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Appendix E

OHIO SOURCES AND TIME SERIES

Included in this Appendix are fifteen master tables listing the annual Ohio series analyzed in Appendix A with a detailed record of all adjustments practiced on the raw data as extracted from Ohio documents and a full account of sources used. The Ohio statistics were inaugurated by statutes which in April 1857 established an Office of Commissioner of Statistics and which a year later made the office permanent and specified a plan for statistical reporting. A bureau of statistics had been contemplated by the new constitution adopted in 1851.[4] Impetus for the creation of a bureau was given by the distinguished Salmon P. Chase in his gubernatorial message of 1856.[5] Once the office had received legislative sanction, Chase appointed to it one of the few representatives of a vanishing type, a man of letters, active in public affairs, knowledgeable about agriculture, industry, and trade.[6] The appointee, Edward D. Mansfield, was doubtless infected with the scientific virus by his professor father, who was singled out for his scientific interests by President Jefferson and appointed to the staff of West Point and to the office of surveyor-general of the northwest territories. Despite young Mansfield's many-sided schooling in Eastern institutions, he settled and made his home in the state early. From 1836 to 1852 he edited various Ohio newspapers and for eighteen years thereafter he published a journal on railroading. He participated for ten years in educational institutions and published works on biography, current events, social topics, and short manuals on mathematics, politics and education [181; 19, I, p. 162]. He learned about statistical methods the hard way, as Census taker for Cincinnati in 1825 and as field researcher in marine statistics at the behest of a Secretary of the Treasury.[7]

Mansfield began his work as Commissioner of Statistics in 1857 and in the years following produced eleven memorable reports. In 1868 he retired from the office, which was abolished

Note: Tables for this Appendix appear on microfiche. See inside back cover.

as a separate agency and, in the form of a statistical bureau, was placed under the general supervision of the Secretary of State, an elected officer of state government, who in the early years frequently complained about the assumption of duties for which he was unfitted and which were meagerly funded as well.[8] However, the statistical system developed by Mansfield had become sufficiently routinized so that it was possible for the bureau, staffed by only a few persons and headed by a person serving as "statistician" to compile and issue an annual statistical report, though without the commentary or explanation previously provided. In this form the bureau functioned for the next half-century.[9]

The bureau not only continued the system but twice carried through major expansions in the reporting network by arranging for a more detailed breakdown of classes of building annually erected and for a separate reporting of conveyances of real estate on a farm and nonfarm basis and for nonfarm lands on a platted or unplatted basis. Visible through most later reports was evidence of perfunctory interest. No attempt was made to make up for omitted county returns or ever to call attention to questionable items.

The statistical plan of Chase and Mansfield was embodied in an 1858 document included in this Appendix (see pp. 298–300). Local officers of local government were required to keep records of, and to report on, their own ministerial or executive actions. Thus county coroners were to report violent deaths, sheriffs were to report prisoner confinements, probate judges who issued marriage licenses were to report the number of licenses issued, welfare officers were to report the number of "paupers" assisted, recorders of documents were to report on the number, consideration or acreage of basic deeds and mortgages recorded, district attorneys were to report on prosecutions and convictions, clerks of courts were to furnish information on civil actions, naturalizations, and judgments, and auditors who supervised the preparation of local budgets and who managed the property tax rolls were to report on government expenditures, taxable property of various types, and agricultural production. The auditors carried out their duties through a network of elected part-time township or ward personal property tax assessors who conducted in the spring of each year virtually an annual census enumeration of households and establishments, using

forms printed by the state and distributed in early spring through county auditors. The core of the duties of these assessors was (a) to obtain from each head of household or establishment a sworn detailed statement of personal property by type and value and (b) to prepare from his own knowledge a detailed list of newly built nonexempted structures or improvements worth over $100 or loss of the same by fire, destruction, or demolition, with the value estimated in line with valuation of realty already assessed and reappraised for tax purposes by special district assessors and equalization boards elected in 1846, 1853, 1859, and thereafter decennially to 1910. Along with these two operational reports was a third which asked for an enumeration of crop production, acreage allotted, and certain husbandry productions for the preceding year. By the third Monday of May, the ward or township assessors were to deliver to the county auditor the requisite listings with sworn affidavits of honest fulfillment and with proper footings for the different columns of the lists. The law provided for penalties for willful violations and auditors were enjoined not to approve payment to assessors unless the lists were satisfactorily made out.[10] For purposes of property taxation the assessors would not need to collect crop and acreage data. However, collection of that information for wheat and corn had been undertaken before the statistical system was installed and under that system it was merely extended to include all varieties of farm products.

Certain kinds of information, e.g. meteorological, were systematically collected from a handful of private or quasi-public primary collectors; while banks and railways were separately enumerated from time to time. Intermittently, attempts were made to collect statistics on births, deaths, and industrial production, but local officials were neither empowered nor enjoined to set up the necessary data-collection procedures and these classes of statistics were dropped. Under Mansfield and for a few reports after him, annual reports were usually commemorated by special statistical collections but these special reports soon disappeared. Once routinized, local officers of government considered data collection and reporting as a secondary function of the job. As this was not their primary function and as no compensation was allowed for the work, a tendency to neglect and carelessness came to the attention of central compiling officers, and hence recommendations for compensation to

local reporting officers were frequently made [10, 1880, p. 194; 1881, pp. 6f.; 1888, pp. 16f.].

There were three separate classes of time series for Ohio utilized in the present investigation: (a) building of different types by number and/or value; (b) recorded conveyance information regarding deeds and mortgages by number and value; (c) marriages by number. Since statistics were collected and published chiefly in the form of county returns, we had, besides statewide aggregates, separate tabulations for the three highly urbanized counties with the largest central cities—Hamilton (Cincinnati), Cuyahoga (Cleveland), and Lucas (Toledo)—and for twenty sampled counties collected into five groups, selected to exhibit both degree of urbanization and location. The basis for selection of the sampled counties and general information about them is provided in Appendix C.

All the Ohio data were collected by local officers of government and consolidated at the county level into county totals. It was found possible to test the validity of other Ohio series by independently derived annual series for (a) building permit data, (b) marriages, (c) mortgages and deeds by number and value in Franklin County for 1900–1920, and (d) mortgage recordings by number and value annually by counties between 1880 and 1889 [38; 214; 265; 264]. Comparison of building permit data available for four central cities from 1900 to 1912 and for one central city back to 1888, with corresponding assessor data for the counties involved, showed the expected order of magnitudes and parallelism of pattern. Cumulated into decade totals, our Ohio series were checked against decennial benchmark measures derived either from state or nationwide Census counts. All comparisons, both annual and decennial, showed divergences, partly traceable to variations in coverage and definitions and partly due to other causes. However, these divergences did not impair broad comparability for level and pattern even on the county level, and were reduced to minor proportions for county returns consolidated into group or statewide totals. A detailed presentation of this evidence is reserved for a later publication.

In my work of 1964 [109, pp. 19–34] a full presentation was made in both tabular and graphic form of the economic and demographic characteristics of Ohio as related to that of the nation as a whole. The course of Ohio residential production both by decades and on a year-to-year basis was related both to

yearly variations in residential building elsewhere and to decade shiftings in net dwelling stocks in Ohio as disclosed by decennial Census benchmark counts. A detailed report on Ohio building statistics may be found in my paper of 1966 [108].

Conveyance Statistics

Our Ohio statistics include conveyance as well as building records. Conveyance statistics are those on the number and value of real estate instruments designed to convey or affirm title (deeds) or to borrow money on the security of a mortgage instrument. These instruments are filed, or "recorded," in public records maintained by a local county "recorder of deeds." Both internal and external checks indicate that the work of compiling the recorders' reports was generally performed conscientiously, though it was necessary to scrutinize statewide collations carefully for lapses and irregularities. It is worth noting that on two occasions independent tabulation of recorders' annual mortgage recordings for all counties between 1880 and 1889 and for Franklin County between 1900 and 1920 confirmed the general validity of the countywide totals listed in the published returns [38; 265].

The earliest conveyance reports merely listed the number of deed instruments, mortgage recordings, and the "amount secured." Since mortgage instruments must specify unambiguously the sums borrowed and payable, an accurate comprehensive return of dollar value liability would not be difficult to render. Leases were included in the deed totals until 1867, but since they numbered only 3 or 4 per cent of deeds, allowance for them could be made. Liens were specifically included with mortgages for only a few early years; they were dropped explicitly in 1864 without affecting the trend. From the beginning, railway mortgage recordings were separately noted, though formal exclusion from the totals and separate tabulation did not begin until the 1868 report. Since railway mortgages ran to immense sums, relative to other recordings, it seems likely that our series from 1858 to 1868 did not include them.[11]

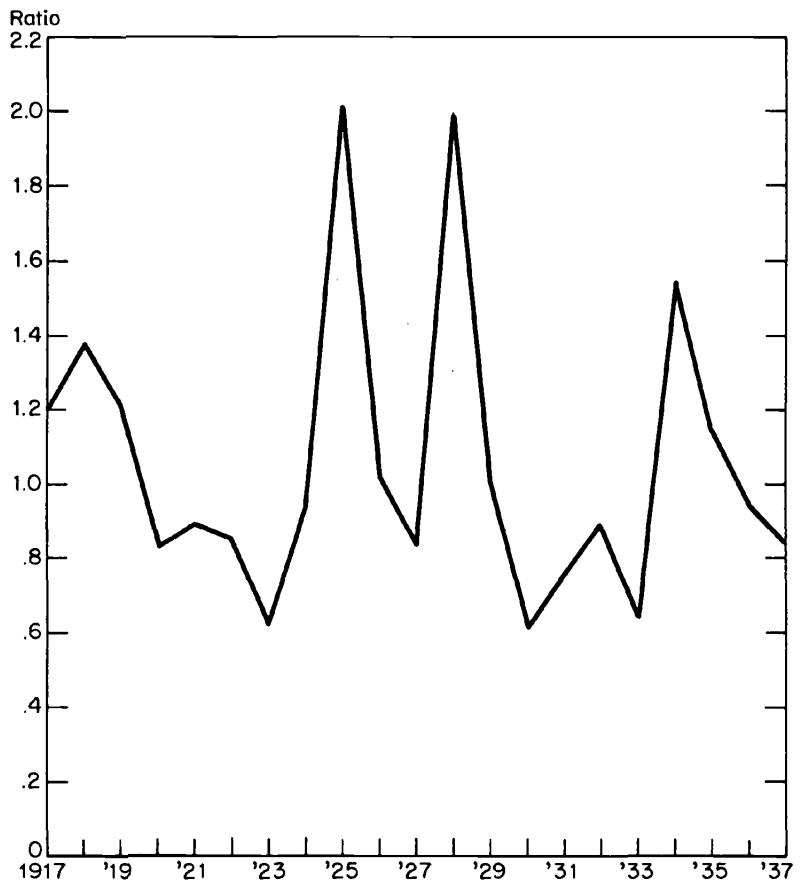
Conveyance statistics were made much more usable in 1877 with major increases in detail reported. Reporting on deeds was amplified by the separation of nominal from bona fide deeds. The latter were reported for three categories of transactions:

deeds for farmlands, deeds for unplatted lands ("town acres") sold by the acre but included within municipal boundaries, and deeds for platted or subdivided land within municipal boundaries ("town lots"). Later a fourth class of deeds, entitled "complicated" or "mixed" conveyances, was added. These soon came to number less than 3 per cent of town lot deeds. Their money values were highly uneven, since they included many very small and some large transactions. In this fourth category were, evidently, transfers of parcels of property located both within and without corporate boundaries and conveyances for mineral and oil-bearing lands (formally so designated in the 1903 and following reports). Our tabulations were confined to town acres and town lot transactions. These deeds were reported both by number and "amount of consideration"; while deeds in town acres were also enumerated with regard to number of acres (as were farmlands). When reporting for consideration began, only 6.85 per cent of the deeds were for nominal consideration. The practice of recording only nominal values slowly spread until, by the end of the period, 71.8 per cent of all recorded deeds were nominal. Hence it was clear that trends for bona fide deeds by number or total value would be biased downward. Our records of bona fide deeds were accordingly tabulated by computing per deed values, providing some indication of the movement of realty price levels, complicated by shifts in the mixture of sales for different classes of property. Though recording of consideration was voluntary, there seems little grounds to dispute the validity of the consideration for bona fide deeds. Buyers and sellers of real property could oftentimes benefit by recording contract of purchase. In Chicago, Hoyt reported that true consideration was usually given in deeds from 1830 to 1890 "or later."[12] In legal proceedings, however, little credence is given to consideration "expressly cited in deeds" [25, p. 482]. Certainly even without desire to hide disclosure of terms of sale, a legitimate motive for recital of nominal consideration would be present in the case of deeds executed by trustees, by administrators or guardians, or for conveying of gifts and inheritances. More disturbing is an Ohio report which found that practice varied with regard to inclusion in consideration of value of mortgage assumed [38, Table 16, pp. xxii, 32 ff.]. Since between 10 and 20 per cent of deeds in this Franklin County study involved assumption of mortgages, variation in practice in this respect was important. In the same study, a

tabulation was made by years, from 1917 to 1937, of the amount of consideration stated in bona fide deeds and assessed value for the same property. The assessed value is shown in Chart E-1 as a per cent of stated consideration. In the early 1920's assessed value should have fallen to perhaps two-thirds of true consideration, and should have risen as a fraction of consideration in the Great Depression. The erratic behavior of the chart indicates that in the later years of our survey, movement of per deed value became unreliable, at least according to one investigation. On the other hand, recorded deed values for farmlands exhibited a

CHART E-1

Ratio of Assessed Value to Consideration Given, "Other Than Dollar Deeds," Recorded in Franklin County 1917–37



SOURCE: [38, pp. 360, 363].

rational and orderly character throughout most of our surveyed period.

With the indicated caution, we analyzed per deed values for town lots and town acres, yielding respectively a per deed value for platted town property and a per acre value for undeveloped town acreage. A series for aggregate town acres sold and total consideration was then checked for pattern of movement against a series of amount secured by mortgages of town acres. The patterns were congruent, indicating that deed consideration data is worthy of close scrutiny. These series plus one on total deeds, bona fide and nominal, were tabulated and analyzed.

Adjustments on grounds of deficiencies or errata were most easily handled in the series for total deeds. There were eighty deficient counties over the sixty-three reporting years; some twenty-two of these deficient returns were in one year, 1864. Returns for the year 1888 were not published and were interpolated linearly; while for two years the number of nominal deeds was estimated.

Few adjustments were needed for the sample deeds data. For the years 1858–67, deeds and leases were reported in a single category. The number of deeds alone was then estimated, using the ratio for 1867–72 of deeds to deeds and leases (88 to 98 per cent), and applying it to 1858–66. The sample groups included twenty-six deficient returns throughout the sixty-three-year period. These were adjusted either on the basis of their own behavior or that of their group in adjoining years. Linear interpolation was used for the six years for which Group I and the two years for Group II were absent from the returns. From 1895 to 1920 the total number of deeds was taken from the sum of nominal and bona fide deeds, rather than from the "grand total" reported, as the latter seemed unreliable.

The "town lot" data was in poorer shape. Except for the years 1882 and 1900, published summary totals were accepted subject to two adjustments: any unmatched report for number or values for a given county and any outlandish or extreme entry for numbers and value were deleted. Altogether, eighty counties were deleted from the numbers count and twenty-seven from the values count. More difficult to allow for was absence of value reports for Hamilton between 1883 and 1893 and 1897 and 1898. Since differentials between Hamilton and the rest-of-state levels

per deed were declining, we adjusted statewide value levels per deed for the absence of Hamilton by a sliding scale.

Adjustments for the sample groups were more complicated because of the numerous (sixty-one) deficient and erratic returns. Per deed values for Group I were adjusted for the absence of Hamilton for 1883–95 by a sliding scale, similar to the statewide adjustment, on the basis of Cuyahoga per deed values. For 1899–1900 per deed values for Cuyahoga alone were used. For sample IV unmatched reports in number or value in a given county for the years 1879–87 were deleted, and group per deed values included only those counties reporting both number and value. The same procedure was used for sample V from 1877 to 1893, with only two exceptions (1883, 1887). All omissions for Groups II and III were adjusted by a "group method" which was also used for Group IV after 1887 and for Group V after 1893. Through the group method the group total, rather than an individual county, was estimated on the basis of group behavior in an adjoining year.

Town acre statistics were difficult to correct for deficient returns since coverage of sales of town acres was spotty for the smaller counties. Counties reporting acreage sales varied between thirty-eight (1919) and fifty-eight (1884). Deficiencies in acreage or consideration were made up in the following manner: if the county reported only the acreage and not the consideration, the acreage report was subtracted from the audited statewide total. The resulting total was then divided into the consideration total, yielding an average value per acre. This average value was then applied to the reported acreage figure for the deficient county, giving an estimated consideration for that county. The same procedure was followed in estimating the number of acres when only consideration was given. In this case, the amount of consideration for the deficient county was divided by the average value, rendering the estimated number of acres. When an urban county was deficient, the same procedure was used except for the derivation of the average value. An urban average value was used, based on the average values of ten urban counties (composing the first three sample groups) for the year in which a county was deficient in acreage or consideration.

There were many cases where either numbers of acres or total

consideration was reported alone. Altogether, of the ten urbanized counties there were 22 omissions, and of other counties, 121 omissions, over the forty-two-year period. Particular county returns, which by reason of abnormally high or low acreage values seemed aberrant after special examination, were dropped from the returns in ten cases. Because of the unevenness in returns and difficulty in checking for deficiencies, all final acreage returns were adjusted by a three-year moving average. Of the statewide totals, there were analyzed total consideration for town acres, number of acres sold as recorded in bona fide deeds, and consideration per deed. For the sample groups, only the number of acres and per acre value were analyzed.

The more detailed reporting of mortgage data commenced only with 1885 and ran to 1920. In 1885 mortgage returns by number and value were separately presented for farmland, town lots, and town acres. Fortunately, it was found possible to extend our town lot series back to 1880, based on a census investigation of mortgage recordings for each year of the 1880's [265]. Adjustments of mortgage returns for statewide and group tabulations were carried on at four levels: (a) use of Census returns between 1880 and 1884; (b) exclusion of oil and mineral mortgages especially enumerated after 1885; (c) adjustment for absence of Hamilton county mortgage value figures between 1883 and 1900; (d) adjustment for deficiencies either of number or value or both.

Census values for town lot mortgages between 1880 and 1884 were scaled down by 10 per cent to exclude town acre mortgages and to allow for varying coverage.

A special check was made of per deed value mortgages for all counties in which gas or oil activities were involved. Mortgage values for four counties between 1881 and 1885 were found abnormally high and were scaled down to statewide levels.

The adjustment for Hamilton had to make allowance for its heavy weight in statewide totals and for the trend of its performance as well. From 1883 to 1889, use could be made of Census enumeration. From 1890 to 1899, Hamilton mortgage returns were estimated on the basis of the average of four large urban counties.

Adjustments for deficiencies were relatively few in all the mortgage series. Thus town lot mortgages recorded seventy-eight deficient returns for a thirty-five-year period. Between

thirty-one (1919) and forty-nine (1893) counties reported mortgage recordings on town acres. Adjustments for sample groups were scrutinized with special care. Only in ten instances were particular sample county returns for total mortgage number and value modified because of assumed error. Throughout all mortgage series, Stark County was excluded from sample Group III because of its irregular behavior.

All deed and mortgage returns from 1858 to 1920 were for a fiscal year ending June 30. To avoid further smoothing of our material, the fiscal year was treated as equivalent to a calendar year. This tended to cause conveyance data to lag slightly in our timing calculations.

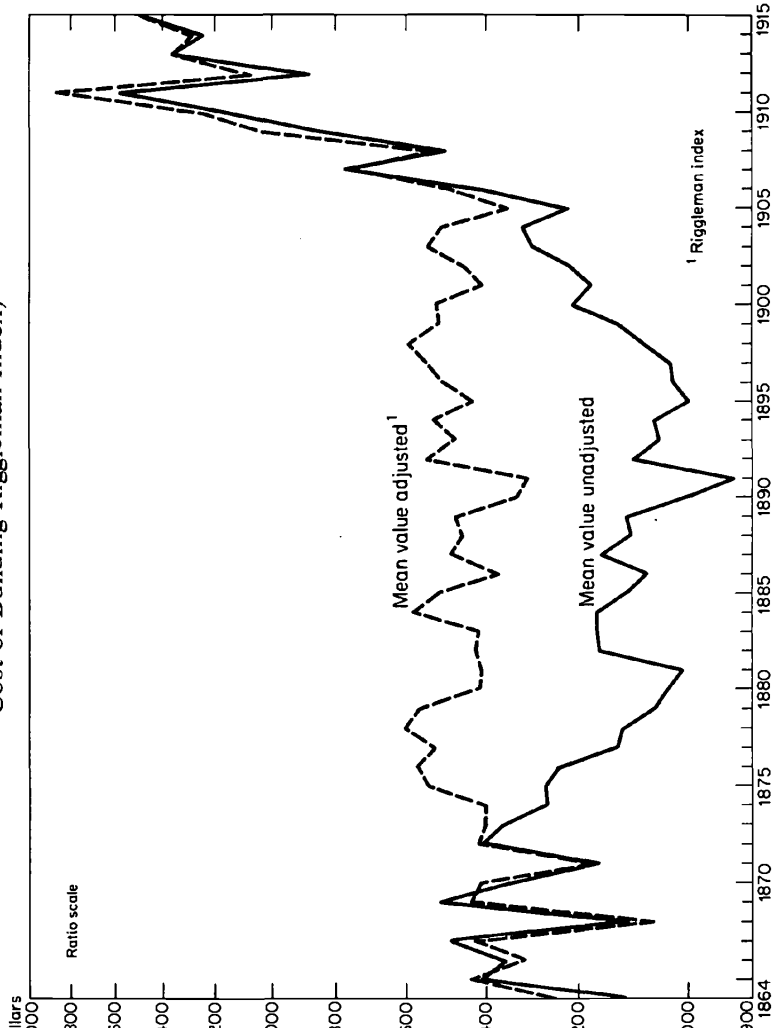
Since mortgage and deed values were in current dollars, it was necessary to consider adjustment to some standard of defined purchasing power. Chart E-2 shows the value of mortgages per recording in current dollars (series 0170) and as adjusted by the Riggleman index. The contrast with the set of corresponding charts on residential and total building before and after adjustment for appraisal shifts is striking. Application of the Riggleman index to the 1858–65 mortgage values results in a very questionable level of per-unit value recordings not reached again until the 1910's. There is little doubt that the sudden rise of per-unit mortgage values in 1917–20 and the doubling of the value and volume of mortgage recordings in 1920 do reflect wartime inflation. However, these peak values were not included in our main tabulations, which ran, so far as cycles are concerned, from trough to trough. Hence systematic price adjustment of our mortgage values until after World War I did not seem called for. Unlike the per-unit building values, undeflated mortgage recordings between 1858 and 1905 fluctuated around a stationary level. The influences which were working to boost average values of transactions—higher levels of income, higher land values, and use of larger and more expensive buildings—were apparently offset by extension of the facilities of mortgage lending to smaller classes of dealings or to lower-ranking home and farm buyers.

Marriages

Responsibility for tabulation of marriage licenses was centered on probate court judges who were required to make an

CHART E-2

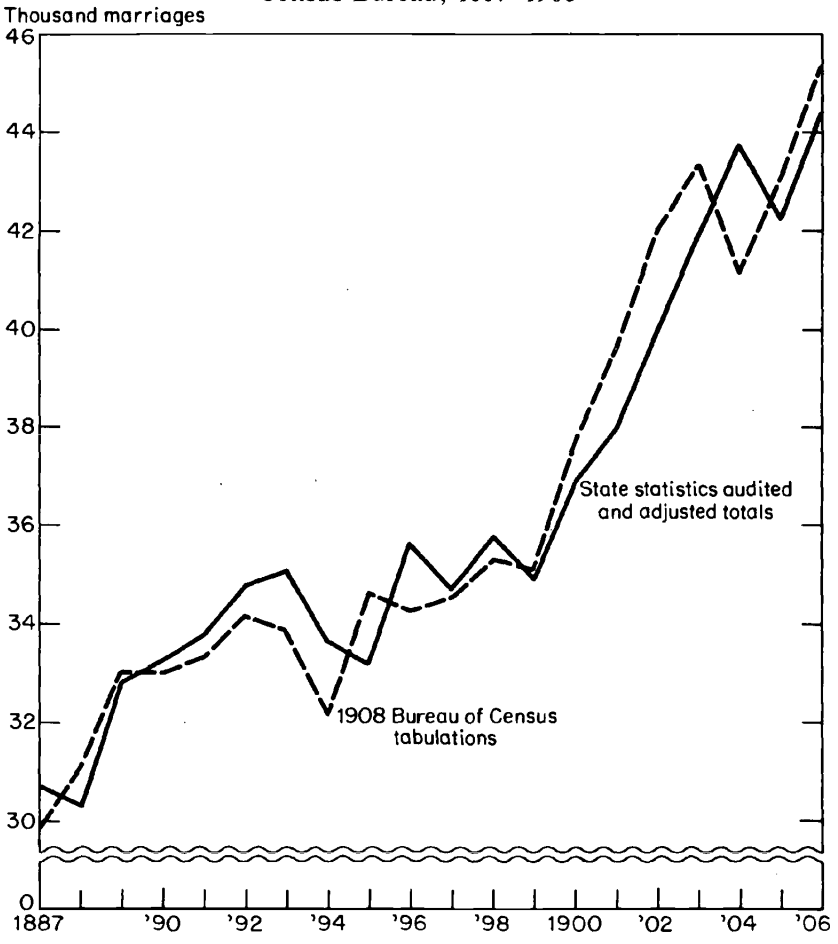
State of Ohio: Per Unit Value of Mortgages (Original and as Modified by Cost of Building Riggleman Index)



annual report on them to the statistics commissioner, along with statistics of wills, births, and divorces. The first three reports merely enumerated "marriages," but the 1861 report distinguished between marriage by license and by banns, the latter accounting through the years for less than 4 per cent of total marriages. Between 1887 and 1906 there is an independent Census enumeration, which, both on a statewide and sample level, approximates closely the magnitudes enumerated in state statistics. Differences in annual returns could grow out of errors of enumeration and divergent fiscal years. The respective totals are shown in Chart E-3.

CHART E-3

Comparison of Ohio Marriages as Compiled by Ohio Officials and Census Bureau, 1887–1906



Adjustments for deficient returns of counties presented few problems. For the entire period there were only fifty-one deficiencies, concentrated in the reporting years 1858, 1868, 1869, 1875. The first fourteen reports were based on a fiscal year ending July 1. Thereafter, reporting dates were March 31. Rather than adjusting returns to a neat calendar-year basis, we preferred to predate the marriage series on substantially the same basis as our residential building chronologies.

Plan of A Bureau

"Plan Of A Bureau" Prepared By the Commissioner of Statistics, February 1858. Report to Governor and Legislature*

1. A commissioner of statistics, and one clerk; the commissioner to be charged with the supervision, arrangement, compilation and report of all the statistics now or hereafter to be obtained; and, for this purpose, all statistics, not necessary to the auditing of public accounts, or to the duties of their respective offices, be transferred from the offices of the Auditor and Secretary of State to that of the Commissioner of Statistics.

2. That the laws relative to the duties of assessors, auditors, clerks, recorders, &c., be amended in these particulars.

1. The ASSESSORS to report, in addition to crops of corn and wheat now obtained, the crops of oats, barley and hay, to be obtained and reported in the same manner as heretofore in regard to corn and wheat. The assessors of cities, towns and villages, in the same manner as they now return carriages, watches and pianos, to ascertain and return the number and kind of manufacturing establishments, the number of hands employed, and the value of the manufactured products.

These duties are all performed in Massachusetts and New York by the township assessors, and very well performed. When it is considered that these officers have to visit every house, and ask numerous questions, it will be seen that no more locomotion, and very little additional trouble is required by the additional questions.

3dly. That the auditors, recorders, clerks of courts, and clerks of towns be required to report to the Bureau of Statistics, any matters of fact to be found in their office, relating to the subjects

* [208, 1858, II, pp. 547–49]. See p. 286 above.

of his inquiry, and to be allowed the usual fees of office, from the county.

4thly. The canal collectors throughout the State be required to report, as far as they can ascertain these facts, the commerce of the ports where they are stationed, with their exports and imports.

5thly. The officers of Railroad Companies be required to make to the Commissioner of Statistics an annual report, at the time he may specify, in reply to the questions he may ask, of the condition, cost, machinery, and business of said road, in the same manner as banks, insurance companies, and other corporations are now by law required to do.

This provision will be all that is necessary to secure what has been much demanded, an official supervision of Railroads, in regard to a large number of which the public has no authentic information. The States of Massachusetts and New York have made very strict regulations, in regard to reports of Railroads, the result of which is, that in those States every material fact, in relation to the cost, safety, and management of Railroads is fully known.

6thly. In relation to births, marriages and deaths, a much simpler and less expensive plan may be adopted, than is now in force. The marriage licenses now issued by the Probate Court, is the nearest approach to accuracy, which has yet been obtained in the U. States. It is defective, however, in one particular, that some small societies, and some individuals choose to publish the *bans* of marriages, as it is termed, before a religious society. The number is small, but a defect may be easily supplied. Let the law require the clergymen to report the number, name, and condition of those whose *bans* they published, and the parties who obtained a *license* furnish the Probate Court with all the particulars which is now required. In this way an accuracy may be had in relation to marriages, not to be obtained any where. In regard to BIRTHS, there seems to be no way to arrive at them, but through the means heretofore employed. But the assessors, physicians, and those who obtain these facts should report them to the Probate Court, there to be embodied. In regard to DEATHS, there is one certain and perfectly accurate mode of obtaining them, and only one mode. This is by the *Interments*. In New York, Boston, Cleveland, and many other places, the deaths are obtained more accurately than any other class of

statistics. All who die must be buried, and when buried in fixed places, the burial is always known. The State has a right to know, for purposes of justice and police, as well as statistics, the burial place of every one who dies. The want of that knowledge has sometimes defeated justice. It is absolutely necessary to prove a marriage or a death to establish just rights. The law should require a *permit* from the Probate office for each burial made, and this should show the age, name, and disease of the party buried. This permit should be recorded in the Probate offices. Thus the entire record of births, marriages, and deaths, will be like mortgages and judgments, recorded in each county. The expensive polls, and printing now required will be done away with, while the statistics will be more perfect and the ends of justice better answered.

In the information I have obtained, much has been got, by my solicitation, of private individuals, who alone possessed the power to give it. This has been particularly the case in relation to coal, iron, and manufactures. Even if perfectly willing to furnish it, the State should be equally willing to offer them some slight compensation. I suggest that the Bureau of Statistics, be allowed a small contingent fund, to be used for such purposes, and accounted for by sufficient vouchers, furnished the Auditor of State.

In the plan of a Bureau of Statistics here suggested, it is quite probable that the saving of labor, in other public offices, and in the statistics of births, marriages, and deaths, will be quite equal to the cost of the Bureau to the State, while the local statistics will cost only a small additional fee paid by the counties for their own local statistics. While the cost on one hand is so small, the value to the State, to each county, and to the whole people will be very great. Bankers, merchants, railroad companies, insurers—have all learned so well the value of this species of knowledge, that they have all paid high to obtain it, while the Government of the U. States, and the enlightened governments of Europe are using all proper means to advance the science, the study and the utility of statistics.