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Volume Title: Estimates of Residential Building, United States, 1840–1939

Volume Author/Editor: Manuel Gottlieb

Volume Publisher: NBER

Volume ISBN: 0-87014-423-5

Volume URL: <http://www.nber.org/books/gott64-1>

Publication Date: 1964

Chapter Title: Front matter, Estimates of Residential Building, United States, 1840–1939

Chapter Author: Manuel Gottlieb

Chapter URL: <http://www.nber.org/chapters/c1786>

Chapter pages in book: (p. -16 - 0)

TECHNICAL PAPER 17

**ESTIMATES OF
RESIDENTIAL BUILDING,
UNITED STATES, 1840-1939**

MANUEL GOTTLIEB
University of Wisconsin—Milwaukee

NATIONAL BUREAU OF



ECONOMIC RESEARCH

1964

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. Price: \$2.00

Printed in the United States of America

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*(Resolution adopted October 25, 1926,
as revised February 6, 1933, and February 24, 1941)*

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Preface

On the basis of fresh information and an extended use of Census sources, I have attempted in this research report to synthesize preceding statistical efforts to measure the annual flow of nonfarm residential building. I have, somewhat boldly, worked up the results in a new series of nonfarm residential production, running from 1840 to 1939. The series is anchored, at one end, in the 1840 Census count of dwellings erected and, at the other end, in the extensive probe into dwelling stocks disclosed by the 1940 Census. In the middle years, it is pinned to national projections founded on decade rates of residential building in Ohio, a new body of information presented in this paper, and also various urban building permit series already subjected to comprehensive analysis. The new estimates were thus derived by integrating results achieved by previous investigators with new information derived from a variety of sources.

The present version of the new nonfarm series is tentative only. At many points the analysis rests upon crude guesses with a range of possible error which could be narrowed by more intensive research. The range of possible error is widest in the representation of the course of short cyclical fluctuation. With respect to secular drift and long swings, I believe the new estimates are much more dependable.

The report is intended to be a contribution to our factual knowledge about United States economic growth and its tendency to long swings of about two decades in duration. It grows out of research during the past two years into all phases of urban building carried on with the aid of the National Bureau of Economic Research and particularly of Moses Abramovitz. We have in private correspondence discussed and wrestled with many of the issues developed in this report, which in turn grew out of a larger inquiry into the nature and characteristics of long swings in building activities. (See the progress reports on the inquiry in the Annual Reports of the National Bureau for 1962, pp. 48-51, and 1963, pp. 46-47.)

The results owe much to the devoted labor of my research assistants, Mary D'Amico and Asa Maeshiro. Mrs. D'Amico proved exceptionally

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resourceful and diligent in organizing much of the detailed work summarized in this report. Thanks are also owed to friends who commented on an earlier draft and assisted the author in correcting some of its more obvious weaknesses. The charts were expertly drawn by H. Irving Forman, and the manuscript ably edited by Margaret T. Edgar. Geoffrey H. Moore made many helpful suggestions in his review. At an earlier stage, A. K. Cairncross of the University of Glasgow and David M. Blank, Columbia Broadcasting System, Inc., gave the manuscript the benefit of their counsel, and the review by Boris Shishkin, George Soule, and Willard L. Thorp of the NBER Board reading committee led to desirable textual revisions.

An exploratory study in New York City during the summer of 1960 owes much to the generous support of the Inter-University Committee for American Economic History. The research project was laid out during that study. Funds for the support of the study were provided primarily by the National Bureau of Economic Research. I am also grateful to the staff of the National Bureau for generous assistance in organizing the research, locating materials, and conducting tabulations. The processing and tabulation of the Ohio data were made possible by a special grant from the Rockefeller Foundation. A grant from the Wisconsin Urban Program (Ford Foundation) provided timely financial help in the summer of 1961 and made possible completion on schedule of our basic data collection. Finally, I am indebted to the officers of the University of Wisconsin for use of facilities and for grants of leave requested.

Foreword

The publication of Manuel Gottlieb's new study of United States residential building is one of those all-too-rare occasions when knowledge of an old subject of wide significance is advanced because a scholar has found and exploited new materials and has used older materials in new and useful ways. Previously, long-time series on the volume of building, some reaching back to the 1830's, have provided quantitative information bearing on several important phases of American economic history: the course of urbanization, the relation between population growth and economic activity, and the volume and composition of investment. They have also played an important part in establishing the fact that at least some aspects of American development were marked by long swings. First noticed in measures of building and real estate activity were the so-called building-cycles, with a duration of fifteen to twenty years. Such fluctuations have now been traced in many other spheres: immigration, railroad building, capital imports, incorporations, and the rate of growth of the money supply. Some scholars have advanced the view that they are to be found in the rate of growth of output at large. There is wide agreement that, in these large fluctuations of American development, a central role has been played by the long swings in construction and, within construction, by residential building in particular.

Study of all these questions unfortunately has been hampered by inadequacies in the statistical series on residential building and urban building generally. These failings are indicated in some detail in Gottlieb's introduction to the present study and elsewhere in the body of his report. The problem, in its essentials, derives from the fact that, during the entire period with which Gottlieb is concerned, residential building series rest chiefly on samples of cities in which permits to build were required. The data consist of the information derived from these permits on the number or value of residential permits or dwelling units or, in the earlier data, the value of buildings of any type. The cities included in the samples in the early decades contained only small portions of the

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total nonfarm population. By 1890, they covered about 15 per cent of that population, and in succeeding decades the coverage expanded rapidly. For the period since 1889, the series on which students now chiefly rely have been built up from the sample totals to estimates of all residential building. To do this, the samples were classified by city size or type, and estimating ratios derived from Census materials were used to raise the sample totals in each class to an estimated national total in each year. Before 1889, the restricted size of the samples did not permit such procedures. Instead, the series referring to earlier years¹ were constructed so as to provide only indexes of fluctuations and to eliminate, so far as possible, the effects of changing samples on the trend or annual movement of the series.

Close study has revealed shortcomings in the data for both the later period and the earlier. For the period since 1889, evidence has accumulated which indicates that existing series probably understate the volume of building, and unevenly in different decades. The possibility arises, therefore, that not only the volume of residential building but also its trend and major fluctuations are to some degree inaccurately depicted.

For the period before 1889, the existing indexes manifestly do not tell us what the volume of building activity was. They measure the growth of building only within the constant sample of cities which was at any particular time covered by the indexes.² They miss the growth that took place through the foundation of new communities and through the expansion of old ones beyond the legal limits of municipalities. They presumably misrepresent the fluctuations of building activity because the covered cities were, in general, the older and larger cities whose trends and fluctuations were not necessarily representative of younger and usually more rapidly growing communities.

Gottlieb's work makes a contribution toward overcoming all these difficulties. First, he has reconstructed the decade levels and, therefore, the trend of the data on the number of residential units built in the period since 1890. For this purpose, he has made use of the so-called vintage data provided by the Housing Census of 1940 together with other Census information about changes in the housing stock and population.

¹ Some of these series, such as those presented by Riggleman, Long, and Newman, also provided index numbers as far forward as the 1930's.

² The well-known Riggleman index does not even do that much, for it is expressed in terms of building per capita.

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Second, he has been able to place our knowledge of the level, trend, and fluctuations in residential building activity before 1890 on a new foundation, chiefly on the basis of hitherto-neglected records of construction and real estate activity in Ohio. These records, which Gottlieb may be said to have "discovered" and which he has worked up into usable form, provide a continuous and virtually complete annual record of new houses built in the entire state from 1857 to 1914. By making use of assessment data, Gottlieb was able to carry the Ohio series back to 1840.

The new Ohio series is in itself an important contribution to our knowledge of the growth and fluctuations of residential building and of the process of urbanization. For Ohio is an important state which, with its mixture of agricultural and growing industrial life, was to some degree representative of the country. In addition, however, Gottlieb has combined the Ohio information on building with data about the growth of urban population and the nonagricultural labor force to derive nationwide estimates of the level of building in successive decades. He has checked the estimates against Census information about increments to the urban housing stock adjusted for demolitions and losses, on the basis of information also obtained from the Ohio records. Thus we have for the first time a reasonable view of the level and trend of urban residential building stretching back to 1840. Next, Gottlieb has made use of the Ohio annual data to improve our picture of the year-to-year movements in nationwide residential building activity. As already indicated, the older series were based on samples of cities known to be less than adequately representative of all urban communities. The Ohio data, while limited to a single state, provide complete coverage of all residential building. Gottlieb has, therefore, combined the older series, which provide a more varied geographical coverage, with the new Ohio data, which are limited to a single state but cover residential building in communities of many sizes and types. He thus obtained annual indexes, which may be plausibly considered a better representation of year-to-year movements in building before 1890 than anything available up to now. Finally, Gottlieb applies his annual indexes to his decade averages to produce a continuous annual series adjusted to the level and trend shown by more comprehensive information.

Gottlieb's reconstruction of the data since 1890, the new annual series he provides from 1840 to 1890 and the Ohio residential building series, itself, provide us, therefore, with an essentially new picture of the level, trend, and fluctuations in urban residential building for the half-century, 1840-89, and with a picture changed in some important ways

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for the half-century, 1890-1939. As with all original work of this type, we cannot be sure at the moment of publication how well the new data will stand up. Close criticism of his sources and methods by experts are still needed to bring out the strengths and weaknesses of the figures. Needed too are repeated attempts to use the new material to illuminate the history of urban development and building fluctuations. How well it will be found to fit in with other related material is still to be seen. We can be confident, however, that Gottlieb's new data will play an important part in the continuing work of improving our quantitative knowledge of construction activity and will leave its imprint on a number of branches of economic history and analysis.

MOSES ABRAMOVITZ