellence of its managers, who have consistently had the courage and the vision to invest large sums of money in research and in the development of new computing machinery of steadily increasing efficiency, power, and convenience. They argue that firms such as General Electric that have left the business have failed because of their own mistakes and not because of any unfair tactics used by I.B.M. It is clear to them that I.B.M., far from monopolizing the industry, has in fact been subject to unremitting and vigorous competition from not only other computer manufacturers in this country and abroad but also computer leasing firms and producers of plug-compatible peripheral equipment, minicomputers, and central processors. The result of this rivalry has been a very rapid rate of technological progress and institutional change over the past 30 years that has, in their view, substantially expanded the range of choice open to consumers.

The authors defend this thesis with impressive scholarship. They provide a detailed and seemingly exhaustive enumeration of the principal innovations introduced by I.B.M. and its competitors, including those that were unsuccessful, and a revealing account of the managerial decisions that made them possible. They skillfully depict the intense technological competition in the industry that constantly exposed all firms to a Schumpeterian gale of creative destruction, which they could survive only through continuous innovation in a commercial environment of great uncertainty and insecurity. They show the origins of I.B.M.'s extraordinary growth in the late 1960s in its risky decision to invest in the development and marketing of the System/360 line of computers. Forty-eight pages of footnotes at the end of the volume provide careful citations to the antitrust trial record on which the authors support their arguments.

Although this book should be of much value to economists concerned with issues of antitrust policy and business history, it may be somewhat less useful to students of technological change. The authors give inadequate attention to the impact of the patent laws, economic regulation, and other public policies on the rate of growth of computer technology. Their history provides very little information on the economic importance of licensing transactions in the industry and of scale economies in R & D. It contains no conclusions regarding the explanation of successful innovation and technological diffusion.

Moreover, the authors could perhaps have improved their book by adding an appendix explicating the language and basic principles of computer science and yet another comparing their reconstruction of the industry's history with that offered by the U.S. government's attorneys in their trial briefs, a discussion that would have facilitated evaluation of their arguments.

BRIAN PECKHAM, *University of Utah*

*The National Balance Sheet of the United States.* By Raymond W. Goldsmith. National Bureau of Economic Research Monograph. Chicago and London: The University of Chicago Press, 1982. Pp. xvi, 217. \$30.00.

In this, his most recent of many important works, Raymond Goldsmith presents a monumental accounting of United States wealth for the years 1900, 1929, and 1953–1980. This volume offers a fundamental chronicle of economic growth and it provides a basis for analytical studies of the changes occurring in our economy that in many ways is superior to studies based on national product statistics. Goldsmith offers, among other

things, fascinating information concerning the distribution of wealth among households in a way that will lead to a better understanding of income distribution.

Goldsmith's data are the aggregate values, in current and constant dollars, for 44 categories of tangible and financial assets, liabilities, and items of net worth. These data provide a basic reference for anyone studying economic development in the twentieth century. The categories are given for each of nine sectors including households, corporations, government, and financial institutions. He casts many tables in the form of ratios so that it is easy to follow changes in the relative importance of the various sectors. By 1980, national assets had reached the staggering total of \$22 trillion, the result of the strong thrust in growth after 1953 which counterbalanced lower rates of growth from 1929 to 1953. His findings of the average annual rates of change from the beginning of the century demonstrate important magnitudes:

Category	Growth rate, 1900–1980		
	Current prices	Constant prices	Constant prices per head
Land	.0593	.0269	.0133
Reproducible tangible assets	.0636	.0280	.0144
Financial assets	.0674	.0347	.0210
All assets	.0646	.0302	.0166

These rates appear to approximate roughly those for income. More particularly, an analysis of capital/output ratios in the initial and terminal years shows that while there was little change in the case of reproducible assets, financial assets were of increasing importance.

Goldsmith offers both narrow and broad estimates of national assets. The latter estimate includes four additional items: military structures, equipment and inventory; standing timber; subsoil assets; and collectors' items. A particularly important item among financial assets in the broader category is unfunded insurance and pension rights, particularly social security (nil in 1900 and 21 percent of national assets in 1980).

For the economic historian, perhaps the most important sectoral account is that dealing with households. This group represented about 38–39 percent of national assets in 1900, 1953, 1975, and 1979 in the narrow accounting; 1929 was abnormally high, at 47.5 percent, under the influence of the then high stock prices. While many household details disappointingly are limited to the period after 1953, they are nevertheless of great interest. Total assets grew 2.1 percent a year per head, in real terms, from 1953 to 1975, although the rate was somewhat uneven. On the whole, assets in stock of corporations declined sharply in relative importance during the period, while the share in land and structures increased, as did the share in time and saving deposits. One can follow various measures of liquidity and leverage as yearly series, in addition to other types of financial ratios. The ratios of assets to general disposable income decline in trough years and rise early in upturns, largely because of the influence of stock prices.

An important aspect of household assets is to classify them by wealth, sex, age, race, occupation, schooling, and even by number of children. We are familiar with these dimensions with respect to income, and Goldsmith does us a service by bringing together several different asset studies and casting them in terms of his balance sheet accounts. The types of assets of the top 1 percent of wealthholders are strategic since this group holds about one-quarter of all household wealth. This group's holdings were dominated by corporate stock, about 43 to 50 percent of their assets from 1953 to 1972,

but down sharply to 30 percent in 1975; their assets in real estate were 19 to 22 percent earlier, but rose to 30 percent in 1975.

What proportions of *all* stocks, real estate, and so on, are held by the rich, middle, and lower groups in the United States? One can find definitive answers in this volume since Goldsmith has adjusted shares to national totals and we need not fear that there is understatement. Fascinating figures emerge in this connection; I list a few of these as but one example of Goldsmith's depth and coverage in this work:

Item	Household wealth, 1962			All
	Below \$15,000	\$15,000– 60,000	\$60,000 and up	
Proportion of persons	.867	.111	.022	1.000
of total assets	.16	.36	.48	1.00
of real estate	.21	.53	.26	1.00
of stock	.01	.10	.89	1.00

This manner of analysis may be applied to many other assets including household goods, bonds, and insurance.

Only limited data on assets are offered for households classified by demographic variables. Strangely, stock as a proportion of total assets is about the same for households classified by amount of schooling. Apparently the author would like to test this finding more carefully by means of multivariate analysis, including age. Disappointingly, the brief information in the tables does not give substantive information on the numbers of children in relation to assets.

A study of asset composition for farms of different sizes and for different regions of the country leads to implications concerning returns to scale. There are additional tables for the nonagricultural sector and for government as well as for assets of financial institutions, classified in several ways.

Goldsmith's book can be criticized for being too succinct in spite of the fact that he offers us a startling diversity of data in his 93 tables. Although every sentence conveys important meaning, he does not go far enough in explaining procedures for treating items such as depreciation. He does not refer to his earlier balance sheets dealing with the years around 1800 and later. These would have provided helpful background for the present volume. Yet he does promise another time dealing with the nineteenth century, a work that will reveal the exciting contrast in wealth structure between the two centuries.

LEE SOLTOW, *Ohio University*

#### GENERAL AND MISCELLANEOUS

*Networks of Power: Electrification in Western Society, 1880–1930.* By Thomas P. Hughes. Baltimore, Maryland: The Johns Hopkins University Press, 1983. Pp. xi, 465. \$38.50.

In most Western countries the period 1880–1930 was one of transition from direct use of raw energy forms (coal and water power) to use of processed energy forms (internal combustion fuel and electricity). Widespread use of electricity—the most highly processed form of energy—became possible not only because of impressive scientific and engineering achievements, but also because new technical components were molded into complex technological and economic systems for producing and delivering electric power. By focusing on system builders (inventors, engineers, managers, and