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Appendix C

OHIO SAMPLE GROUPS

Detailed information about the twenty sampled counties, returns for which were tabulated individually or in groups, may be found in Table C-1. The first ten counties listed were not, in the strict sense of the word, sampled at all. These ten were by 1920 standards the most highly urbanized counties of the state and were by 1950 the areas of highest urban density. Both the counties and the central cities involved are of highly unequal size. If they were dealt with as an aggregate, the smaller counties (and cities) would not have an appreciable influence; the aggregate would be dominated by such counties as Cuyahoga (containing Cleveland) and Hamilton (containing Cincinnati). To enable the different size groups to exhibit the peculiar patterns which may characterize their behavior, this large urban category is broken up into three subgroups, which are entitled: large metropolitan, large urban, and small urban.

In all of these counties, the urban influence dominates the county totals, though unevenly, according to the measures noted in Table C-1. As regards population by 1920 the counties were urbanized (defined as having incorporated municipalities of 2,000 or more) by at least 71 per cent (up to 95 per cent for the highest of the range). However, if we go back in time, the rural or farm influence becomes stronger. Thus, of total recorded mortgages in 1884 (which is near the center of our survey period) as much as 68 per cent by dollar volume for the ten counties was on agricultural lands. In all of the urban counties, real estate market activity as a per cent of sales of nonfarm property or platted property, was predominantly urban, with the farm component ranging from 11 to 58 per cent.

In terms of geographical location, the ten urban counties are distributed over the state and into widely differing resource layouts. Hamilton (containing Cincinnati) was from early days the leading commercial and industrial center of the upper Ohio valley. Two of the other counties, Lucas (Toledo) and Cuyahoga (Cleveland) are harbor ports on the Great Lakes. The other urban counties are interior, though most of these were tapped by

TABLE C-1
Ohio Building Study. Sample Counties and Their Characteristics

Areas	Sales of Farm Land as % of Sales of Town Lots,		Urban Pop. as % of Total Pop.,		Nonfarm Value Mort. Recorded as % of Total Mort. Value,		Value Total New Building, Unadjusted (Thousands of Dollars)			Population (Thousands)	
	1884	1920	1885	1920	1857	1884	1908	1860	1880	1900	
Ohio total	107	63.8	51		5,150	16,300	45,541	2,340	3,198	4,158	
Large metropolitan											
Cuyahoga (Cleveland)	12	95	90		260	1,609	9,823	78	197	439	
Hamilton (Cincinnati)	11	91	86 ^b		1,296	3,119	4,941	216	313	409	
Total ^c	12	93	88		1,556	4,728	14,764	294	510	848	
Large urban											
Franklin	31	83	32 ^c		149	1,224	3,118	50	87	164	
Lucas (Toledo)	22	89	84		108	435	2,100	26	67	154	
Montgomery	35	77	67		192	713	1,144	52	79	130	
Total ^c	29	83	61		449	2,372	6,362	128	233	448	
Urban											
Mahoning	46	82	78		58	109	3,366	26	43	70	

Summit	45	87	68	53	457	841	27	44	72
Stark	58	71	51	70	294	948	43	64	95
Butler	42	72	52	161	401	954	36	43	57
Clarke	51	75	63	59	323	427	25	42	59
Total ^a	48	77	63	401	1,584	6,536	157	236	353
Southeast small urban									
Jefferson	313	48	42	22	204	440	26	33	44
Belmont	63	44	50	74	213	423	36	50	61
Washington	151	35	-	61	99	129	36	43	48
Muskingum	111	51	73	45	138	472	44	50	53
Guernsey	164	35	8	31	101	241	24	27	34
Total ^a	160	43	43	233	755	1,705	166	203	240
Northwest rural farm									
Williams	84	29	12	18	71	58	17	24	25
Hardin	65	26	29	35	41	54	14	27	31
Wood	106	12	8	19	52	92	18	34	52
Henry	197	17	13	8	63	68	9	21	27
Wyandot	88	19	18	26	64	55	16	22	21
Total ^a	108	20	16	106	291	327	74	128	156

^a Entries for first three columns are unweighted means.

^b For 1880.

^c For 1886.

the canal lines running north and south which were constructed in the 1830's to provide passage for bulk freight. Altogether four of the urban counties are on the border of the great iron and steel region which fringes the northeastern corner of the state and runs on into Pennsylvania. Two of these counties, Cuyahoga and Mahoning (Cleveland and Youngstown), are leading centers for the iron and steel producing industry. Except for these counties, industry is highly diversified.

Unfortunately, neighboring cities are not usually of the same size-class. Thus, the decision to group cities of similar size linked together, in one aggregate, cities which have little direct impact on each other, even though economic activity in the Ohio Valley and along the Great Lakes responded to a common set of influences. Since our principal Ohio results, so far as local cycles are concerned, involve the behavior of these loosely related groups of urban communities of like size, it is necessary at the outset to establish the degree to which behavior patterns of the aggregate reflected behavior patterns of group members.

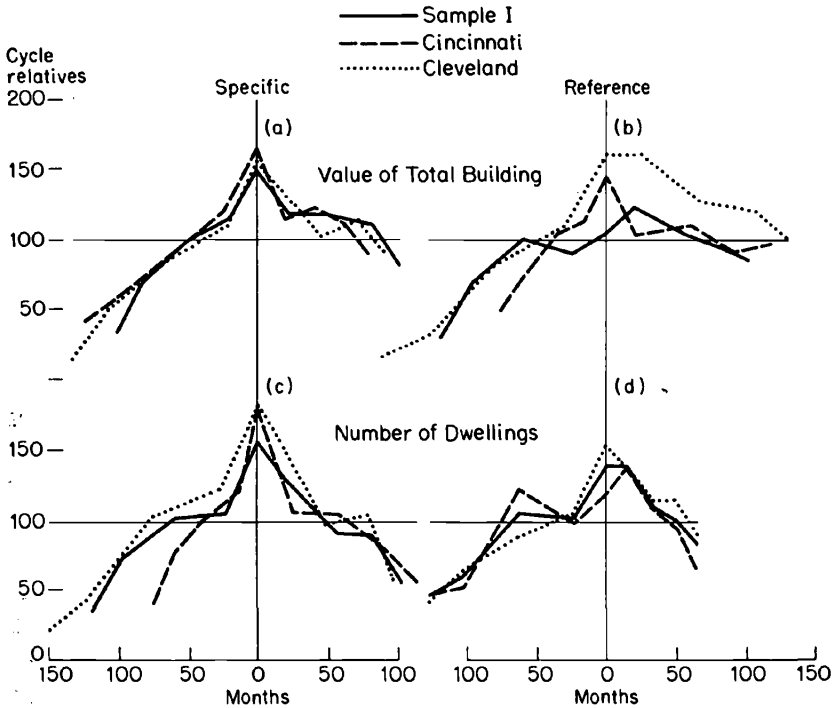
To permit such a study, a complete analysis was made of cycle patterns for Cleveland and Cincinnati considered separately and together. Four sets of average patterns are shown in Chart C-1. The aggregate, as expected, cuts across the dissimilar patterns of the rapidly growing Cleveland and the more matured Cincinnati area. The form of movement and timing is affected by aggregation only in one of the four sets of reference patterns. Though located at opposite ends of the state, growth patterns of the two cities responded to wave movements of comparable force and timing. The average divergence in years between specific turning points in residential building was only 1.5 years (see Table C-2). Divergences in timing narrowed toward the end of the period. No growth waves are rubbed out by nonconvergence, though amplitudes are dampened and patterns are somewhat smoothed.

Similar conclusions are indicated by the comparison set forth in Chart C-2 of average patterns for Toledo and the composite of three counties in Group II including Toledo. The process of rubbing down and smoothing out was probably carried somewhat farther in Group III, which is made up of five counties, three of them located in the northeast Piedmont region and two in the western and southern areas. The divergence in cyclical timing was greatest for Group III (see Table C-2).

The surveyed materials reveal the hazard of treating even

CHART C-1

Average Long Cycle Patterns, Specific and Reference, Value of Total Building and Number of Dwellings Built, 1857-1914, Ohio Sample Group I and Its Component Countries



slight aggregation as trivial. Our first three sample groups are themselves not representative or modal. Average group patterns will thus understate the force of movement which swept through the area. The group patterns do indicate the comparative behavior over the same time periods of city areas in different size classes. To the extent that demand and supply for building work was satisfied by shifting manpower throughout the area, the aggregate pattern is more representative of the movement of productive activity than city patterns taken separately.

The other two sample groups with five counties each are sampled in the proper sense of the word. One group (labeled southeast small urban) is made up of nearly contiguous counties of nearly similar size. These counties are in the broken country of the Appalachian plateaus draining into the upper Ohio. They were all settled early in the nineteenth century. Four of them have an active coal mining industry, and in the later years of our

TABLE C-2
 Deviation of Individual Counties from Group Chronology,
 Residential Building
 (In years)

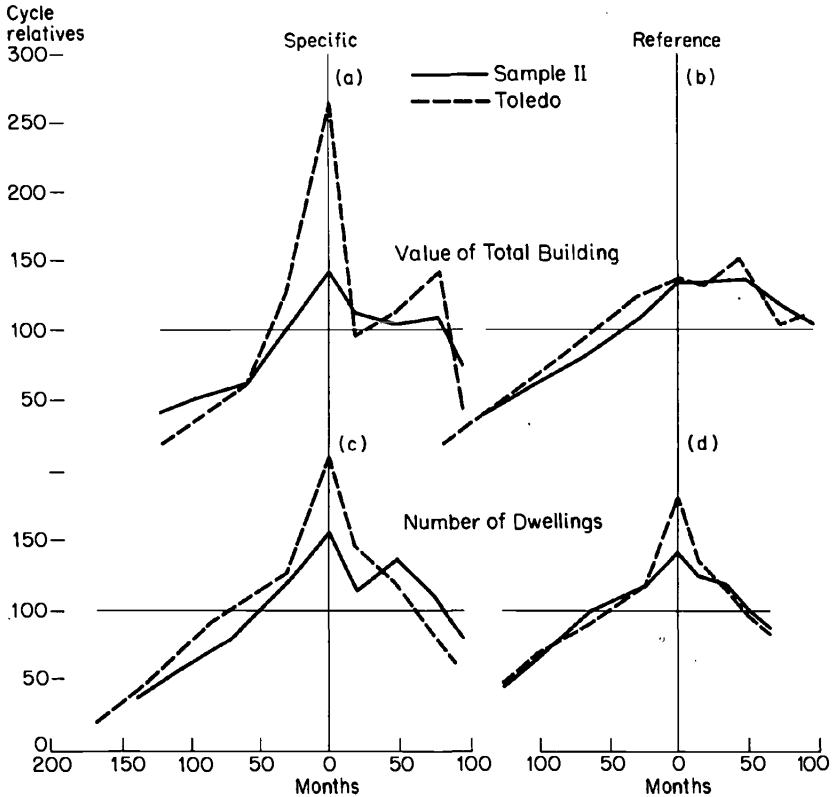
<i>Group</i>	<i>Total Number of Years Deviation, All Turning Points</i>	<i>Average Deviation per Turning Point</i>
I	18	1.50
II	18	1.27
III	74	3.20
IV	49	1.90
V	68	3.10

survey period were favored by exploitation of gas and oil deposits. The economic development of the region rested on exploitation, successively, of forests, fields, and mines. Of the twenty-four counties which make up the southeast region,² the five were selected with the requisite degree of urbanization, city size-class, absolute size, and contiguity. Contiguity played a role since it was felt that building-trades workers spread their field of employment over a wider area than a county, and that hence something like a regional resource pull would develop and give economic meaning to the group aggregates. No attention was paid to the kind of building pattern exhibited, to the movement of population, or to industrial characteristics. The sampled counties were characterized by the absence by 1900 of any large urban center of more than 25,000 population but involved a degree of urbanization which in 1920 ranged between 25 and 50 per cent. Whereas the simple average of urbanization for the ten urban counties is 82 per cent, for these counties the comparable simple average in 1920 was 43 per cent. In 1884-85 our two measures of real estate activity exhibited about the same proportion for nonfarm transactions by number and by value.

The other five counties were selected to represent the behavior of northwest Ohio with its flat drained farmlands devoted chiefly to corn and hog farming.³ This area has a comparatively light density, averaging only 71 persons per square mile. The degree of urbanization is under 30 per cent, with no city over 20,000. It is hoped that this subgroup of counties will typify the

CHART C-2

Average Long Cycle Patterns, Specific and Reference, Value of Total Building and Number of Dwellings Built, 1857-1914, Ohio Sample Group II and Lucas County (Toledo)



building and real estate behavior of the midwestern farm belt, which stretches beyond Ohio to the Great Plains states. Corn and hogs account (in 1950) for 26 per cent of total farm incomes, dairying 16 per cent, wheat 14 per cent, and poultry 14 per cent. This region was settled late. Population growth in these counties was light after 1880, and after 1900 in most of these counties a population decline, reflecting lighter farm density, set in. Of the seventeen nonurban counties making up this region, five were selected on grounds of contiguity, appropriate size, and degree of urbanization.

