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Volume Title: Housing Markets and Racial Discrimination: A Microeconomic Analysis

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Volume Publisher: NBER

Volume ISBN: 0-870-14270-4

Volume URL: http://www.nber.org/books/kain75-1

Publication Date: 1975

Chapter Title: Appendix B: Estimation of Value for Owner-Occupied Dwelling Units

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Chapter URL: http://www.nber.org/chapters/c3723

Chapter pages in book: (p. 317 - 319)

Estimation of Value for Owner-Occupied Dwelling Units

No single satisfactory measure of market value was available for all single-family detached structures included in the sample. Therefore, it was necessary to combine several overlapping and independent estimates to obtain a consistent measure of market value.

This was accomplished by merging the following measures of housing value.

For city samples:

Owner's estimate	Recorded for 114 households out of 275	
of value, V_1	owners of single-family detached structures	
Assessment	Recorded for each dwelling unit in the city,	
value of land and	together with the year of the most recent	
structure, V_2	assessment	
Appraised value	Recorded for a random sample of 500 dwell-	
of land and struc-	ing units, including 134 single detached units	
ture, V_3		

For county samples:

Owner's estimate
of value. V_1 Recorded for 127 households out of 137
owners of single-family detached structuresAssessmentRecorded for each dwelling unit in the
countyvalue of land and
structure, V_5 county

Table B-1 presents the means and standard deviations of these measures:

	Mean	Standard Deviation	
V_1	\$13,704.76	\$ 6,243.94	
V_2	4,224.33	2,140.22	
V_3	14,707.14	7,105.49	
V_4	20,453.54	12,088.69	
V_5	6,027.87	3,250.91	

TABLE B-1 Summary Statistics of Valuation of Owned Single-Family Detached Housing

For the city samples, it was assumed that the appraisals by Charles O. Gorman & Company were the best of the several estimates of current market value. However, these appraisals were available for only 114 city owners of single-family units. To estimate the value of the remaining owner-occupied structures, it was necessary to rely upon information from assessment records, as well as owners' estimates of housing value.

A separate analysis of the disparities between appraised value and owner-estimated value was conducted for the 83 single detached units in the city which had both real estate appraisals and owners' estimates.¹ Based upon the results of this investigation, which indicates an average discrepancy in dollars of only 1.8 percent of appraised value and an average discrepancy in percentage terms of only .17 percent of owners' estimates, owners' estimates were used as estimates of housing value for those dwellings without appraisal data.

For the 53 units in the city of St. Louis lacking both appraisals and owners' valuations, value estimates were calculated from city assessment data using an "assessment ratio." This assessment ratio was estimated using the sample of 134 single detached units in the city which possess both assessment and appraisal data. Equation B-1 summarizes the regression of V_3 on V_2 and several dummy variables used to make corrections for different assessment years.

(B-1)
$$V_3 = 5,757.63 + 2.53 V_2 + \text{Dummy variables for year of}$$

(.17)
assessment

The standard error of estimate of Equation B-1 is only .17, and this equation explains 72 percent of the variation in appraisals. For estimates

¹The results of this investigation appear in John F. Kain and John M. Quigley's "Note on Owners' Estimates of Housing Value," *Journal of the American Statistical Association* 67, no. 340 (Dec. 1972): 803-6.

of market value for the 53 units in the city having neither appraisal nor owner's estimate, values were obtained by applying Equation B-1 to the assessment data.

If the assessment ratio were the same for St. Louis city and County, it would have been possible to apply Equation B-1 directly to the county assessment data to derive estimates of market value for those units lacking owner's estimates. However, since the city and county are under different political jurisdictions and have different tax structures and appraisal practices, it was necessary to correct county assessments separately. Because appraisal information was not available for sample units located in St. Louis County, it was not possible to reestimate Equation B-1 for these samples. Fortunately, the owners' estimates of market value provide a benchmark to estimate assessment ratios for the county.

For the 127 dwelling units in St. Louis County with both owner's estimates of value and assessment data, V_4 was regressed upon V_5 and dummy variables were again included to adjust for different assessment years.

(B-2) $V_4 = 1,845.08 + 3.09 V_5 + \text{Dummy variables for year of}$ (.19) assessment

The standard error, .19, is again rather small, and Equation B-2 explains 69 percent of the variation in owners' estimates. Estimates of market value for the 10 units located in St. Louis County which lacked owner's estimates of value were then obtained by applying Equation B-2 to the assessment data.

To make an independent test of the relationship between value and county assessment, sales records and assessment data were gathered for a total of 40 single-family detached structures in St. Louis County which had been sold during the twelve months preceding the home interviews. A regression of sales price on assessed value, similar to Equation B-2 above, resulted in a coefficient for V_5 of 3.33. This coefficient, which is not significantly different from the coefficient in Equation B-2, indicated that Equation B-2 could be expected to provide reasonable estimates of housing value for the 10 dwelling units in St. Louis County lacking estimates of market value.