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Appendix II

Estimates of the Value of Land in the United States Held by Various Sectors of the Economy, Annually, 1952 to 1968

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1. TRENDS, 1952 TO 1968

In this paper I attempt to develop a time series of the market value of land, exclusive of improvements, in the United States from 1952 to 1968, ascribing these values to major sectors of the economy, as part of a balance sheet of the nation's wealth. The final results of this effort indicate that the total land value in 1952 was estimated at $201 billion (Table II-1). By 1968, it had increased by three and a half times in current dollars to $726 billion, at an average annual rate of increase somewhat over 8.3 percent. Privately held land increased at the slightly lower average rate of 8.1 percent each year.

NOTE: The preparation of this estimate has been made possible by the cooperation of a number of people, who not only made available published and unpublished data from their files, but who also contributed their advice and thought in a complex field where counsel is essential. I would like to express my gratitude particularly to Albert Balk, author of "*The Free List*": *Property without Taxes*, Russell Sage Foundation/Basic Books, 1970; Daniel Creamer, National Industrial Conference Board; Maurice Criz and David McNelis, Governments Division, Bureau of the Census; Samuel J. Dennis, and his associates, Construction Statistics Division, Bureau of the Census; Jean Dubois, Bureau of Land Management, Department of Interior; Earl Johnson, Appraisal Section, General Services Administration; G. T. Lawrence, Investment Vice-President, Real Estate Financing, Metropolitan Life Insurance Company; Arthur A. Lenroot, Jr., Vice-President, Mortgage Guaranty Insurance Corporation; Allan Manvel, Advisory Commission on Intergovernmental Relations; Catherine E. Martini, Director of Research, National Association of Real Estate Boards; Alfred Schimmel, Vice-President, Douglas Elliman & Co.; William H. Scofield, Economic Research Service, Department of Agriculture; Allan F. Thornton, Director, Division of Research and Statistics, and William F. Shaw, Chief,

(*continued*)

TABLE II-1

Estimated Value of Land by Sector, 1952–68

(*$billion*)

Year End	All Sectors	Nonfarm Households[a]	Nonprofit Institutions	Unincorporated Business	Agriculture	Nonfarm Corporations	State and Local Governments	Federal Government
1952	201.3	58.7	6.3	10.8	69.2	21.8	23.7	10.8
1953	218.2	64.9	7.3	12.5	68.5	26.1	28.2	10.8
1954	233.9	72.7	7.9	12.6	71.4	27.5	30.2	11.5
1955	265.0	84.9	9.1	14.0	75.6	33.2	35.9	12.2
1956	297.8	97.3	10.3	15.9	81.9	38.4	40.6	13.4
1957	329.2	108.9	11.2	17.5	86.8	43.8	46.5	14.4
1958	362.4	121.9	12.5	18.7	94.1	48.5	51.4	15.2
1959	398.8	140.0	13.9	17.8	99.3	54.9	56.4	16.6
1960	420.4	148.6	14.9	18.2	101.6	58.1	60.6	18.4
1961	455.8	161.9	16.4	19.4	107.2	64.0	66.3	20.6
1962	454.9	172.9	17.8	21.5	112.8	69.6	71.9	22.1
1963	524.3	184.8	19.4	21.9	120.2	76.1	78.0	23.9
1964	563.1	198.0	21.1	23.1	128.0	82.7	84.6	25.5
1965	603.4	212.7	22.9	23.7	138.1	88.7	90.1	27.3
1966	645.9	224.5	24.8	26.2	146.6	96.5	97.9	29.5
1967	687.0	237.7	26.9	27.6	155.7	103.3	104.3	31.5
1968	726.5	250.9	28.6	29.0	163.7	110.0	110.7	33.5

SOURCE: See text.

[a] Including land under 1- to 4-family structures, vacant lots, and acreage.

At the same time, the ownership of land shifted dramatically among institutional sectors. This is particularly notable in farmland and household holdings of land underlying 1- to 4-family residential structures, vacant lots, and acreage (Table II-2). The farm holdings dropped from 34 to 23 percent, while the other three items together increased from 29 to 35 percent of the value of all American land. Nonfarm corporate-held land also showed a great relative increase, rising from 11 to 15 percent, although total business land, including that held by partnerships and proprietorships, increased more slowly, going from 16 to 19 percent of the total.

The major part of these shifts occurred in the earlier years from 1952 to 1960, rather than from 1960 to 1968. Indeed, the proportion of total value held by households decreased slightly in the second half of the period, because the increasing proportion of value held in land underlying residences and in vacant lots was not great enough to counterbalance the absolute drop in the value of acreage. It is, of course, no accident that the drop in the proportion held as farmland is close to the increased proportion in residential and business land. The conversion of farmland to urban use, although not necessarily a direct and immediate transformation in the case of any individual piece of land withdrawn from agriculture, has been a pervasive process throughout the country during the past two decades. State and local governmental holdings also rose sharply, from 12 to 15 percent of all land, while the federal share dropped by a percentage point to 4 percent in the midperiod but recovered slightly by the end of 1968.

2. COMPARISON WITH PREVIOUS STUDIES

These estimates are based upon a variety of sources of data and assumptions. One would expect that the importance of land, which represents

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(*Note, continued*)

Statistics Section, FHA; Arthur Young and his staff, Housing Division, Bureau of the Census; John Ullman, Department of Management, Marketing, and Business Statistics, Hofstra University; and Roy Wenzlick, Wenzlick Research Corporation. Raymond W. Goldsmith, Director of the study of which this is a part, and Helen Stone Tice of the Federal Reserve System provided most helpful assistance. Robert M. Fisher, Leo Grebler, John R. Meyer, Max Neutze, and William H. Scofield reviewed a draft of the manuscript and offered valuable suggestions for its improvement. My thanks go as well to Chester Rapkin, Director of the Institute of Urban Environment, for his thoughtful comments at all stages of the work.

I am also grateful to Harvey Goldstein and Peter Whalley, who served as research assistants, and to Bernadette Douai, whose patient, careful typing of the manuscript is much appreciated.

roughly a fifth of the wealth of the country, would have resulted in a large body of carefully derived information, but this is not the case. Instead, the data available are fragmentary and unsatisfactory in quality.

The studies of land prices that have been made in the past fall into three general classes: empirical investigations, estimates based on a perpetual inventory of national wealth, and estimates derived from real-property-tax assessment data. The empirical investigations are typically concerned with small areas, and within these, with land in particular uses. Many are cross-sectional, reporting differences in value of land in various uses or locations at a particular time, rather than over a period of time. They frequently report price changes of assessment parcels of land, for sites of buildings, or for other shifting size classifications, without indicating any means of transforming the values into a price for a constant amount of land, whether square foot or acre. If they do present data on price changes for a unit size, the geographical or land-use restrictions may be too narrow to permit expansion of the findings to broader regions of either the metropolitan area or the nation. Any effort to estimate national land values solely on the basis of empirical data relating to market transactions would require a massive new research effort, not the compilation or further analysis of an already existing body of information.

Because of these deficiencies in past efforts to collect direct valuations,

TABLE II-2

Percentage Distribution of Land Value Among Sectors, 1952, 1960, and 1968

Sector	1952	1960	1968
All sectors	100.0	100.0	100.0
Nonfarm households	29.2	35.4	34.6
Institutions	3.1	3.5	3.9
Unincorporated business	5.4	4.3	4.0
Agriculture	34.3	24.2	22.5
Nonfarm corporations	10.8	13.8	15.1
State and local governments	11.8	14.4	15.2
Federal government	5.4	4.4	4.6

SOURCE: See text.

the land components of national wealth have been estimated primarily by means of the perpetual inventory method, developed largely by Raymond W. Goldsmith and carried forward by John W. Kendrick.[1] Here the value of real property is established for a benchmark year, then the value of new construction is added annually, and estimated depreciation of buildings and withdrawals from the existing stock are subtracted. The land value is then estimated as a ratio of net structure value. Obviously, these estimates are only as valid as the construction estimates and the depreciation and land-structure ratios, no one of which is without some question.

An alternative source of estimate lies in the assessment data collected by American cities for the real property tax, the major source of municipal revenues. Since 1956 the ratio of assessed values to market value has been estimated at five-year intervals by the Bureau of the Census on the basis of a sample survey of actual sales during a six-month period. Allan Manvel has used the Census of Governments data to prepare an estimate of land values, making assumptions as to the relation of the assessed value of land to its true market value, as compared with the census-derived estimate of the ratio of the assessed value to the market value of the total property, and making further assumptions as to the proportion of market value of real property ascribable to the land component.[2] Manuel Gottlieb has subjected this study to a critical review, pointing out the statistically inadequate basis for estimates of national average rates which were used in some of the categories.[3] Manvel has made it clear that he himself is aware of the tentative nature of his estimates, but Gottlieb's work serves to point out once again the absence of solid information and the unfortunate necessity of drawing general conclusions from incomplete data if any estimates at all are to be derived.

It is encouraging that some comparability exists between estimates derived by the perpetual inventory method and those based on the Census of Governments data. It is difficult to make a direct comparison, since the types of land included are not precisely the same. A discussion of the

[1] Raymond W. Goldsmith, *The National Wealth of the United States in the Postwar Period*, Princeton, Princeton University Press for NBER, 1962. The estimates contained in this work were carried forward to 1966 by John W. Kendrick, "The Wealth of the United States," *Finance*, January 1967, p. 10 ff.

[2] Allan D. Manvel, "Trends in the Value of Real Estate and Land, 1956 to 1966," in *Three Land Research Studies*, Research Report No. 12, National Commission on Urban Problems, Washington, D.C., 1968.

[3] Manuel Gottlieb, "Did USA Land Values Double Between 1956–1966—A Critique of the Douglas Report," Milwaukee, University of Wisconsin Economics Department, 1969, mimeographed.

sources, and their differences and discrepancies, is included in *U.S. Land Prices—Directions and Dynamics.*[4] Table II-3 of this study, taken from that work, summarizes the conclusions and is presented here to indicate the order of magnitude involved.

In the estimates which follow, major reliance will be placed on a third source of data, reports of the book value, or acquisition cost, of land. That held by corporations is reported to the Internal Revenue Service,[5] and "cost" of federal land is reported by the General Services Administration.[6] The Census of Governments issues reports on state and local governmental finances, which show capital outlay for "land and existing structures."[7] Daniel Creamer made use of the IRS data to estimate the value of land held by manufacturing firms. Creamer applied the ratio between book value of land and depreciated value of structures to an estimate of annual investment in real property developed by Patrick Huntley.[8] This produced an annual estimate of additional investment in land, which he added to the book value of the stock, adjusted by an inflation factor to obtain an annual estimate of the value of land holdings.

In the current study, use of the ratio of land to structure value is avoided for the most part, and the value of the stock of land is raised by price indexes developed directly for land, rather than by a general price index. Some of the assumptions underlying the computations are heroic, and averages are drawn from small, and possibly unrepresentative, samples. Yet none of the crucial assumptions duplicates any of those necessary in making estimates by means of a perpetual inventory or of assessment data, both of which employ an estimate of the land to structure-value ratio. Hence, despite its deficiencies, an independent estimate of total land values is produced. The only categories for which this is not true are farmland, vacant lots, and household ownership of residential land and acreage. For the first, the estimates of the Department of Agriculture were adopted; for lots and acreage, those of Manvel, drawn from the Census of Governments, were used; residential land value is based on a land-structure ratio applied

[4] Grace Milgram, *U.S. Land Prices—Directions and Dynamics*, Research Report No. 13, National Commission on Urban Problems, Washington, D.C., 1968.

[5] Treasury Department, Internal Revenue Service, *Statistics of Income*, Washington, D.C., published annually.

[6] General Services Administration, *Inventory Report on Real Property Leased to the United States Throughout the World*, Washington, D.C., published annually beginning 1956.

[7] Department of Commerce, Bureau of the Census, *Government Finances*, Washington, D.C., published annually.

[8] Dr. Creamer kindly made his and Patrick Huntley's unpublished estimates available for this study.

TABLE II-3

Comparative Estimates of Total Private, Noninstitutional Land Value and Average Annual Percent Change, Selected Years, 1922–66

Estimate	A. Absolute Values in Current Prices ($billion)					
	1922	1930	1938	1945	1956	1966
1. Keiper et al.	95	112	94	—	244	—
2. Goldsmith–Kendrick	—	—	—	121[a]	207 (228)[b]	354
3. Manvel	—	—	—	—	282[b]	549

	B. Average Annual Percent Change				
	1922–1930	1930–1938	1945–1956	1938–1956	1956–1966
1. Keiper et al.	2.1	−2.1	—	5.4	—
2. Goldsmith–Kendrick	—	—	5.0 (5.9)	—	5.5 (4.5)
3. Manvel	—	—	—	—	6.9 (6.0)[c]

SOURCES: Line 1: Joseph S. Keiper, Ernest Kurnow, Clifford D. Clark, and Harvey H. Siegel, *Theory and Measurement of Rent*, Philadelphia, Chilton, 1961, Chapter II. Line 2: Raymond W. Goldsmith, *The National Wealth of the United States in the Postwar Period*, Princeton, Princeton University Press for NBER, 1962, Table II, pp. 86–87; and John W. Kendrick, "The Wealth of the United States," *Finance*, January 1967, p. 10 ff. Line 3: Allan D. Manvel, "Trends in the Value of Real Estate and Land, 1956 to 1966," Research Report No. 12, Washington, D.C., National Commission on Urban Problems, 1968, p. 16.

[a] Taken from Goldsmith, *op. cit.*, Table II, p. 55, col. 4.

[b] The categories of land included in the three estimates vary slightly, primarily in the exclusion, or inclusion, of land owned by public utilities. Keiper excluded public utilities. Goldsmith himself reports that for land included in Keiper's estimate, his figure would approximate $207 billion, whereas Manvel estimates comparable land as reported by Goldsmith as valued at $228 billion. He has adjusted the figures estimated from Census of Governments reports to include publicly held and state-assessed properties based on constant land-value proportion. A similar adjustment has been made by the authors of this report in the 1966 figure.

[c] These percentages are based on the unadjusted estimates made by Manvel. The lower estimate (in parentheses) is the percentage change if it is assumed that there is no increase in the proportion of land in all real property values. The higher figure, preferred by Manvel, assumes an increasing proportion of value ascribable to land.

TABLE II-4

Comparative Estimates of Total Private, Noninstitutional Land Value and Average Annual Percent Change, 1956–66

Estimate	1956 ($billion)	1966 ($billion)	Annual Rate of Change (percent)
Goldsmith–Kendrick	207	354	5.5
Manvel	282	549	6.9
Milgram	234	494	7.8

SOURCES: Tables II-1 and II-3.

to a perpetual inventory estimate of the structure value. If this estimate approaches the others, it can only serve to increase our confidence in the essential reliability of the figures.

Because of the time periods to which other studies apply, the most appropriate comparisons for the estimates made here are those prepared by Allan Manvel and by Goldsmith and Kendrick for 1956 and 1966. These estimates, adjusted to cover all privately held land, are given in Table II-4. The current estimate falls between those of Goldsmith and Kendrick, which are low, and those of Manvel, which are considerably higher. Since our study has, in essence, accepted Goldsmith's 1952 estimates as a base from which to begin, it is not surprising that our result is closer to Goldsmith's figure in 1956. The rate of increase, however, is higher than that of the other series, so that it is much closer to Manvel's estimate by 1966. The range in these estimates is large, with the highest in 1966 over 50 percent greater than the lowest. Yet, in view of the data gaps which have been spanned by simplifying assumptions in each of these estimates, it is indeed gratifying that they are as close as they are.

3. METHODS OF ESTIMATION

Although the general approach in the derivation of this estimate was the use of reported book value of holdings, book value data are not available for all sectors. Thus, it was necessary to employ different bases of estimation to obtain the desired aggregates. The methods used for each sector are described in the following sections.

A. Book Values

In reporting to the Internal Revenue Service, businesses divide their assets among those that are depreciable, depletable, and nondepreciable, in order to take advantage of the tax benefits to be gained from depreciating capital assets. For corporations, complete data are available from their balance sheets. Regulations applicable to partnerships and proprietorships do not require the same information to be filed, and data are uneven. In the case of vacant land, the reported book value is the price in the year of acquisition, carried forward without change from year to year. In the case of newly acquired property which consists of both land and structure, the acquisition price is normally divided between the two types of assets in accordance with the ratio of land and structure in the assessed value if the site is within a local taxing jurisdiction which makes a separate determination, or through some other appraisal method. Once again, this figure is carried forward as the book value of the land. No adjustments are made for changes in its market value so long as the land remains in the same ownership.

Ideally, to determine the market value at any given time from the book value, we should have a land price index by which to adjust the value of the stock of land continuing in the same ownership; a distribution of book values by date of acquisition or a benchmark estimate of total market value at a given year; and a record of the former and newly adjusted book value of land transacted during the year so that any sold could be subtracted from the stock before the stock's value has been changed by application of the price index, and added at market value after the stock adjustment. In fact, we have none of these figures, and a large part of this work, therefore, consists of deriving estimates of these items.

B. Land Price Indexes

There are a number of data sources from which a rudimentary index can be derived for different types of land, at least to 1966 (Table II-5). Chief among these is the series on value of farmland prepared by the U.S. Department of Agriculture.[9] It is the only published series in which values are reported on a per acre basis, thus lending itself directly to the preparation of an index for farmland.

Unfortunately, the series refers only to land in farm use, excluding that which has been converted from farm to nonagricultural use during the

[9] For 1950 to 1967, a summary table is presented in Department of Agriculture, Economic Research Service, *Farm Real Estate Market Developments*, CD-70, April 1968, Table 21, p. 27. For later years the estimate is based on unpublished data from ERS.

TABLE II-5

Land Price Indexes for Nonmetropolitan, Metropolitan Ring, and Central City Areas, 1952–66

(*1952 = 100*)

Year	Nonmetropolitan (1)	Metropolitan Ring of SMSA [a] (2)	Central City (3)
1952	100	100	100
1953	99	135	117
1954	104	143	123
1955	111	180	145
1956	121	200	160
1957	129	230	180
1958	141	250	195
1959	149	270	209
1960	153	290	220
1961	162	310	236
1962	170	325	250
1963	182	345	265
1964	195	360	280
1965	211	370	290
1966	225	390	309

SOURCES: Col. 1 computed from data of col. 5, Table 21, p. 27, Economic Research Service, Department of Agriculture, *Farm Real Estate Market Developments*, CD-70, April 1968. Col. 2, Table II-6. Col. 3, see text.

[a] Standard Metropolitan Statistical Area.

year. The land undergoing urbanization is undoubtedly that with the most rapidly increasing price. In fact, farmland in nonmetropolitan counties, although at a lower price, shows a greater increase than that in metropolitan counties, primarily because of the greater diversion of land to urban use in the latter.[10] Hence, an index based on land continuing in farm use will tend to underestimate changes in national land prices, though the degree of underestimation cannot be determined. The estimated farm

[10] Department of Agriculture, Economic Research Service, unpublished memorandum by William H. Scofield, December 1967.

value, however, does include some effect of increased demand resulting from urban expansion and speculative activities preceding such expansion, not simply an increased value arising from agricultural activities. The farmland index, consequently, has been taken as representative of all non-metropolitan land, whether in farm or small-city use.

Since 1956, there has also been available an estimate of market value of the public domain managed by the Bureau of Land Management of the Department of the Interior, which gives, in addition, the acreage under its jurisdiction.[11] This estimate is based on appraisals of the value of similar land in the private sector, which is subject to normal market transactions. The Bureau has translated its estimates into a price index, which can be considered appropriate for the type of land in the public domain; that is, land largely devoted to grazing and forests. Although the level of prices is much lower than that of farmland, the rate of increase is slightly greater, supporting the view that the farm index understates rising trends. The Bureau's index has been used in conjunction with others in estimating the value of federal land.

Three sources of price data are available for urbanizing land (Table II-6). One is the FHA series of site prices for new construction financed with FHA-insured mortgages.[12] This is located largely in suburban areas. These data, of course, incorporate not only changes in raw land prices, but also increases in costs of land preparation and changes in the size of sites.

Maisel has estimated that approximately half of the increase from 1950 to 1962 in the San Francisco area arose from increases in land prices and the remaining half from the other two factors.[13] Although San Francisco land prices are not typical of those of the nation as a whole, the discrepancy in factors affecting these changes in price would almost certainly be less than the level of prices. In the absence of similar studies in other places, the annual nationwide average increase in site value was reduced by 50 percent, and the resulting series transformed into an index.

There are also two studies available which report changes in per-acre prices of land over time within a single developing suburban area, one for

[11] Unpublished memorandum supplied by Jean Dubois, Bureau of Land Management, Department of the Interior.

[12] Reported in annual issues of Department of Housing and Urban Development, *Statistical Yearbook*. Prior to 1966, the series was issued as part of the Federal Housing and Home Finance Agency's *Annual Report*.

[13] Sherman J. Maisel, "Background Information on Costs of Land for Single-Family Housing," in *Housing in California*, Appendix to Report, Governor's Advisory Commission on Housing Problems, San Francisco, 1963, Table 4, p. 226.

TABLE II-6

Components of Metropolitan Ring Land Price Index, 1952–68

(*1952 = 100*)

Year	Adjusted FHA Site Prices (1)	Los Angeles Residential Land (2)	Northeast Philadelphia, All Land (3)	Estimated Metropolitan Ring (4)
1952	100	100	100	100
1953	105	124	177	135
1954	110	146	173	143
1955	118	172	250	180
1956	129	202	218	200
1957	137	246	304	230
1958	144	261	355	250
1959	151	280	380	270
1960	155	310	410	290
1961	159	330	440	310
1962	165	350	470	325
1963	176	360	500	345
1964	182	370	520	360
1965	196	380	540	370
1966	204	395	565	390
1967		410	575	410[a]
1968		420	585	430[a]

SOURCES: Col. 1 adjusted for increase in costs of site preparation and size. See text.

Col. 2 curve smoothed graphically and extended from data in Frank G. Mittelbach, "Patterns of Land Utilization and Costs: A Study of Los Angeles," (unpublished), Table VI-4, p. VI-9.

Col. 3 curve smoothed graphically and extended from data in Grace Milgram, *The City Expands*, Washington, D.C., 1968, Table 28, p. 86.

Col. 4 is the average of columns 1 through 3.

[a] Extrapolated.

Los Angeles and one for Philadelphia.[14] These series were smoothed by graphic methods and the curves projected for the years after the conclusion of each study. No other studies could be found in which data were reported in a form permitting their incorporation into a time series. The three series reported above were combined through an unweighted average, and the base converted to 1952 equal to 100. This index was used to compute the price change in land in the metropolitan ring areas.

No aggregate land-price data could be found for central cities, although scattered information which reveals a variety of movements is available for various cities. Studies of urban renewal sites showed an overall increase, although the degree varied among cities.[15] Consultation with a number of realtors and other experts familiar with city development indicated a general belief that, in toto, city values have risen but not so rapidly as those in suburban areas. An index for metropolitan central-city land was constructed, falling halfway between the farmland and suburban indexes already developed. This is imprecise as to level, but not as to position within the major land submarkets.

C. The Stock of Land

It would have been preferable to have an independently derived initial valuation of land at some base period. It was beyond the scope of this study, however, to attempt either a de novo construct of a land value inventory for the 1950's, or to carry back the price indexes for a long enough period so that the value of the beginning stock of land would prove unimportant when considered in relation to newly purchased land over the whole period. As a consequence, Goldsmith's valuation was employed as a starting point in the estimates for all sectors except agriculture and individual households (Table II-7).[16] For smaller sectors than those reported in Goldsmith's table, proportions were taken in the same ratio as the book value of the subsector to the book value of the larger sector reported.

For corporations and local and state governments, the 1952 estimates were used as the base year. For federal government lands, the series of acquisitions begins in 1956; so that year was taken as the base and the

[14] Frank G. Mittelbach, "Patterns of Land Utilization and Costs: A Study of Los Angeles," University of California, Los Angeles, unpublished; Grace Milgram, *The City Expands*, Washington, D.C., 1968.

[15] For example, see Neil N. Gold and Paul Davidoff, "The Supply and Availability of Land for Housing for Low and Moderate-Income Families," in *Technical Studies*, Report of the President's Committee on Urban Housing, Washington, D.C., 1969, Vol. II, Table 76, p. 373.

[16] Goldsmith, *op. cit.*, Table A-41, p. 188.

TABLE II-7

Estimated Value of Land Held by Nonfarm Corporations and Governments, 1952

(*$million*)

Corporate holdings	
Total	21,753
Finance	10,080
Manufacturing	4,926
Retail and wholesale	2,751
Services	1,701
Public utilities	872
Mining	297
Contract construction	235
Other	891
Federal government	10,797
State and local governments	23,700

SOURCE: See text.

years from 1952 to 1955 were extrapolated from subsequent trends. Book values for the land holdings of unincorporated businesses, institutions, and households are not available, so other methods not requiring an independent figure for a base year were used to estimate their value. In general, book values of sectors in the base year were approximately one-third of the amount reported in 1968.

It is obvious that any addition to the stock between successive years is brought in at current market value. These annual differences were computed and assumed to be the value of land at current market price. There is almost certainly some land included in what we call the "stock," which, in fact, was transacted and, hence, already raised to market value. Application of a price index to this part of the stock would thus raise the value of that transacted land twice. There are no data by which to estimate the extent of this overstatement. Mortgages on 1- to 4-family unit properties insured by FHA had a median duration of approximately ten years,[17] indicating a transaction or prepayment rate of approximately

[17] Department of Housing and Urban Development, *Statistical Yearbook, 1966,* FHA Table 72, p. 142.

5 percent each year. In early years, almost all of these are likely to be sales rather than prepayment of a mortgage by the owner. Residential sales, however, are influenced by the great mobility of the American population. There is no reason to suppose that other sectors of the economy transact properties at so high a rate. In a rapidly developing section of Philadelphia subject to speculative forces, the maximum proportion of vacant land acreage transacted was 11 percent, and this steadily decreased over the years until it reached 3 percent of available vacant land.[18] Thus, turnover rates of 4 to 5 percent might be considered normal in number of properties, though possibly not in value of properties. The proportion of real property transacted each year—that is, structure and land—is almost certainly lower than this, particularly in view of the increasing tendency to sell companies through transfers of stock rather than by transfer of real property. Whatever its extent, this overestimate in the stock of land to be increased by the index offsets to some degree the underestimate which may exist because of the downward bias in the nonmetropolitan land index component.

D. Estimate of Value by Sector

Since we have not one index, but three, the land owned by any sector must be divided among the three types before its value is raised by the index. This was done differently for each sector.

(*1*) *Corporations.* For corporations, there is, of course, no inventory of location of types of establishment by size of parcels they occupy, which would permit a direct allocation. Number of establishments and number of employees are reported for the United States, for metropolitan areas in total, and for each individual Standard Metropolitan Statistical Area (SMSA). The same data are also reported for counties, so that it is possible to distinguish between central counties and ring counties in SMSA's. The establishments in central cities have more employees on the average, but presumably are more intensive in their use of land per employee—certainly in area, although not necessarily in dollar value. There is no information to answer the question of whether companies which have located outside of central cities in order to get more space are satisfied merely to achieve additional space, or whether they also want to reduce total land expenditure. On the other hand, each establishment, no matter how small, uses some land. As a result, the sheer number of establishments has some effect. Consequently, land values were divided

[18] Milgram, *The City Expands*, Table 19, p. 69.

TABLE II-8

Allocation of Corporation Land Value by Location and by Subsector, 1952 Stock and Subsequent Purchases

(*percent*)

Location	Manufacturing	Retail and Wholesale	Services	Contract Construction	Public Utilities	Finance
			1952 Stock			
Nonmetropolitan	30	30	20	20	10	10
Ring	18	29	20	25	25	10
Central city	52	41	60	55	65	80
			Subsequent Purchases			
Nonmetropolitan	30	30	20	20	10	10
Ring	45	35	30	27	30	15
Central city	25	35	50	53	60	75

SOURCE: See text.

among metropolitan and nonmetropolitan areas in accordance with a ratio which took account of both the proportion of employees and of reporting units in their respective areas, using the national totals for the economic sector (Table II-8). One estimate was made based on data for 1963, midway in the time period investigated here, and kept constant for 1952 and subsequent years. Within metropolitan areas, a similar ratio by which to divide the 1952 stock was determined. It was based on the average values of employment and number of establishments in central and ring counties in twelve SMSA's in 1951 (Table II-9).

Since 1952, there has been, of course, a trend toward movement of industrial and commercial establishments away from central cities. Dorothy K. Newman has reported on value of new construction in central cities and ring areas for selected industrial groups.[19] For land not carried in the stock but newly transacted from year to year, in sectors on which she reported, the division between central city and ring was made on the basis of her report (Table II-10). For sectors not given, the proportions

[19] Dorothy K. Newman, "The Decentralization of Jobs," *Monthly Labor Review*, May 1967, pp. 7–13.

TABLE II-9

Percentage of Employees (E) and Establishments (ES) in Central Counties by Subsector, Twelve Selected SMSA's,[a] 1951

Metropolitan Area	Services		Finance		Public Utilities		Construction	
	E	ES	E	ES	E	ES	E	ES
Atlanta	96	91	93	98	98	50	90	86
Boston	60	48	76	56	62	45	43	29
Chicago	93	89	97	97	96	86	89	81
Cleveland	98	97	95	96	97	88	96	93
Dayton	83	85	74	63	88	66	86	78
Detroit	91	88	92	89	90	88	85	81
Indianapolis	91	88	92	86	95	60	92	79
New Orleans	91	90	97	96	87	80	93	90
New York	92	88	96	94	91	87	79	66
St. Louis	78	68	83	71	76	60	61	51
San Francisco	88	83	91	87	89	77	75	68
Washington	84	80	81	80	73	57	58	48
Average	87	83	83	84	88	70	79	70
Weighted average	84	80	88	88	82	66	73	64

SOURCE: See text.
[a] Standard Metropolitan Statistical Area.

used for 1952 were adjusted in favor of suburban values to a small degree.

Values were estimated separately for each of the seven most important industries by application of the appropriate index to each type of land in accordance with the procedure described above (Table II-11). The total values for these industries were then expanded by the proportions their book value bears to total book value of all corporations, minus the industry-class agricultural, forestry, and fishing, to give a total estimate of market value of holdings of nonfarm corporations (Table II-12). The agricultural category was excluded because corporate farm holdings are included by the Department of Agriculture in its estimates of the value of farmland. A very slight undervaluation results from the omission of corporate forestry and fishing land. The IRS reports were available only

TABLE II-10

Percent of New Private Nonresidential Building Outside the Central Cities of SMSA's[a] by Region, 1960–65 and 1954–65[b]

Type of New Nonresidential Building	Percent of Valuation of Permits Authorized for New Nonresidential Building				
	United States	North-east	North Central	South [c]	West [c]
			1960–65		
All types [d]	47	53	49	34	53
Business	47	54	47	33	52
Industrial	62	71	59	46	69
Stores and other mercantile buildings	52	68	57	34	56
Office buildings	27	26	30	22	32
Gasoline and service stations	51	61	52	39	57
Community	45	47	47	33	53
Educational	45	47	46	34	50
Hospital and institutional	35	35	36	20	48
Religious	55	66	57	42	60
Amusement	47	41	60	46	45
			1954–65 [e]		
All types [d]	49	55	51	34	55
Business	46	56	50	33	50
Industrial	63	73	59	47	72
Stores and other mercantile buildings	53	69	55	33	58
Office buildings	27	25	31	20	32
Gasoline and service stations	53	66	54	40	59
Community	45	52	50	33	57
Educational	50	53	54	36	58
Hospital and institutional	36	38	36	21	50
Religious	54	67	55	39	62
Amusement	48	48	51	41	50

SOURCES: Unpublished data of the Bureau of the Census: tabulated at the request of the Bureau of Labor Statistics and based on a sample of over 3,000 permit-issuing places. Dorothy K. Newman, "The Decentralization of Jobs," *Monthly Labor Review* 90 (May 1967), pp. 7–13.

[a] Standard Metropolitan Statistical Area.

[b] Data for groups of years are used to avoid erroneous impressions from erratic year-to-year movements in building construction.

[c] Data for southern and western SMSA's reflect a more significant degree of annexation and area redefinition and are therefore less reliable than figures for other regions.

[d] Includes types not shown separately and excludes major additions and alterations for which type of building is not known.

[e] Excludes data for 1959, for which comparable information is not available.

TABLE II-11

Estimated Value of Land Held by Corporations in Seven Major Industry Groups, 1952–66

(*$million*)

	Total	Manufac-turing	Retail and Wholesale Trade	Mining	Services	Public Utilities	Contract Construction	Finance
1952	20,862	4,926	2,751	297	1,701	872	235	10,080
1953	24,774	5,762	3,200	308	2,031	983	289	12,201
1954	26,322	6,069	3,421	344	2,121	981	317	13,079
1955	31,556	7,474	4,122	374	2,564	1,109	390	15,523
1956	36,617	9,042	4,630	393	2,870	1,254	448	17,980
1957	41,698	10,199	5,185	431	3,319	1,443	528	20,593
1958	46,870	11,378	5,855	495	3,639	1,615	615	23,274
1959	52,885	12,345	6,327	522	4,046	1,741	667	26,034
1960	56,273	13,237	6,806	548	4,269	2,015	763	28,635
1961	62,074	14,556	7,125	636	4,743	2,275	989	31,751
1962	67,477[a]	15,348	7,954	690	5,138	2,444	1,119	34,784
1963	73,759	16,721	8,704	760	5,587	2,629	1,264	38,094
1964	80,018	18,125	9,485	848	6,093	2,841	1,447	41,180
1965	86,194	19,757	10,211	919	6,517	3,037	1,664	44,090
1966	93,775	21,748	11,155	1,012	7,229	3,308	1,808	47,515

SOURCE: See text.
[a] Interpolated.

TABLE II-12

Estimated Market Value of Land Held by Nonfarm Corporations, 1952–66

(*$million*)

	Total Value of Stock (1)	Seven Major Industry Groups			Ratio: Col. 2 to Col. 1 (5)
		Total Stock (2)	Result of Price Rise (3)	Net Addition (4)	
1952	21,754	20,862			95.9
1953	26,054	24,774	24,297	477	95.2
1954	27,533	26,322	25,878	444	95.6
1955	33,217	31,556	30,973	583	95.0
1956	38,383	36,617	35,335	1,282	95.4
1957	43,755	41,698	40,928	770	95.3
1958	48,520	46,870	45,190	1,680	96.6
1959	54,917	52,885	51,331	1,554	96.3
1960	58,133	56,273	54,547	1,726	96.8
1961	63,994	62,074	59,887	2,187	97.0
1962	69,636	67,477[a]	n.a.	n.a.	96.9
1963	76,119	73,759	69,839	3,920	96.8
1964	82,664	80,018	77,867	2,151	96.8
1965	88,678	86,194	83,369	2,825	97.2
1966	96,477	93,775	91,117	2,658	97.2

n.a. = not available.
SOURCE: See text.
[a] Interpolated.

through 1966 at the time this report was prepared. Estimates for 1967 and 1968 are straight-line extrapolations of the trend of previous years.

It should be noted that the differences in value resulting from the allocation process are marginal. Thus, for corporations, if all land is assumed to be covered by the nonmetropolitan price index, the 1966 valuation differs by $19.2 billion, or 18 percent of the valuation obtained with land allocated among types. Differences resulting from relatively minor variations in allocation among the three types of land would be correspondingly less. Differences would be much greater, of course, if values resulting from an assumption of total nonmetropolitan location

were compared with those obtained by an assumption of total location in the metropolitan ring, but the latter assumption is completely unreasonable and, therefore, the degree of difference has not been tested.

(*2*) *Partnerships and Proprietorships.* Although the Internal Revenue Service has reports for some years for the book value of land held by partnerships and proprietorships, these are incomplete both as to industries and as to years. It can be assumed, however, that in any industry, rentals bear some relatively constant relation to gross receipts, and that rentals, in turn, are a reflection of the value of the land, regardless of the institutional form of the business.

The gross receipts for each type of business are reported by industry. Following the line of reasoning described above, the ratio of gross receipts of partnerships and of proprietorships to corporations was calculated (Table II-13) and applied to the previously estimated land holdings of corporations to derive an estimate of the value of land held by the other types of business (Table II-14). These were totaled and expanded by the same ratios as those used to expand the corporate sector, thus producing the estimates of total value of land held by unincorporated businesses.

(*3*) *Federal Government.* The process by which federally owned land was evaluated was similar in concept to that used for corporations, but differed in execution because of the difference in available data. Since 1956, the General Services Administration has issued an annual inventory of real property owned by the United States government, classified as urban or rural, as well as by agency, state, predominant usage, and other categories.[20] Acreage of land is given, and the "cost" of land and buildings is entered separately. In the case of property held for some time, cost is the actual acquisition cost to the government, including zero cost for public domain land or gifts. For example, the "cost" of the land obtained in the Louisiana Purchase, or through Seward's Folly in Alaska, has not been adjusted to current values. Current acquisitions, however, are supposed to be reported at actual cost or, if acquired through donation or means other than purchase, at the estimated fair price had the parcel been purchased.[21] As with corporations, the difference in cost between subsequent years produces a net figure on the value of newly acquired ground.

Although each year the acreage is classified as urban or rural, the cost is given only as a total and, of course, it cannot be divided in the same ratio as the acreage. To aid in this allocation, use was made of the values

[20] General Services Administration, *Inventory Report on Real Property Owned by the United States throughout the World*, annual publication, beginning 1956.

[21] *Ibid.*, June 1968, p. 3.

TABLE II-13

Gross Receipts of Partnerships (P) and Proprietorships (PR) as a Percent of Corporate Receipts, by Industry, 1952–66

	Manufacturing		Retail and Wholesale Trade		Mining		Services		Utilities		Contract Construction		Finance	
	P	PR	P	PR	P	PR	P	PR	P	PR	P	PR	P	PR
1952	3.98	2.92	33.90	59.97	18.45	8.87	67.26	162.06	1.56 [a]	6.39 [a]	1.56 [a]	6.39 [a]	15.67	15.09
1953	3.70	2.62	31.18	52.17	17.24	9.93	63.86	156.02	1.56 [a]	6.39 [a]	1.56 [a]	6.39 [a]	15.93	15.73
1954	3.42	2.32	28.46	44.37	16.03	10.08	60.46	149.98	1.56 [a]	6.39 [a]	1.56 [a]	6.39 [a]	16.19	16.37
1955	3.13	2.02	25.74	36.58	14.82	10.19	57.06	143.94	1.56 [a]	6.39 [a]	1.56 [a]	6.39 [a]	16.45	17.02
1956	2.85	1.98	33.02	38.28	13.61	10.49	53.67	131.18	1.56 [a]	6.39 [a]	1.56 [a]	6.39 [a]	16.72	16.68
1957	2.57	1.95	20.29	40.19	12.40	10.80	50.27	118.42	1.56 [a]	6.39 [a]	1.56 [a]	6.39 [a]	16.98	16.35
1958	2.47	1.95	19.01	37.72	10.74	13.67	50.32	116.74	1.92	7.21	1.92	7.21	13.56	18.48
1959	2.16	1.88	16.47	36.54	9.67	10.15	43.16	112.06	1.82	6.67	1.82	6.67	11.69	12.22
1960	2.02	1.90	14.70	33.19	9.68	14.42	41.98	105.20	1.56	6.80	1.56	6.80	10.21	13.41
1961	1.85	1.78	14.03	32.14	8.48	10.41	40.65	99.15	1.76	6.18	1.76	6.18	11.34	12.21
1962	1.66	1.68	12.48	30.36	7.63	8.26	39.01	98.01	1.40	5.97	1.40	5.97	12.02	11.17
1963	1.46	1.52	11.66	29.38	7.86	8.00	37.62	94.09	1.38	6.04	1.38	6.04	12.07	10.93
1964	1.45	1.48	10.84	28.40	8.09	7.75	36.22	90.16	1.36	6.12	1.36	6.12	12.12	10.68
1965	1.11	1.44	9.60	27.13	7.28	7.92	34.04	81.51	1.52	6.39	1.52	6.39	11.15	11.44
1966	1.09	1.28	9.28	26.09	6.35	8.04	33.17	77.68	1.31	6.11	1.31	6.11	12.61	12.20

SOURCE: Calculated from U.S. Bureau of Internal Revenue, *Statistics of Income, Tax Returns of Corporations, Partnerships, and Sole Proprietorships.*

[a] Data unavailable; percentage extrapolated.

TABLE II-14

Estimated Value of Land Held by Partnerships and Proprietorships in Seven Major Industry Groups, 1952–66

(*$million*)

	Total	Manufacturing	Retail and Wholesale Sales	Mining	Services	Public Utilities	Contract Construction	Finance
1952	10,471	340	2,643	81	3,901	70	336	3,100
1953	11,914	366	2,679	84	4,466	78	379	3,862
1954	12,128	368	2,492	90	4,463	78	378	4,259
1955	13,347	366	2,569	93	4,516	88	419	5,296
1956	15,212	437	2,839	95	5,305	100	431	6,005
1957	16,722	461	3,136	101	5,598	115	448	6,863
1958	18,064	503	3,322	101	6,079	147	456	7,456
1959	17,102	499	3,354	101	6,280	148	495	6,225
1960	17,634	520	3,259	132	6,284	168	507	6,764
1961	18,817	529	3,290	120	6,631	181	589	7,477
1962	19,936	513	3,407	110	7,040	180	620	8,066
1963	21,162	498	3,572	121	7,359	195	658	8,759
1964	22,397	532	3,722	135	7,700	213	705	9,390
1965	23,087	505	3,751	140	7,703	240	786	9,962
1966	25,422	515	3,945	145	8,013	226	785	11,793

SOURCE: As for Table II-13.

TABLE II-15

Estimated Average Price per Acre of Rural Federal Land, 1956–67

(*dollars*)

	Public Domain (1)	Farmland (2)	Rural Public Land (3)
1956	5.34	66.14	11.42
1957	4.89	72.13	10.89
1958	4.95	76.98	12.15
1959	5.07	84.03	12.97
1960	6.59	89.05	14.84
1961	8.90	91.20	17.13
1962	9.88	96.47	18.54
1963	10.68	101.74	19.79
1964	11.30	108.67	21.04
1965	12.68	116.26	23.04
1966	14.06	125.85	25.24
1967	15.35	134.20	27.24

SOURCES:
Col. 1. Computed from price index supplied by Jean Dubois, Bureau of Land Management, Department of Interior.
Col. 2. Department of Agriculture, Economic Research Service, *op. cit.*, Table 21, p. 27.
Col. 3. See text for method of derivation from data in columns 1 and 2.

of farmland and of the public domain in the jurisdiction of the Bureau of Land Management. After an examination of the governmental agencies which held the land and the predominant usage within each agency, it was decided that the rural land held by the government could reasonably be valued by a formula which ascribed one-tenth to the farmland value and nine-tenths to the type of land held in the public domain. An estimated average acreage price for rural land held by the government was thus produced (Table II-15). Multiplication of the rural acreage for 1956 by this figure gave an estimated total value of government-held rural land in 1956, which was then subtracted from Goldsmith's governmental estimate of 1956 to produce a benchmark figure for urban land for that year. For each year thereafter, the difference in number of rural acres was

multiplied by the average price of rural land and the result subtracted from the difference in cost to obtain the additional urban values (Table II-16). The results for each year were added to the appropriate stock after the value of the urban stock had been raised by the urban price index and that of the rural stock had been raised by the nonmetropolitan index, as described in the section dealing with corporate land. In actual practice, since the value of the public domain is directly reported, its acreage was subtracted from rural acreage at the start of this process, and its value added to the total for each year after all the other calculations were completed. A slight overestimate results from the failure to exclude federal land leased to farmers and grazers, the value of which is also included in the Department of Agriculture estimates. The current value of this land is estimated at $3.8 million, and thus would have no appreciable effect on the figures reported here.[22] The values for 1952 through 1955 were estimated from trends of the nonmetropolitan price index, and those for 1967 and 1968 were estimated by extrapolation of the trend shown in the immediately preceding years.

(*4*) *State and Local Governments.* As part of its series on governmental finance, the Bureau of the Census issues annually a report on the expenditures of state and local governments for a number of classes, including land and existing buildings. A major, but undeterminate, number of existing structures are purchased to be cleared, and their cost of acquisition can, in fact, be considered a part of the land cost. In the present estimates, the actual amounts reported by the Census were reduced by 10 percent, to adjust both for that part of the acquisition which, in fact, applied to existing structures bought to be used as such, and for any sales of land which may have occurred but which are not reported separately in revenues.[23] These figures then served as the equivalent to the net acquisition to the stock (Table II-17). For the 1952 base value, Goldsmith's estimate of that year was accepted.

No means of separating the land into classes was found. No data exist on the total amount of land owned, or annually acquired, by municipalities inside and outside of metropolitan areas—either by acreage or by

[22] Letter to the author from William H. Scofield, Economic Research Service, Department of Agriculture, May 14, 1970.

[23] In the absence of factual data, there are differing judgments as to the most appropriate adjustments to make. Maurice Criz, assistant chief of the Governments Division, Bureau of the Census, believes that 2 or 3 percent would be more accurate (letter to the author, November 20, 1970). Since the absolute magnitude of land acquisition is low, the differences resulting from use of the lower adjustment rate would affect only the figures after the decimal point in Table II-1, col. 7.

TABLE II-16

Estimated Value of Land Held by the Federal Government in the United States, 1952–68
(*$million*)

	A. Net Additions				B. Change in Value of Stock					
		Net Addition to Stock During Year			Estimated	Increased Value of Standing Stock, by Location		Addition of New Land, by Location		Total Value of Public
	Value of Stock[a]	Total	Rural	Urban	Total	Rural	Urban	Rural	Urban	Domain
1952					10,797[b]					
1953					10,763[b]					
1954					11,488[b]					
1955					12,237[b]					
1956	2,463				13,400			2,621	8,230	2,549
1957	2,512	48	−2	50	14,399	2,804	9,218	2,802	9,268	2,329
1958	2,552	41	11	30	15,218	3,054	10,009	3,065	10,039	2,114
1959	2,752	198	476	−278	16,609	3,244	10,742	3,725	10,464	2,420
1960	3,146	393	118	205	18,361	3,837	10,987	4,025	11,192	3,144
1961	2,956	157	3	154	20,559	4,261	11,975	4,270	12,124	4,160
1962	3,462	157	3	154	22,106	4,484	12,857	4,487	13,011	4,608
1963	3,765	303	3	300	23,859	4,801	13,792	4,604	14,092	4,963
1964	3,980	215	20	196	25,541	5,140	14,938	5,160	15,134	5,247
1965	4,128	144	18	131	27,279	5,573	15,739	5,591	15,870	5,818
1966	4,393	264	20	244	29,494	5,982	16,822	6,002	17,066	6,426
1967		264	1	263	31,518[b]			6,500[b]	18,000[b]	7,000
1968					33,543[b]			7,000[b]	19,000[b]	7,500

SOURCE: See text.
[a] Excluding public domain administered by Bureau of Land Management, Department of Interior.
[b] Extrapolated.

TABLE II-17

Estimated Market Value of Land Holdings of State and Local Governments, 1952–68

(*$million*)

	Value of Stock (end of year)	Result of Price Rise	Net Addition
1952	23,700		
1953	28,206	27,729	477
1954	30,233	29,616	617
1955	35,902	35,071	832
1956	40,573	39,492	1,081
1957	46,529	45,442	1,087
1958	51,383	50,252	1,131
1959	56,377	54,980	1,397
1960	60,599	59,195	1,404
1961	66,284	64,841	1,443
1962	71,938	70,261	1,677
1963	77,982	76,254	1,728
1964	84,641	82,661	1,980
1965	90,128	88,037	2,102
1966	97,860	95,526	2,324
1967	104,300[a]	101,500	2,500
1968	110,700[a]	108,000	2,700

SOURCE: See text.
[a] Extrapolated.

dollar value. If it were assumed that all land was nonmetropolitan in character, it would have been valued at $95 billion by the end of 1968. Since the land is located in all three of the classes, it seemed more reasonable to raise its value by the central-city land index, which fell between the nonmetropolitan and ring area indexes. This procedure produced a land value of $110 billion in 1968, 15 percent higher than the first figure.

As with the other sectors for which data were not available, the estimates for 1967 and 1968 were extrapolated from trends of the previous years.

(*5*) *Nonprofit Institutions.* Data which would permit an estimate of land ownership by nonprofit institutions is completely lacking. Some tax jurisdictions do publish reports of the assessed value of real property owned by these institutions. The assessments, however, are made in an even more cursory manner than assessments in general, since no tax payments result from the process. In addition, the jurisdictions involved are scattered and are not notably representative. Only occasionally is an effort made to separate land from other real property. Moreover, the relation of land to structure value is extremely variable, even for a single type of institution. Balance sheets of assets are only rarely available for public perusal.

Under these circumstances, it was assumed that the percentage which institutional holdings formed of all holdings during the 1950's, as reported

TABLE II-18

Estimated Value of Land Held by Institutions, 1952–68

	Nonprofit Institutions as Percentage of Noninstitutional Total	Total Value ($million)
1952	3.24	6,300
1953	3.45	7,277
1954	3.50	7,911
1955	3.55	9,084
1956	3.57	10,263
1957	3.53	11,224
1958	3.56	12,455
1959	3.62	13,935
1960	3.67	14,883
1961	3.73	16,390
1962	3.78	17,802
1963	3.84	19,387
1964	3.89	21,083
1965	3.95	22,928
1966	4.00	24,842
1967	4.08	26,930
1968	4.10	28,612

SOURCE: See text.

by Goldsmith, would continue during the 1960's. The 1950–58 percentages were calculated, projected forward, and applied to total holdings, as calculated for other sectors (Table II-18).

(*6*) *Household Property*

a. One- to Four-Family Residential Land. The major part of residential property is owned by households for their own use, rather than as an investment. This, of course, is particularly true of single-family structures. Most multifamily structures, which are an increasing part of the inventory, are owned by investors, who report to IRS in the same way as other types of property-holders, either as corporations or as proprietors or partnerships. Therefore, the value of the land on which they are built is included in either the nonfarm corporations or in the unincorporated business sector. Owner-occupants may report property tax payments and mortgage interest payments, but they have no reason to report either the total value, or land and structure values, of their homes to IRS or to any agency other than the U.S. Census Bureau, which collects this information once a decade. The decennial housing census includes estimates of the value of single-family owner-occupied structures, and of the average value of units in other classes of residential structures. As a result, an estimate of total worth of the residential stock can be developed for 1960. Comparable figures do not exist for 1950, when data were published only for mortgaged structures.

Consequently, for estimates of residential land values, reliance must be placed either on the Census of Governments assessment data or on a perpetual inventory—which is obviously preferable for annual estimates. In order to utilize this method, attention was focused on the rate of depreciation and on the land-structure value ratio, particularly for single-family structures.

In *The National Wealth*, Goldsmith assumed an eighty-year life with straight-line depreciation, or 1.25 percent a year. This is somewhat lower than the compound rate of 2 percent used by Grebler et al. to approximate a straight-line 1.4 percent rate.[24] In developing their formula, Grebler and his colleagues made use of an FHA study which showed an annual average linear rate of depreciation of 1.2 percent. They also allowed for demolitions at a variable rate for each decade; that for 1940–53 was estimated at an annual rate of 0.12 percent of the structural value of the stock at the

[24] Leo Grebler, David M. Blank, and Louis Winnick, *Capital Formation in Residential Real Estate: Trends and Prospects*, Princeton, Princeton University Press for NBER, 1956, p. 381.

beginning of the year. Goldsmith's depreciation estimate is gross, including demolitions.

In the face of differences between the housing market in 1952–68 and that of the earlier period, FHA records were examined for current valuations of older single-family structures. The records actually available were the error print-outs for all appraisals of single-family homes for which application had been made for mortgage insurance in the last five months of 1968, constituting 2,191 usable records. The entire record for the property is printed, with a notation of the column in which the error occurred. This cannot be considered a random sample, but there is no reason to suppose that a systematic bias is introduced. Entries for which an error occurred in any of the items relevant to this study were, of course, excluded.

The reported sale price, the estimated site value, and the estimated replacement cost were taken for all transactions, classified by year of construction. The transactions were further classified by the four major geographical regions of the country, but no differences emerged, and the final results were analyzed only for the country as a whole. Site value was subtracted from both sale price and replacement cost estimates, and the difference between sale price and replacement cost was calculated for each time-class, in order to obtain the average loss of value of the structures independent of changes in site values (Table II-19). A regression of loss of value against years produced an estimated straight-line annual depreciation rate of 0.6 percent, about half of that shown in the earlier study.

The withdrawal rate, however, seems to have increased. Such a finding is consistent with the increase in demolititions resulting from urban renewal and highway programs in the last two decades, and from an apparent acceleration in the so-called filtration process, marked most vividly by a growing volume of abandoned structures. The report on components of change in the housing stock, 1950 to 1960, showed a loss of 3,716,000 units, or 8 percent of the total 1950 stock of 46,137,000.[25] An examination of the size, condition, and value in 1950 shows that the withdrawn units were smaller, in worse condition, and of lower value than the units remaining in the stock. For owner-occupied units, the median value of the withdrawn units was about two-thirds that of those remaining, and rental values showed the same proportion. The estimated 8 percent loss in numbers is thus equivalent to an approximately 5.3 percent loss in value. In annual terms, this results in an estimated decline

[25] Census of Housing, 1960, *Components of Inventory Change*, Vol. IV, part 1A, Table 3, pp. 46–47.

TABLE II-19

Residential Depreciation Rates,[a] 1901–67

Date of Construction	Depreciation Rates (percent)
1967	7.0
1966	8.5
1965	10.3
1964	16.6
1963	11.2
1962	11.6
1961	16.2
1960	14.5
1959	12.0
1958	16.6
1956–57	14.8
1954–55	15.8
1952–53	17.7
1950–51	19.1
1948–49	18.3
1946–47	21.8
1941–45	21.0
1936–40	27.2
1931–35	32.3
1926–30	30.0
1916–25	42.4
1901–15	42.5
Before 1901	57.0

SOURCE: See text.

[a] Estimated by the loss in value reflected in the difference between sales price and replacement cost taken as a percent of replacement cost. Figures are given by date of construction and cover single-family structures submitted for FHA mortgage insurance in the last quarter of 1968.

of 0.5 percent, for a total decrease from depreciation and withdrawal of 1.1 per year. This rate was applied to the perpetual inventory of residential structures developed in the study and described in Appendix I.

To determine the estimated value of the land, land-structure ratios were applied to the structural values developed by the perpetual inventory,

with a combined depreciation and withdrawal rate of 1.1 percent. Computationally, the ratios used are essentially the site-to-value proportions reported for existing single-family housing with FHA-insured mortgages, but reduced in each year by one percentage point.

Structures covered by FHA mortgages are not representative of the whole range of houses in the country. Site-structure ratios from two other sources were compared with them. First, in connection with its efforts to develop a construction cost index, the Census of Housing has prepared a site-to-value estimate for new houses in 1968. Second, on request, the Mortgage Guarantee Insurance Corporation examined the estimated site-to-value ratios for a random sample of mortgages it had insured in 1968, covering both new and existing structures (Table II-20). For new structures, the Census of Housing and MGIC figures were very close, while the FHA figures for the latest available data were over one percentage point higher. For existing housing—again, the latest available FHA data—FHA was one percentage point higher than MGIC. The trend has been toward a higher ratio so it is probable that, were 1968 figures available, the discrepancy would be greater. Moreover, the ratio of new housing is lower than that for existing ones, and though new housing is only a small component of the total housing supply in any one year, it would tend to lower the overall ratio to some degree. Inclusion of 2-to-4-unit structures

TABLE II-20

Average Site-to-Total Value Ratios for Single-Family Structures, 1966 and 1968

(*percent*)

Source of Estimate	Year	Ratio
	A. New Construction	
FHA	1966	19.6
Census of Housing	1968	18.1
MGIC	1968	17.9
	B. Existing Housing	
FHA	1966	21.2
MGIC	1968	20.2

SOURCES: See text.

TABLE II-21

Estimated Value of Land Held by Households, 1952–68

(*$million*)

	Total	Underlying 1- to 4-Family Structures	Vacant Lots	Acreage
1952	58,969	36,140	15,949	6,880
1953	66,125	39,147	17,068	9,910
1954	74,849	43,535	18,374	12,940
1955	88,994	52,271	19,773	16,950
1956	101,296	61,096	21,200	19,000
1957	112,106	67,326	22,730	22,050
1958	124,282	74,972	24,260	25,050
1959	141,579	87,669	25,810	28,100
1960	149,372	90,922	27,350	31,100
1961	161,925	98,835	28,940	34,150
1962	172,899	109,569	30,430	32,900
1963	184,843	119,323	33,870	31,650
1964	197,990	130,230	37,310	30,450
1965	212,651	142,701	40,750	29,200
1966	224,494	152,344	44,200	27,950
1967	237,694	163,351	47,643	26,700
1968	250,894	174,358	51,087	25,450

SOURCE: See text.

also tends to lower the ratio. In view of these considerations, the trends shown by the FHA ratios were accepted, but at the slightly lower level.

The value of land so estimated has been ascribed to the household sector (Table II-21). The proportion of structures containing 1 to 4 units that are owned by business enterprises is very small. Their value has already been included in the estimate of business holdings. This double-counting, however, serves as an offset to land underlying multiunit buildings owned by individuals (not included among partnerships or sole proprietorships), for which no estimate has been made.

b. Vacant Lots. The valuations placed upon vacant lots in the Census

of Governments reports have been accepted here, with linear interpolation for intermediate years. These values have been included with those of land underlying 1- to 4-family structures in the household sector. The same problem of double-counting of business holdings exists here as in the case of residential land. The extent to which such land is, in fact, owned by businesses rather than by individuals is another unanswered question in land economics; such indications as there are lead to the conclusion that, in general, the proportion is not large.

c. Acreage. There is one remaining type of land which is not reported and whose dimension is difficult to estimate. This is the value of acreage owned by individuals and, hence, not included in any of the other classes of holders. It encompasses recreational land owned by individuals rather than by business concerns; abandoned farmland not put to other business or residential use; and any investment, by individuals not classified as proprietors, in land within or outside of urban areas which has not been legally subdivided and, hence, is not included as lots in the Census of Governments assessment data. Except for ground in areas undergoing development, where prices may increase sharply prior to platting, land in this class would have a low acreage price, and would be of greater importance in estimates of acreage than of value.

The difference between the Census of Governments estimate for acreage and farms, and that of the Department of Agriculture for farmland, ranges from $30 billion in 1956 to $68 billion in 1961 and then drops to $56 billion in 1966 (Table II-22). These amounts would seem to be the maximum values of nonfarm acreage that have been omitted from the estimate. In fact, the omission cannot be this high, since much of the land classified as acreage is owned by business organizations and institutions, or is the site for second homes, whose structural value is included in the perpetual inventory. For purposes of this estimate, the amount of difference has been interpolated on a straight line between the years for which data are available. For 1967 and 1968, the 1961–68 trend was continued. For 1952 to 1955, since there is no Census of Governments estimate prior to 1956, it was assumed that prices of acreage had increased at the same rate as the suburban price index; that the greater increase in value of acreage from 1956 to 1961 over that shown by the index was the result of increased amounts of land; and that land had been added to the inventory from 1952 to 1955 at the same rate as in the next five-year period, 1956 to 1961. The estimated change in valuation of this acreage was then derived from the price index and divided equally among the four years. It was then assumed that in all years, half the calculated amounts were attributable to the household sector.

TABLE II-22

Estimate of Value of Acreage Held by Household Sector, 1952–68

(*$billion*)

	Value of Farmland (1)	Value of Farms and Acreage (2)	Value of Acreage (3)	Household Share of Acreage Value (4)
1952	69.2		13.2	6.6
1953			17.4	8.7
1954			21.6	10.8
1955			25.8	12.9
1956	81.9	111.9	30.0	15.0
1957			37.7	18.9
1958			45.3	22.7
1959			53.0	26.5
1960			60.6	30.3
1961	107.2	175.5	68.3	34.2
1962			65.8	32.9
1963			63.3	31.7
1964			60.9	30.5
1965			58.4	29.2
1966	146.6	202.5	55.9	28.0
1967			53.4	26.7
1968			50.9	25.5

SOURCES:

Col. 1. Table II-1, col. 5.

Col. 2. 1956 and 1966: Manvel, *op. cit.*, Table 1, p. 6; 1961: "Taxable Property Values," *Census of Governments*, 1962, Table 9, p. 41.

Col. 3. 1956, 1961, and 1966, col. 2 minus col. 1. Other years by extrapolation or interpolation.

Col. 4. 50 percent of col. 3. See text.