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# 1. PURPOSE AND SCOPE

THIS PAPER presents new estimates of private nonfarm housekeeping residential construction for the period 1889-1920 and of private nonfarm nonhousekeeping residential construction for 1891-1914,[1] developed by the Institute for Urban Land Use and Housing Studies and based on a large-scale tabulation by the U.S. Work Progress Administration of historical building permit data. The derivation of the new estimates is described in detail, and the series are compared with earlier estimates covering the same period. In addition, the new data are linked to the official estimates of the U.S. Bureau of Labor Statistics and the U.S. Department of Commerce for more recent years, and the behavior of residential construction activity over the last six decades is summarized.

The development of new estimates of the volume of residential construction was occasioned by the preparation of a monograph on the formation and financing of capital in residential construction, as part of the National Bureau of Economic Research's "Studies in Capital Formation and Financing in the United States." The purpose of this study is the analysis of long-term trends in the accumulation of capital and the uses and sources of funds over the past sixty to seventy years. In this connection, the need for improved data on the volume of residential construction for the period not covered by existing official estimates became great, since only the roughest kind of estimates, based on a few recorded data, were available for those years.

A step toward improving the data had been taken under a WPA project, sponsored by the Bureau of Labor Statistics, in which historical building permit data were transcribed from local official records. Before the transcribed data could be tabulated, however, this project was terminated (in 1940) and the transcription sheets were stored at the Bureau of Labor Statistics. Through a cooperative arrangement between the Bureau of Labor Statistics and the National Bureau of Economic Research, this invaluable, and heretofore only partially exploited, source of information was made available to the Institute for Urban Land Use and Housing Studies, which undertook to use the individual city data derived from the annual tabulation of the WPA permit records as a basis for estimating nonfarm totals.[2] These new estimates yield improved knowledge of the level, movement, and composition of aggregate residential

[1] For definitions, see pp. 3 ff.

[2] The Bureau of Labor Statistics plans to publish the individual city data. It is hoped that these data will be utilized by others for the analysis of many aspects of urban construction, to which little attention could be devoted in this study. The data offer an opportunity, for example, to investigate the behavior of nonresidential construction; short cycles in urban construction of various types; timing and amplitude differences of building cycles among regions, among individual cities, and among city size classes; differences of average permit valuation per dwelling unit among regions and city size classes, etc.

construction for the years for which estimates had previously existed, as well as new information for years for which no data at all were hitherto available.

The new estimates make it possible to present a full record of residential construction during the last six decades. Accordingly, the course of residential construction between 1889 and 1950 is described in this paper, and the long-run movements of the several construction series are summarized. An analysis of the factors underlying these movements and a discussion of the sources and uses of the funds employed in financing residential construction are reserved for the monograph on the formation and financing of capital in residential construction. In addition, that monograph will contain a more detailed analysis – already prepared but too long for inclusion here – of the data presented in this paper, including, for example, a test of the new construction estimates against independent wealth estimates and a comparison of the construction cost index, used herein, with an index of the market price of single-family houses. The general validity of the long-run movements of the new series is confirmed by both analyses.

In this paper nonfarm residential construction means new private permanent housekeeping residential facilities and new private nonhousekeeping residential facilities.[3] Public housing and farm housing, as well as additions and alterations to, and maintenance and repair of, existing residential structures, are excluded.

According to the Bureau of Labor Statistics and Department of Commerce definitions adhered to throughout this study, new private permanent housekeeping residential facilities include

> "new houses, apartments, and other privately-owned housekeeping dwellings of all types not located on farms. Prefabricated houses are included, if permanent and made of new materials. Temporary structures, units without housekeeping facilities,[4] and such movable structures as trailers and houseboats are not included. Accommodations in transient hotels, dormitories, and clubhouses are not counted in the dwelling-unit figures. These are usually nonhousekeeping quarters and the buildings containing them are defined as 'nonhousekeeping residential.'[5]
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> "Coverage under . . . [this category] . . . excludes the remodeling of existing residential structures or the conversion of nonresidential buildings into housing which are classified under 'Additions and alterations.' Living quarters provided for

[3] "Nonfarm dwelling units include those in urban places and all nonfarm dwelling units in rural areas. Urban places include all incorporated places whose populations, as counted in the most recent decennial census, were 2,500 persons or more, and a small number of densely populated unincorporated places classified as 'urban' by the Bureau of the Census under a special rule. . . . Rural nonfarm dwelling units include all units located outside of urban places but not on farms." U.S. Housing and Home Finance Agency, *Housing Statistics Handbook,* (1948), p. 8.

[4] Essentially permanent cooking facilities.

[5] Currently, summer cottages are not considered housekeeping dwelling units unless they meet all the following requirements:

"(a) Each contains built-in cooking facilities;
(b) Each contains built-in heating facilities (where required for year round living);
(c) Each contains a private bath or has access to semi-private bath facilities; and
(d) It is the intention of the owner or builder to use or rent each unit as a semi-permanent family dwelling."

From an unpublished manuscript by David I. Siskind, "Construction in the 1947 Interindustry Study" (National Bureau of Economic Research, Conference on Research in Income and Wealth, October 1952), p. 25.

superintendents, caretakers, or watchmen in warehouses and factories are excluded from residential building, since construction of the residence in these cases is incidental to the nonresidential building. On the other hand, the residential figures do include housekeeping dwelling units in buildings that also contain stores. In such cases the housing accommodations are at least as important as the stores and usually account for a major part of both the physical volume and value of the construction job." [6]

New private nonhousekeeping residential facilities, according to the same definitions, include

"buildings containing nonhousekeeping quarters such as transient hotels, dormitories, clubhouses and tourist courts and cabins." [7]

The volume of housekeeping residential facilities is measured in this paper in terms of the number of new private permanent dwelling units[8] started and of the total expenditures for such units. Construction of nonhousekeeping residential facilities is measured solely in terms of expenditures.

Expenditures for residential facilities are here considered to include payment not only for the buildings proper but also for the nonstructural site improvements associated with residential building, to the extent that they are privately financed, such as grading and landscaping, connections with sanitary and storm sewers, driveways, streets, sidewalks, etc. The cost of the raw land underlying new structures is excluded from the expenditure measures.

Conceptually included in the expenditure estimates also is the value of all

"types of immobile equipment which when installed become an integral part of the structure and are necessary to any general use of the structure. Plumbing, heating, air conditioning and lighting equipment . . . are examples of service facilities which are considered a part of construction. . . . Construction does not include the procurement of special purpose equipment designed to prepare the structure for specific use. Examples of such equipment are . . . refrigerators, ranges or washing machines in homes." [9]

Expenditures for housekeeping dwellings can be measured at several points in the construction process. All such measures, in both the current official government series and the new pre-1921 estimates presented in this paper, are derived primarily from building permit data.[10] These data furnish the

[6] Department of Commerce, *Construction and Building Materials,* Statistical Supplement, May 1951, p. 84.

[7] *Ibid.*

[8] A housekeeping dwelling unit is defined as a living accommodation containing housekeeping facilities and designed for occupancy by one household. *Housing Statistics Handbook,* p. 5, and Dorothy K. Newman, "Estimating National Housing Volume," *Techniques of Preparing Major BLS Statistical Series,* Bureau of Labor Statistics *Bulletin No. 993,* (1950), p. 13.

[9] *Construction and Building Materials,* Statistical Supplement, May 1951, p. 1.

[10] For a discussion of the derivation procedure for the pre-1921 estimates used in this study, see Section 5. For details of the derivation procedure of the official estimates of dwelling unit starts since 1920, see the following studies: David L. Wickens, *Residential Real Estate* (National Bureau of Economic Research, 1941), pp. 41-66, for the 1920-29 decade; M. H. Naigles, *Housing and the Increase in Population,* Bureau of Labor Statistics Serial No. R. 1421, (1942), for the 1930-39 decade; *Housing Statistics Handbook,* pp. 10-13, for the 1940-44 period; Dorothy K. Newman, *op. cit.,* pp. 13-18, for the post-1944 period.

For a discussion of the derivation techniques of the official series on expenditures for housekeeping residential construction, see Lowell J. Chawner, *Construction Activity in the United States, 1915-37* (Department of Commerce, 1938), pp. 38-45; *Housing Statistics Handbook,* pp. 15-17; Roland V. Murray and Bruce M. Fowler, "Estimating Expenditures for New Construction," *Techniques of Preparing Major BLS Statistical Series,* pp. 50-54; Department of Commerce, *Construction and Construction Materials,* Statistical Supplement, May 1950, pp. 79-81.

permit valuation of dwelling units *authorized* in a given period. This is the construction cost, as estimated in the building permit application, of dwelling units for which permits were issued in a specified period. The permit valuation of units authorized is converted to the permit valuation of dwelling units *started* in a given period, i.e. it is reduced by the valuation of units whose permits were allowed to lapse and is adjusted to take into account lags in starts. Permit valuation is further converted to the construction cost of dwelling units started by making allowance for the typical understatement on permit applications of the final cost of structures, as well as by including those elements of cost (such as architects' and engineers' fees, operative builders' profits and land development costs) which are conceptually excluded from the permit valuation. Finally, the construction cost of dwelling units started is converted to estimates of "the monetary value of the construction work performed . . . during the stated periods of time. This monetary value is equivalent to the cost of the materials put in place or otherwise consumed, the wages of workers who place the materials, and appropriate charges to the work for overhead and profit."[11] The expenditure series used in this study, which are based in part on official Bureau of Labor Statistics and Department of Commerce series and in part on new estimates developed for this study, are all estimates of the *monetary value of work put in place.*

Although the procedure for deriving the official series has been significantly improved in recent years and the new estimates presented here for earlier years are a major advance over previous estimates, there are, nevertheless, certain weaknesses in the series limiting the confidence that can be placed on the data and the analysis. These weaknesses relate primarily to the lack of direct information, except for recent years, on building activity in non-permit issuing areas, on underreporting and lapses of permits in permit issuing areas, and on the accuracy with which permit valuations conform to actual construction cost. The further back in time the estimates go, the more important become these weaknesses, although even in current years the margins of error involved in the estimates are not insignificant. The broad trends in residential construction, however, should not be obscured by the deficiencies in the estimates.

Section 2 of this paper describes the behavior of residential construction over the period 1889-1950, and presents an analysis of the composition and cyclical behavior of the several measures of residential construction and of their long-term trends. In Section 3 the derivation techniques underlying the new estimates for the early years of the period are briefly summarized. In Section 4 the new estimates are compared with existing estimates for the same years. Section 5 presents a detailed description and analysis of the techniques employed in the derivation of the new estimates prepared for this study.

[11] Roland V. Murray and Bruce M. Fowler, *op. cit.*, p. 50.