

J. Morgan Kousser

Making Separate Equal: Integration of Black and White School Funds in Kentucky On August 6, 1882, Kentucky voters approved by a 54-46 margin a referendum proposal to increase school property taxes for whites by 10 percent in order to triple state-level educational expenditures for black children. Passage of the measure equalizing state spending, which accounted for about 64 percent of the total amount allocated to public primary and secondary schools in Kentucky in the 1880s, was, according to state school superintendent Joshua Desha Pickett, "the most remarkable fact in the school history of Kentucky."¹

Why did this referendum, an event not directly paralleled in any other southern state, take place? Why did the Kentucky electorate, 84 percent of which was white, pass such a measure? What types of voters favored or opposed it? And how well do the events surrounding the referendum accord with historians' generalizations about postbellum black history? For instance, in his Jefferson lectures on racial equality in America, John Hope Franklin asserted that

. . . the position of freedmen in the postwar South was scarcely better than that of free blacks in the antebellum period. . . . The Reconstruction years were marked by halfhearted, lighthearted, inconclusive steps taken by the state and federal governments to introduce a semblance of racial equality in America. The feeble effort was an abject failure. . . . There were few voices raised anywhere against the far-reaching [post-Reconstruction] program

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¹ Referendum returns from *Frankfort Tri-Weekly Yeoman*, Oct. 12, 1882; school statistics and quotation from *Kentucky Common Schools Report* (Frankfort, Ky., 1884-86), 106-107 (henceforth *KCSR*).

looking to the degradation and humiliation of blacks everywhere. . . . the emancipation of the slaves had no discernible effect on the movement for racial equality.²

Were blacks, at least in Kentucky, as powerless and friendless as Franklin claims? By bringing both impressionistic and quantitative evidence to bear on these factual and historiographical questions, I attempt to illuminate at least one important and previously almost unnoticed corner of the largely murky political and educational history of the border states, as well as to demonstrate the usefulness of a statistical technique—logit analysis—which has so far escaped the attention of social and political historians.³

Since they were never subjected to military Reconstruction and escaped having their antebellum constitutions recast by Republican-dominated constitutional conventions, the Democrats who controlled the border states of Delaware, Kentucky, and Maryland were much freer than their ex-Confederate counterparts to define as they wished the legal status of their former slaves.⁴

Nowhere was this fact more evident than in the halting, ungenerous gestures toward black education in unreconstructed Kentucky. Pressured by the Freedmen's Bureau, the legislature in 1866 dedicated half of the poll and property taxes paid by blacks to black schools, a scheme which raised about 13.5 cents per black child from six to twenty years of age. White expenditures per child were about six times as high. In 1868, however, the legis-

2 Franklin, *Racial Equality in America* (Chicago, 1976), 60–62, 72. In a similarly pessimistic vein, W. Augustus Low, another prominent Afro-American historian, and the former editor of the *Journal of Negro History*, recently asserted that “As in the Deep South, public education for the Negro in Kentucky was virtually nonexistent until after the turn of the century.” See Low, “The Freedman's Bureau in the Border States,” in Richard O. Curry (ed.), *Radicalism, Racism, and Party Realignment: The Border States During Reconstruction* (Baltimore, 1969), 253.

3 Victor B. Howard, “The Struggle for Equal Education in Kentucky, 1866–1884,” *Journal of Negro Education*, XLVI (1977), 305–328, covers some of the same events analyzed here, but is silent on the political struggles involved, includes no statistical analysis, and is misleading on several points.

4 On the border state systems, see *KCSR* (1880–81), 236; Harold B. Hancock, “Reconstruction in Delaware,” in Curry (ed.), *Radicalism*, 207, 214. The system of racially separate taxation and allocation in these states was nationally notorious. See, e.g., John Eaton, Jr. (U.S. Commissioner of Education) to Thomas W. Conway in *Louisiana Schools Report* (1872), 57–58; a report of the National Education Assembly meeting in 1882 in *Cincinnati Commercial*, Aug. 28, 1882.

lature, dominated by a "Bourbon" Democratic faction which openly "scoffed at education for Negroes," declared that all money from black taxes was to go for the support of black paupers. There were apparently no state-supported black schools in Kentucky from 1868 until 1874, when the legislature, anticipating congressional passage of a bill allocating funds from public lands to those states which provided a free education to all children between six and sixteen, revived the separate-tax-and-allocation system for black education.⁵

The 1874 law provided that all state property and license taxes paid by blacks would go to black education. Because the tax on black property would yield such a small sum, the legislature additionally authorized a \$1 poll tax on black, but not white, male adults. Although no funds from white taxes would be spent for black education, the legislature did hold out the promise that some of the expected federal aid might be used to upgrade black schools. Since the federal largesse never materialized, however, the system remained racially inequitable in both taxation and expenditures. In 1876, for example, the state allocated \$1.90 for each white child between the ages of six and twenty, but only thirty cents for each black child between six and sixteen, or nearly nine times as much for whites as blacks if the age bases of the two groups had been equalized.⁶

The split on the separate and unequal system was partisan as well as racial. Blacks and their white Republican allies vociferously denounced the 1874 law, which most white Republican legislators had opposed as unfair to blacks. Black leaders, who had been demanding equal taxation and equal education in con-

5 Hambleton Tapp, "Three Decades of Kentucky Politics, 1870-1900," unpub. Ph.D. diss. (Univ. of Kentucky, 1950), 45-46; Thomas Cavin Venable, "A History of Negro Education in Kentucky," unpub. Ph.D. diss. (George Peabody College for Teachers, 1952), 70-79; Moses Edward Ligon, *A History of Public Education in Kentucky* (Lexington, Ky., 1942), 245-247; Gilbert Thomas Stephenson, *Race Distinctions in American Law* (New York, 1969; orig. pub. 1910), 196-199. For the effect of proposed federal aid law, see *KCSR* (1879), 196.

6 For provisions of the law, see *Louisville Commercial*, Dec. 12, 1881; for statistics, *KCSR* (1884-86), 146-147; for expectation of federal aid, *KCSR* (1879), 89-99. For vehement Republican opposition to the bill and a Republican attempt in the 1873-74 legislative session to enact equal funding for black and white schools, see *Kentucky Senate Journal* (1873-74), 325-326, 396-398, 457, 478-484, 769; *Kentucky House Journal* (1873-74), 756-763; speech of GOP Attorney-General nominee William Cassius Goodloe, *Louisville Commercial*, July 30, 1875.

ventions since at least 1869, pressured the 1875 GOP state convention to commit itself to equal funding. "As a matter of justice, no less than of wise statesmanship," the Republican party's platform declared in its first plank on state issues, "we hold that the provision now made for the education of colored children should be increased until they are afforded, in their separate schools, facilities of obtaining instruction in every respect equal to those provided for white education." While the 1875 Democratic platform was silent on this, as on all other state issues, James B. McCreary, the party's candidate for governor, harshly denounced the Republican proposal. The Democratic state superintendent of schools patronizingly dismissed black protests as a mere reflection of a "captious disposition to find fault with everything that is done for them." And the state's leading "New Departure" Democratic organ urged blacks to show their thanks for finally receiving at least some school money by voting Democratic; otherwise, the paternalistic and comparatively moderate *Courier-Journal* counseled, the Negroes would prove themselves "a race of pig-headed irreconcilables."⁷

Petitions, speeches, and conventions having left the 1874 law unscathed, the blacks turned to the courts. On November 25, 1881, a white Paducah attorney, Emmet W. Bagby, a former Republican congressional candidate who was chairman of the county GOP committee and a member of the party's state committee, argued the case of *Kentucky v. Jesse Ellis* in the federal

7 On the 1869 and 1875 black conventions, see "Kentucky State Colored Educational Convention Held at Benson's Theater, Louisville, Kentucky, July 14, 1869" (undated pamphlet in Library of Congress), 17; *Lexington American Citizen*, Nov. 13, 1875; *Louisville Commercial*, Nov. 12, 1875. The GOP platform and typical speeches supporting it by Republican gubernatorial candidate John Marshall Harlan are in *Louisville Commercial*, May 14, June 19, July 13, 1875. The Feb. 8, 1882 *Commercial* estimated that one-third of Kentucky Republicans were black, which probably overstated the number of white Republicans, for obvious reasons. Although the 1871 Republican platform contained no such explicit provision, it did denounce the Democrats for failing to make "adequate provision" for black schools and several GOP candidates endorsed complete equalization during that campaign. *Ibid.*, July 22, 27, Aug. 2, 4, 1871. Democratic gubernatorial candidate (1871) P. H. Leslie, by contrast, opposed "dividing the school fund with the nigger," and called for repeal of the Thirteenth, Fourteenth, and Fifteenth Amendments, and the Democracy's candidate for state school superintendent, H. A. M. Henderson, favored abandoning the public schools entirely if the only alternative was dividing the white fund. *Ibid.*, June 3, 30, 1871. For McCreary's denunciation and the newspaper statement, see *Louisville Courier-Journal*, July 28, 30, 1875. For the superintendent's attitude, see *KCSR* (1874), 29; (1875), 107; (1876), 21; quotation from 1875 report.

circuit court. In his brief Bagby challenged the state's right to collect a poll tax for support of black schools from Ellis, a black man, when it did not impose such a tax on whites. More broadly, Bagby averred that the entire system of Kentucky schools supported by racially separate taxes was contrary to the equal protection clause of the Fourteenth Amendment and the more express provisions of the federal civil rights act, and was therefore wholly unconstitutional.⁸

While the *Ellis* case was pending in federal court, Republicans in the 1881–82 session of the state legislature decided to force the issue more directly. On January 7, 1882, Republican House leader James Breathitt introduced a bill to merge the two school funds and to equalize the taxes, school terms, and eligible age-groups of whites and blacks immediately, and to submit the question of raising school property taxes by 10 mills, which would have amounted to a 50 percent rise for whites, to a referendum at the time of the August 1882 state elections.⁹ The crucial roll call came on April 10, when by a 37–29 margin, the House voted to postpone the Breathitt bill until after the legislature's scheduled adjournment date. The Republican *Louisville Commercial* exploded in wrath:

The conspiracy at Frankfort to defy the Constitution of the United States and precipitate a civil war has not yet been destroyed. Thanks to the density and extent of Bourbon ignorance and its perpetuation in the Legislature, Kentucky is the only State in the Union which has not accepted the war amendments to the Federal constitution.

8 On black and Republican activities in favor of equalization between 1875 and 1881, see Tapp, "Kentucky Politics," 144, 180, 228. Unreported by the West Publishing Company, the *Ellis* case has rarely been noticed before. The *Louisville Commercial*, Dec. 12, 1881 published Bagby's federal court brief in full. On Bagby, see *Paducah Daily News*, Feb. 25, March 18, May 13, 1882; *Frankfort Weekly Yeoman*, Nov. 19, 1878, May 29, 1883; *Louisville Commercial*, Aug. 11, 1882, March 2, 1883. Section 1977 of the U.S. Revised Statutes then in effect expressly prohibited racially unequal taxation. (The U.S. Supreme Court's decision in *The Civil Rights Cases*, 109 U.S. 3, which declared much of the 1875 Civil Rights Act unconstitutional, was not issued until 1883.)

9 Several black Republican conventions had demanded the introduction of such a bill in the 1881–82 legislature. See, e.g., *Louisville Commercial*, May 14, 1881. On Breathitt, see William Elsey Connelley and E. Merton Coulter, *History of Kentucky* (Chicago, 1922), IV, 102–113; *Louisville Commercial*, Dec. 7, 1881, March 24, 1882. For the introduction, provisions, and actions on his bill, see *Louisville Commercial*, Jan. 9, Feb. 14, March 2, 17, April 11, June 9, 1882; *Louisville Courier-Journal*, March 29, April 1, 12, 1882; *Kentucky Senate Journal* (1881–82), 798.

. . . When these antediluvian unteachables placed themselves at Frankfort in the attitude of implacable hostility to the great cause of equal education, and with barbaric obtuseness refused to recognize the harmonizing and liberalizing and elevating influences of the age which give glory to our common country, they committed the one signal crime that was needed to kill and damn them politically.¹⁰

But the *Commercial* underrated the talent of the Democracy (the Democratic party) for survival, just as the Democrats had forgotten the blacks' ability to gain in court what they could not otherwise win in the legislature. For on the same day that it noted the postponement of the Breathitt bill in Frankfort, the *Commercial* reported Judge John Baxter's decision in favor of Ellis in Paducah. The Fourteenth Amendment, Baxter averred, meant that ". . . any fund created by the state for educational purposes must be equally and uniformly distributed among both classes, and neither in the raising of the fund by taxation, nor in the distribution of it, must there be any inequality or any discrimination on account of race or color." Although he ordered no immediate remedy, Baxter referred to his earlier decision in *U.S. v. Buntin*, in which he had ruled that unless black schools in Ohio were "equal [to white schools] in the benefits provided," the segregated school system would have to be dismantled.¹¹

The decisions in *Ellis* and *Buntin* and the threat by Paducah blacks to go back to court to seek an appropriate remedy presented the Democrats in the legislature with three alternatives: equalize,

¹⁰ *Louisville Commercial*, April 12, 13, 1882. Similarly, though not so vituperatively, see *Louisville Bulletin* (black) and *Indianapolis Journal*, quoted in *Louisville Commercial*, April 15, 1882; *Cleveland Leader* (black), quoted in *Louisville Courier-Journal*, March 10, 1882; *New York Tribune*, quoted in *Louisville Courier-Journal*, April 18, 1882, and accompanying editorial in *Louisville Courier-Journal*, same date.

¹¹ Bagby had not asked for any specific remedy. See *Paducah Daily News*, Feb. 29, 1882. Although the *Ellis* case was apparently decided on April 4, the news seems to have taken a week to travel from Paducah to Louisville, and one day longer to get to Frankfort. *U.S. v. Buntin*, 10 Fed. Rep. 730. The quotations in the *Buntin* and *Ellis* cases were taken from *Louisville Commercial*, April 11, 1882. For an incisive gloss on the two cases, see *Owensboro Messenger*, June 9, 1882. For threats to return to court by attorney Bagby and a mass meeting of Paducah blacks, see *Louisville Commercial*, April 11, 18, 20, 1882. For a recognition of the dilemma posed by *Ellis* by J. A. Munday, a Democratic state senator, see *Owensboro Messenger*, May 2, 1882.

integrate, or close the schools.¹² Although some Democrats and all but one Republican favored a simple bill equalizing the funds per child and raising the school property tax rate sufficiently to prevent a decline in the current level of white expenditures, many Democratic members still opposed any white support for black schools. To prevent a serious Democratic split, House Speaker William C. Owens and his chief lieutenant Clarence U. McElroy proposed a clever compromise. Their bill equalized the funds and raised taxes, but would go into effect only if a majority of the voters approved at the August election. So-called "young Democrats" could therefore appeal to blacks and nonracist whites by pointing to their votes for equalization; "Bourbons" could satisfy themselves that the voters would disapprove the measure; all could shift the burden of raising taxes to their constituents; and if the measure failed and closure, integration, or chaos followed, then it would be the voters, and not the legislators, who would be to blame.¹³

On April 21, the House considered the McElroy-Owens bill and several amendments. It defeated by 33-51 and 37-48 margins amendments by Breathitt and Democrat James H. Mulligan, who sought to equalize the funds without a referendum and raise the white tax rate by 3 mills and 2 mills, respectively. Then the body voted 48-30 against a compromise by Democratic Representative

12 For Democratic fears of the effect of *Ellis*, see *Louisville Courier-Journal*, April 14, 1882. "It may be well enough," Bagby contended in the April 18 *Commercial*, which was widely read by Democrats in the legislature, "to let the Democratic party in Kentucky know, right here, that the petty, vexing tyranny of such legislation will not be longer tolerated in this State. If the school fund for the education of the common school children of the State is not equalized by this Legislature, then the proper officers whose duty it is to collect and distribute the fund will be forced, by legal process, to distribute it, pro rata, among all the pupil children of the Commonwealth. There will be a meeting of leading colored citizens in this city [Paducah] within a few days, who will take into consideration the measures necessary to secure this result."

13 On Owens, see Tapp, "Kentucky Politics," 409-410; H. Levin (ed.), *The Lawyers and Lawmakers of Kentucky* (Chicago, 1897), 572-574. On McElroy and the authorship of the bill, see *Louisville Courier-Journal*, June 9, 1882; *Louisville Post*, May 4, 1882. All these positions, except the "Bourbon," were enunciated at a Democratic caucus meeting, which was reported fully in the *Louisville Commercial* and *Louisville Courier-Journal*, April 21, 1882. Most "Bourbons" stalked out of the caucus, but some of these opponents of equalization voted for McElroy-Owens in the House the next day. For more information on the various positions, see *Louisville Courier-Journal*, April 12, 22, June 4, July 28, Aug. 2, 1882; *Louisville Commercial*, May 25, 1882.

A. W. Moremen which would have integrated the funds at once, but allowed a referendum on a 2.5-mill tax hike. Finally, the House passed the leadership's measure unamended, 64-18. The Senate on April 22 voted down an amendment providing for a 2-mill increase and immediate equalization by a 16-12 count, and then passed the House bill, 26-2.¹⁴

Rather than try to categorize the legislators by employing a sophisticated scaling procedure, I have divided the House members into four groups on simple commonsensical grounds. Because the eight representatives who voted for the Breathitt bill, but against the McElroy-Owens referendum proposal, seem to have been so outraged at any delay in equalizing the funds that they were willing to kill the one measure which had a chance to pass, I have denominated them "radicals." Next come thirty "liberal" House members who favored both McElroy-Owens and at least one of the substitutes offered by Mulligan, Moremen, and Breathitt. All but three of these men voted for the Breathitt amendment. Thirty-seven "regular" Democrats, one Greenbacker, and one GOP member opposed all the substitutes, but voted for McElroy-Owens. Finally, the eight Democrats and two Greenbackers who opposed any change, despite the danger that the federal court would force integration or suspension of the school system, were so unwilling to budge that they deserve the "Bourbon" appellation.¹⁵

It may well be that the roll calls do not perfectly mirror the complex structure of attitudes on issues related to equalization. Since the "radicals" joined the "Bourbons" in voting against McElroy-Owens, it is clear that the votes do not fall into a simple unidimensional Guttman scale. It appears that the votes tapped at least three dimensions: attitudes toward parties, toward tax increases, and toward equalization. Thus, some quite racist Democrats no doubt favored McElroy-Owens only because the leadership convinced them that the measure was necessary for the party's welfare, that since the court was going to order equalization anyway, the Democracy might as well take credit for it.

¹⁴ *Kentucky House Journal* (1881-82), 1578-1582; *Kentucky Senate Journal* (1881-82), 1170-1176.

¹⁵ The party designations of the legislators were given in *Louisville Commercial*, Nov. 7, 1881.

And other Democrats acted as if they had a preferred level ("bliss point") of tax increases. Whereas Breathitt and the Republicans felt it a propitious time for hiking taxes by 50 percent, some Democrats would have tolerated a 10 percent, but not a 15 percent increase. Unfortunately, there were too few roll calls to allow us to distinguish these attitudes mathematically through some multidimensional scaling or cohesion procedure, and the compromise McElroy-Owens bill conflated several dimensions—precisely as it was meant to do. Anytime that there is competent leadership in a legislature there will be logrolling which will result in the passage of legislation, but will impede an analyst who mechanically applies scaling algorithms without really knowing how the key legislators have shaped the agenda.¹⁶

Party and racial attitude explain many of the legislators' votes. Table 1 shows that all but one of the House Republicans fell into the liberal or radical categories, whereas Democrats and Greenbackers were much more likely to cluster toward the "Bourbon" end of the scale. If party loyalty and the attitudes which caused them to join the GOP in the first place account for the Republicans' behavior, what explains that of the Democrats? Table 2 cross-classifies groupings among the Democrats on the equalization issue with a February 3 House vote on a bill to

Table 1 Party and Groupings on Equalization Bills

GROUP	PARTY		
	DEMOCRAT	REPUBLICAN	GREENBACK
Bourbons	8	0	2
Regulars	37	1	1
Liberals	15	15	0
Radicals	4	4	0
Abstained or Insufficient votes	10	2	1
	Chi-Square = 36.58 (P < .001)		

¹⁶ Advice to Democrats to bow gracefully to the inevitable is given in, e.g. the *Paducah News*, quoted in *Owensboro Messenger*, Aug. 4, 1882, as well as in papers cited in note 13, above. On preferred levels of tax increases, see *Louisville Courier-Journal*, April 12, 23, 1882. The role of legislative leaders was perhaps particularly crucial in Kentucky, where, as Tapp, "Kentucky Politics," 474, notes, "the inefficiency of the state's lawmakers was notorious."

Table 2 Groupings on Equalization and Votes on Whipping Post Bill (Democrats Only)

GROUP ON EQUALIZATION	WHIPPING POST BILL		
	FOR	AGAINST	ABSTAIN
Bourbons	7	0	1
Regulars	23	5	9
Liberals	4	10	1
Radicals	1	3	0
Abstain	3	4	2

Chi-Square = 24.28 (P < .001)

reestablish the whipping post for petty theft, a vote which apparently reflected racial attitudes quite closely. The table shows that a hefty majority of those who favored a return to the antebellum method of punishing blacks opposed equalization, and vice-versa. All but one Republican who was recorded on the whipping-post issue opposed its reestablishment, whereas the four Greenbackers split evenly.¹⁷

But if the Democrats' vote on the equalization issue appears largely to have reflected the racial beliefs of the legislators and their constituencies, what explains variations in those racial attitudes across constituencies? One approach to such a question would be to subdivide the constituencies into various groups on the basis of their scores on certain socioeconomic or political indices and to look at the resultant bivariate cross-classification tables. For instance, one might separate rural from urban legislators and see whether those from each demographic group tended to fall into different attitude groups. Then one could repeat the process for other demographic classifications.

¹⁷ It is unclear what interest the Greenbackers had in "Bourbon" policies, but that party's greatest strength was in the extreme western end of the state, which had been the chief hotbed of Confederate sentiment during the War. All four Greenbacker legislators came from this area. Perhaps racist sentiments were stronger there, although the proportion of blacks in that section was lower than in the bluegrass area. Or perhaps western Kentucky had gone with the Confederacy because it had had fewer economic ties with the North and more with the South than other areas in the state, and residual antipathy to the party of the Union pushed them into Bourbonism. For the division in wartime sentiments, see Ross A. Webb, "Kentucky: 'Pariah Among the Elect'," in Curry, *Radicalism*, 109. The best source on the Kentucky Greenbackers, Edward F. Prichard's "Popular Political Movements in Kentucky, 1875-1900," unpub. senior thesis (Princeton University, 1935) has nothing to say on the party's racial attitudes. On the racist nature of arguments for the whipping post bill, see *Richmond Kentucky Register*, Dec. 16, 1882, in which that Democratic paper stated that "the petty thieves of the State are nearly all [N]egroes. . . ."

There are three problems with this method. First, it is difficult to detect spurious correlations or interactions between two or more independent variables in cross-tabulation tables. For instance, those legislators who came from heavily black rural areas might be more conservative in their racial views than all legislators from counties with high percentages of blacks or all rural solons. In a particular case, it might be that the apparent correlation between urbanism and racism dissolved when one controlled for the proportion of blacks in each area. Second, the analyst often knows not only that one county was more urban, say, than another, but also how much more urban it was. Such "interval level" information is lost if one simply divides the legislators into groups. Third, simple methods of cross-classification, such as analysis of variance, are based on a linear model, but the relationships of interest may not be linear. For instance, a Democratic legislator from a wholly white county might be as willing to ignore black voters as one from a county which was 20 percent black; a representative from a 50 percent black county would imperil his career much more by writing off the black vote than one from a county in which blacks made up 30 percent of the electorate.

These problems can be remedied by employing logit analysis, one of a group of advanced techniques which have recently been applied to the investigation of multivariate contingency tables.¹⁸ The logit model is based on the so-called "odds ratio." If the odds are six to five that a certain horse will win a race, then the probability that he will prevail, according to the touts, is six-elevenths, or about 54.5 percent. If we let p stand for the probability of winning, or choosing a certain alternative, or falling into a certain group, then the ratio can be expressed as:

$$(1) \text{ Odds ratio} = \frac{p}{1 - p} .$$

18 Yvonne M. M. Bishop, Stephen E. Fienberg, and Paul W. Holland, *Discrete Multivariate Analysis: Theory and Practice* (Cambridge, Mass., 1975); David K. Hildebrand, James D. Laing, and Howard Rosenthal, *Prediction Analysis of Cross Classifications* (New York, 1977). In addition, logit can be used to describe relationships between interval-level variables, or between sets of variables which are nominal, ordinal, and interval. There is currently no good expository introduction to logit, but see Takeshi Ameniya, "Qualitative Response Models," *Annals of Economic and Social Measurement*, IV (1975), 363-372; Henri Theil, *Principles of Econometrics* (New York, 1971), 628-635; G. S. Maddala, *Econometrics* (New York, 1977), 162-181.

The actual logit equation, the parameters of which must be estimated by an iterative computer algorithm unless all the variables are measured at nominal or ordinal levels, is:

$$(2) \ln(p/(1 - p)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + U,$$

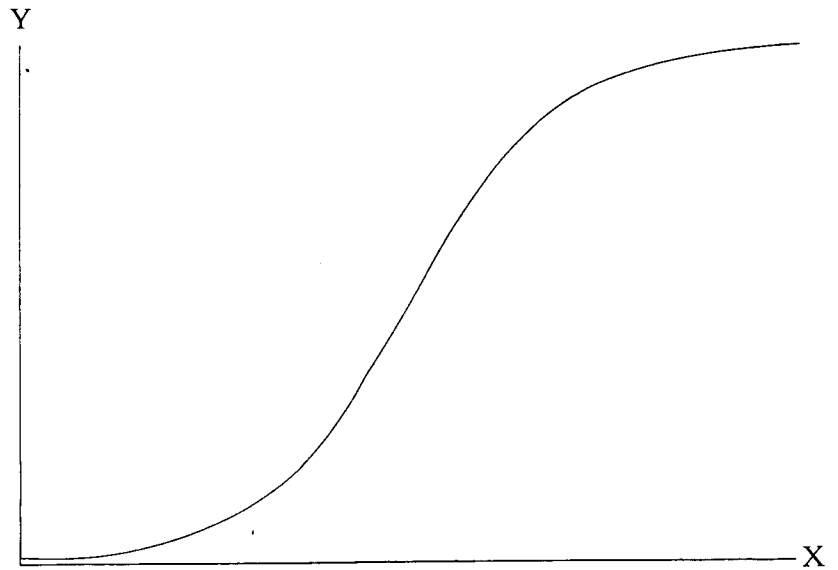
where \ln indicates that it is the natural logarithm of the odds ratio which is actually estimated, the betas are parameters, the X s are independent variables, and the U is the error term. After estimating the parameters, one may compute the probabilities for various levels of the independent variables.

Since the dependent variable is related to the independent variable in a nonlinear rather than a linear fashion, the estimated probabilities will not be the same at different levels of the independent variables. In the more familiar linear regression equation, the dependent variable is assumed to change by the same amount for a given change in an independent variable, whether the latter changes from, say, zero to ten or from ninety to one hundred on some scale. In the logit equation, the relationship is sigmoid or S-shaped, rather than linear, and the probabilities which can be derived from the parameter estimates will vary, depending on choices about the levels of the independent variables (see Fig. 1). Because the parameters in a logit equation have no simple interpretation, the estimates will be reported here as probabilities, but the reader should be aware that there is art as well as science involved in the choice of levels of the independent variables at which the probabilities are computed. In tables 3–5, for instance, I report the probabilities of falling into each legislative group contingent on setting the independent variables to their statewide means as well as to points a standard deviation above and below their means. Although I picked these points to show changes in the probabilities over a wide range of levels of the independent variables, the particular levels themselves are arbitrary, and the probabilities reported in the tables would differ somewhat if other points had been selected.¹⁹

To show how such probabilities are arrived at in the logit procedure, consider the case of estimating the probability of voting “yes” for a legislator from an average county in an either/or

19 For reasons of space the logit coefficients, which, unlike regression coefficients, have no simple interpretation, will not be printed here, but are available, along with their standard errors, from the author.

Fig. 1 An S-shaped Logit Curve



vote with abstainers excluded. After exponentiating both sides and performing some algebraic manipulations, the logit equation becomes:

$$(3) \quad p(\text{yes}) = \exp(\beta' \bar{X}) / (1 + \exp(\beta' \bar{X})),$$

where \exp is the natural exponential function, β' a transposed vector of parameters (previously estimated by computer), and \bar{X} a vector of the means of the independent variables. To compute probabilities at other levels of the independent variables merely requires plugging different values of the X s into equation (3). Formulas for a larger number of alternatives and different combinations of variables are messier, but once the betas have been estimated by computer, the corresponding probabilities can be determined with a hand calculator which has slide-rule functions.

The logit technique enables us to ask some interesting questions about the behavior of the sixty-seven Democratic and Greenbacker House members who were recorded on enough roll calls to place them in one of the four groups. (Since all but one of the Republicans fell into the liberal or radical groups, they will be excluded from this part of the analysis.) To what degree did their votes in April represent the feelings of their constituents in

the August 1882 referendum? How did the party balance in the legislators' counties affect the representatives' votes on equalization? Were those from overwhelmingly Democratic areas more or less likely to favor it? And how much influence did different characteristics of their counties' socioeconomic makeup have on the legislators' actions? Were legislators from relatively heavily black counties more or less likely to take a liberal or radical position than those from virtually all-white counties? How did the variables interact with each other?

Since the number of independent variables on which data are available is large, the number of different equations which could be estimated, if all possible interactions between and combinations of variables were considered, is even larger. I shall concentrate on the equations of the greatest substantive importance. Table 3 contains logit estimates of the probability that a Democratic or Greenbacker legislator would fall into each of the three indicated groups if his county had voted a certain way in the 1880 presidential election. For instance, in a hypothetical county where 56.5 percent of the voters backed the Democrats, 8.5 percent the Greenbackers, 34.8 percent the GOP, and 0.2 percent abstained, about 12 percent of the Democratic and Greenbacker legislators were likely to be radicals or liberals, about 71 percent probably supported only McElroy-Owens, and one in six opposed all change.²⁰

The modal category in all but the last row is the "regular" column—most Democrats followed their leaders. Legislators from heavily Democratic counties (who appear in the first four rows), where racism was presumably more prevalent than elsewhere, were disproportionately likely to be Bourbons, whereas those who came from counties where only a third of the electorate was solid for the party of the Confederacy were more likely to be liberals or radicals than Bourbons. Variations in support for the Greenback presidential candidate in 1880 had a very small

²⁰ Since only four Democrats fell into the radical category, I have consolidated it with the liberal category here to decrease the errors in estimation. I use the words "probabilities" and "percentages" interchangeably to apply to the transformed logit estimates, since if the probability that a person living in a county would vote a certain way is, say, 12%, then 12% of the people in the county would, on average, be expected to vote that way. The means of the party percentages for the counties from which the legislators came are given in the fifth row of Table 3.

Table 3 Logit Estimates of Relationship between County Votes in 1880 Presidential Election and Legislative Groupings on Equalization in 1882 Legislature

COUNTY VOTE IN 1880 ELECTION				PREDICTED PERCENTAGE OF LEGISLATORS IN GROUP		
DEM.	GRBK.	REPUB.	ABSTAIN	RAD.-LIB.	REG.	BOURBON
.565	.085	.348	.002	.122	.712	.166
.565	.085	.172	.178	.187	.578	.235
.565	-0-	.348	.087	.154	.682	.164
.565	-0-	.172	.263	.231	.543	.226
.444 ^a	.031	.260	.265	.270	.583	.147
.323	.085	.348	.244	.288	.617	.095
.323	-0-	.348	.329	.347	.565	.088
.323	.085	.172	.420	.411	.466	.123
.323	-0-	.172	.505	.478	.410	.112
Actual percent in each group284	.567	.149
Percent of legislators correctly placed in groups =				.627		

a Means of all independent variables are in this row.

effect on the likelihood that the county would produce a Bourbon, but a decline in the proportion of votes that the Greenbackers received was associated with a rise in the proportion of legislators in the leftward groups.

The table's most fascinating relationship is between Republican strength and Democratic legislative behavior. Increases in the Republican presidential vote were correlated with declines in both Bourbonism and liberalism (compare, for instance, rows one and two, or six and eight). Apparently a relatively strong GOP corralled the Democrats into party regularity; whereas a weak one left them free to follow their personal or constituency predilections instead of staying with the herd. Although one should not stress these conclusions too much, since they are based on coefficients with rather large standard errors and equations which misclassify many legislators, it would be interesting to see whether the same pattern of party loyalty and opposition strength held in other states and for other issues.

As Table 4 shows, the legislators appear to have reflected constituency sentiment fairly closely. Counties which recorded a high level of opposition to the equalization proposal in the August referendum produced many fewer racial liberals in the legislature

Table 4 Logit Estimates of Relationship between County Votes in August, 1882 Referendum on Equalization and Legislative Groupings on Equalization in 1882

VOTE IN REFERENDUM			PREDICTED PERCENT OF LEGISLATURE			
FOR	AGAINST	ABSTAIN	RAD.	LIB.	REG.	BOURBON
.430	.131	.439	.021	.348	.514	.117
.430	.377	.193	.026	.037	.844	.093
.315 ^a	.254	.431	.064	.175	.614	.147
.200	.131	.669	.150	.495	.269	.086
.200	.377	.423	.052	.074	.619	.255

Percent of legislators correctly placed in groups = .621

a Means of all independent variables are in this row.

than those in which opposition was muted in August. Those who came from counties where sentiment both for and against equalization was high in August overwhelmingly supported the McElroy-Owens compromise bill. Most striking are the last two rows. Representatives of areas where neither supporters nor opponents of equalization polled a large vote were more likely to be liberals or radicals than those from counties with any other mix of sentiments, whereas those from counties where support was tepid and opposition strong were markedly more likely to be Bourbons. Perhaps where their constituents lacked deep feelings on the issue, legislators could avoid the posturing of the Democratic high command and vote for the outcome which the *Ellis* case had made inevitable. Those from unreconstructed counties had little choice but to try symbolically to save the old regime.²¹

The three most important demographic correlates of support for the liberal and radical positions, shown in Table 5, were the urban and Negro percentages of each county's population, and the value of white property per white male adult (a proxy for wealth per white family).²² Urban legislators were more cos-

21 The northwest-southeast trend of Table 4 would be much more pronounced if I could have included legislative Republicans. Since only one Republican fell into the regular or Bourbon categories, however, those cell entries were nearly empty, and the computer algorithm would not converge to give a solution to the equation which included legislators from that party.

22 The legislative groupings have been collapsed into two categories (liberal-radical and regular-Bourbon) here in order to improve the reliability of the logit coefficients.

Table 5 Logit Estimates of Relationship between Socioeconomic Variables and Legislative Groupings on Equalization^a

SOCIOECONOMIC INDICATORS ^b							PREDICTED
PERCENT BLACK	PERCENT CATHOLIC	PERCENT URBAN	PERCENT UNION DEMOCRATIC	BLACK SPENDING INCREASE	WHITE TAX INCREASE	WHITE WEALTH	PERCENT LIBERAL- RADICAL
.152 ^c	.089	.161	-.179	1.245	.517	1322.44	.228
.035				1.850			.333
.269				1.850			.106
.035				.640			.427
.269				.640			.179
.035	.279						.299
.035	-0-						.321
.269	.279						.111
.269	-0-						.122
		.457				2212.56	.378
		.457				432.32	.109
		-0-				2212.56	.092
		-0-				432.32	.020
.035		.457					.636
.269		.457					.339
.269		-0-					.225
.035		-0-					.079
.035						2212.56	.549
.035						432.32	.198
.269						2212.56	.263
.269						432.32	.067

Percent of legislators correctly placed in groups = .806

a *Percent Black* is the percentage of registered voters in 1882 who were black. Since registrars were paid to register voters, this was virtually the same as the percentage of adult males who were black.

Percent Catholic is the percentage of total church property owned by the Roman Catholic Church. No church membership figures exist for this period to my knowledge.

Percent Urban is the percentage in towns and cities over 4,000, taken from the 1880 U.S. Census of population.

Percent Union Democratic is an estimate of the percentage of former Unionists (as opposed to Confederates) who normally voted Democratic. It was formed by subtracting the Republican vote in the 1879 Governor's race from the percentage for the independent (former Unionist) Jacob in the 1882 Court of Appeals race.

Black spending increase is the increase in spending for black schools in each county from 1882 to 1883 divided by the number of white male adults.

White tax increase is the increase in white property taxes from 1882 to 1883 divided by the number of white male adults.

White wealth is the value of white property in 1882 divided by the number of white male adults. All variables except the *Percent Urban* and *Percent Union Democratic* come from the report of the state auditor for 1883.

b To decrease the complexity of the table, blanks have been left instead of inserting the means of the variables being held constant in each row. In the second row, for instance, the value of the *Percent Black* is at .035 (a standard deviation below its mean), the *Percent Catholic* is at its mean (.089), the *Percent Urban* is at its mean (.161), etc.

c Means of all independent variables are in this row.

mopolitan and perhaps less racially sensitive than their counterparts from the hills and hollows. Such Democratic urban newspapers as the *Louisville Courier-Journal* and *Post*, the *Paducah Daily News*, and the official state Democratic organ, the *Frankfort Yeoman*, were staunch supporters of equalization, at least after the *Ellis* decision.²³ City leaders must have realized also that their bailiwicks were prime targets for equalization suits if the legislature delayed, for the eleven urban areas contained about a third of the state's black children, and lawyers for the blacks would probably have sought to end discrimination first where equality would have benefited the greatest number.²⁴

Other things being equal, Democratic legislators from relatively heavily black counties were about 22 percent less likely to favor immediate equalization than those from counties which contained few blacks. The repeatedly documented positive relation between the strength of white racism and the threat to whites posed by large proportions of blacks accounts for this finding.²⁵ Furthermore, white wealth per white male adult correlated positively with support for instant merging of the school funds. The higher the white property value per family in his county, the more likely a Democratic or Greenbacker legislator was to vote for equalization, particularly if his county were urban and had relatively few blacks. Apparently poor rural Democratic counties were hotbeds of racism, although poor rural Republican counties sent to the legislature representatives who staunchly supported

23 Henry Watterson, the *Courier-Journal* editor, had been courting the black vote in Kentucky and the nation for years, and fervently wished to dispel the southern Democrats' reactionary social image at a time when the "newer departure" Democracy seemed to be attracting black support. On the "newer departure," see Lawrence Grossman, *The Democratic Party and the Negro: Northern and National Politics, 1868-92* (Urbana, 1976). For editorials supporting equalization, see *Louisville Courier-Journal*, Jan. 12, Feb. 17, April 12, July 28, Aug. 2, 1882; *Louisville Post*, Aug. 5, 1882; *Paducah Daily News*, June 20, 22, 1882; *Richmond Kentucky Weekly Register*, July 28, 1882; *Frankfort Daily Yeoman*, April 19, July 29, 1882. Thirty-nine percent of the black children in the state in 1882 lived in the eleven counties containing towns of over 4,000 population.

24 Black teachers in Louisville, the state's only large city, had long agitated for equal pay, and received it after *Ellis* but before the August referendum. See *Louisville Commercial*, May 3, 1881. The threat by Henry Fitzbutler, a Louisville black leader, to file a suit to force that city to equalize its schools may well have forced the city school board's hand. *Ibid.*, June 14, 1882.

25 Hubert M. Blalock, *Toward a Theory of Minority Group Relations* (New York, 1970), 143-189.

black equality. It is impossible to resolve this contradiction with the data at hand, but the question deserves further study.²⁶

None of the other variables had large effects on the Democratic or Greenbacker legislators' propensity to favor equalization without a referendum. First, I hypothesized that legislators from more heavily Catholic areas would oppose equalization, since it meant higher taxes for public schools, and many Catholics sent their children to parochial schools in Kentucky. Second, since there was considerable discussion in the newspapers about a split in the Democratic party between ex-Unionists and ex-Confederates, and since ex-Unionists were presumably less racist than followers of the gray, I guessed that legislators from counties where the "independent" candidate of the Unionist faction, Richard T. Jacob, ran strongest in the 1882 race for Clerk of the Court of Appeals would be more favorable to black equality. Third, I thought that the prospect of more funds coming into a county because of the increased level of state support for black education might attract votes in the counties which had large numbers of black children, at least when one controlled for white racial attitudes by including the percentage black in the equation. Largely white counties, in contrast, had little to gain in revenue from the legal change. Fourth, since the money was to be raised through a uniform statewide property tax, but distributed on a per capita basis, I surmised that counties which faced a relatively large per capita tax increase would be less likely to favor equalization than those with comparatively little property to be taxed. The logit analysis of legislative groupings and county characteristics lends little support to any of these four hypotheses.

If the results of the analysis of legislature's actions are clouded by the ability of such a body to compromise, the referendum called by the McElroy-Owens Act presented the voters with a clearer alternative—whether to merge the funds and raise the white tax rate to keep the white expenditure per child at approximately the current rate, or refuse any change. As indicated in Table 6, which is based on ordinary least-squares (OLS) multiple

26 The sign of the wealth variable may appear contradictory to the voters' economic self-interest, since the rich would be taxed more in the event of equalization. But note that the effect of such a change is controlled for by the "white tax increase" variable. The wealth variable therefore is purely a measure of racial attitudes in counties with different mean levels of wealth.

Table 6 Unweighted OLS Estimates of Relationships between Votes in 1879 Gubernatorial, 1880 Presidential, and 1882 Court of Appeals Races and Votes in 1882 Referendum

1879 GOVERNOR	1882 REFERENDUM		
	FOR	AGAINST	ABSTAIN
Democrat	36	41	23
Republican	53	16	31
Abstain	12	29	59
1880 PRESIDENT	1882 REFERENDUM		
	FOR	AGAINST	ABSTAIN
Democrat	34	37	28
Republican	52	15	32
Greenback	17	64	19
Abstain	3	32	65
1882 APPEALS COURT	1882 REFERENDUM		
	FOR	AGAINST	ABSTAIN
Democrat	53	35	12
Independent	48	19	40
Abstain	10	32	58

regressions of the percentage of adult males in each county who chose different alternatives in the referendum, most Republican and Greenbacker voters cast their ballots as their legislators had, and the Democrats split, a majority of their 1879 and 1880 partisans opposing the reform, while a majority of those who voted for the Democratic candidate for Clerk of the Courts of Appeals supported the measure.

Since Kentucky, unlike most other southern states, had several large cities, the equations which form the basis of Table 6 may give misleading results. The OLS results may be distorted, in other words, by heteroskedasticity (unequal variance) in the error term. Population disparities between counties are taken into account in Table 7, which is based on the technique of generalized least-squares (GLS). The results are similar to those in Table 6, but indicate that much larger percentages of the Republicans supported, and considerably higher proportions of the Democrats

Table 7 Generalized Least Squares Estimates of Relationships between Votes in 1879 Governor's, 1880 Presidential, and 1882 Appeals Court Races and Votes in 1882 Equalization Referendum^a

1879 GOVERNOR	1882 REFERENDUM		
	FOR	AGAINST	ABSTAIN
Democrat	36	51	13
Republican	64	15	21
Abstain	11	13	76
1880 PRESIDENT	1882 REFERENDUM		
	FOR	AGAINST	ABSTAIN
Democrat	31	51	18
Republican	68	4	28
Greenbacker	30	117	-47
Abstain	-8	4	104
1882 APPEALS COURT	1882 REFERENDUM		
	FOR	AGAINST	ABSTAIN
Democrat	55	37	7
Independent	41	23	36
Abstain	10	22	68

a The estimating equations were of the following form:

$$Y/\sqrt{N} = \sqrt{N} \beta_0 + \beta_1 X_1/\sqrt{N} + \beta_2 X_2\sqrt{N} + U,$$

where \sqrt{N} is the square root of the adult male population in each county.

and Greenbackers opposed equalization than Table 6 had implied. In fact, the row showing how the 1880 Greenbackers voted in 1882 contains two logically inadmissible estimates, as does the row following it.²⁷

Such estimates, which are fairly common in this type of analysis, can be dealt with by reestimating the equations and assuming, say, that the Greenbackers all voted against equalization and that the 1880 abstainers all abstained in 1882, or by ignoring the logical discrepancies and merely stating that the results mean that nearly all Greenbackers opposed the change and few 1880 abstainers voted. But there is a third alternative. Since the problem

27 See Appendix A for a further discussion of OLS and GLS.

Table 8 Logit Estimates of Relationship between 1880 Presidential Race and 1882 Referendum

1880 PRESIDENT	1882 REFERENDUM		
	FOR	AGAINST	ABSTAIN
Democrat	25	51	24
Republican	60	10	30
Greenbacker	5	91	4
Abstain	10	11	79

arises because one is using an unconstrained linear model, one might employ a nonlinear model, such as logit, which allows no estimates to fall outside the 0–100 percent logical bounds.²⁸

The results presented in Table 8, which is based on a logit model, are much more esthetically and substantively satisfying than those in Table 7. There are no more logically impossible estimates, and the 1882 behavior of those who did not vote in 1880 is not so unrealistically extreme. Since some Democrats and many Greenbackers appear to have joined the 1882 Jacob Movement, whereas the state's only Republican congressman and several other state GOP leaders pointedly refused to endorse the Union Democrat, the 1880 presidential contest is a better indicator of long-term partisan attachments than is the 1882 court of appeals vote. The Republicans, white and black, voted six to one for (segregated) racial equality, the Democrats two to one against, and the Greenbackers eighteen to one against. Democratic overtures to the blacks were somewhat more than rhetoric, but not much; whereas the Republicans, while refusing to press for integration, which would have been suicidal as well as completely ineffective in the state at that time, overwhelmingly supported the largest practicable step toward black equality.²⁹

28 See Appendix B for further discussion of the problem of ecological regression estimates which fall outside the 0–100% logical bounds and the use of the logit model to overcome this difficulty.

29 Although the Democratic *Louisville Post* endorsed the 1882 Independent campaign, both my OLS and GLS estimates show no voters who supported Winfield Scott Hancock for President in 1880 backing Jacob in 1882. The estimates do show, however, that from 7 to 19% of the Garfield supporters backed the Democratic candidate for Appeals Court Clerk, while about 95% of those who voted the Greenback ticket for James B. Weaver and turned out in 1882 seem to have favored Jacob. For the *Post* endorsement, see the issue of June 7, 1882. For the GOP split, see *Louisville Commercial*, June 19, July 25, 1882.

The final table presents logit coefficients masquerading as regression coefficients, partly to reduce the table's complexity and partly to demonstrate another guise of the malleable technique. The numbers in the table hold only for the roughly linear portions of the logarithmic relationships. In Table 9 I have included both political and socioeconomic variables in an attempt to separate out the effects of political philosophy and behavior from those of demographic traits. The figures show the 1880 Democrats and Greenbackers in a light rather more favorable to modern tastes, but only underline the exceptionally liberal behavior of the party of Abraham Lincoln and John Marshall Harlan. As in the legislative analysis, a rise in the percentage of blacks in a county provided a significant push toward Bourbonism. Since newspaper reports of the election indicate that blacks overwhelmingly backed equalization, whites in the heavily black counties must have al-

Table 9 Logit Estimates of Change in Votes in Referendum for Increases in Political and Socioeconomic Variables of One Percent^a

INDEPENDENT VARIABLE	CHANGE IN VOTING IN REFERENDUM		
	FOR	AGAINST	ABSTAIN
Percent Dem., 1880 President	.176	-.008	-.168
Percent Rep., 1880 President	.598	-.406	-.192
Percent Grbk., 1880 President	.264	-.028	-.236
Percent Black	-.173	.257	-.084
Percent Urban	.015	-.194	.180
Percent Catholic	-.093	-.006	.099
White Wealth (in \$1000's)	.003	.010	-.013
White Tax Increase	.003	.019	-.016
Black Spending Increase	-.008	.047	-.039
Percent Union Democratic	-.078	-.047	.031

a The relationships hold only between \pm one standard deviation from the mean of the independent variables, and can be interpreted as giving the change in the dependent variables for a 1% change in the relevant independent variable, holding all other independent variables constant.

Many blacks and other Republicans could not forget Jacob's leadership of the racist "Conservative Unionist" party in 1867-68. See Webb, "Pariah Among the Elect," 117, 120, 123. Some blacks opposed the equalization measure because it mandated segregated schools, but numerous black gatherings throughout the state endorsed it. See *Louisville Commercial*, May 17, 22, 29, June 1, 5, 10, 15, 1882.

most unanimously opposed it. Other things being equal, urbanites were barely more likely than their country cousins to vote "yes" in the election, but markedly less likely to vote "no." Roman Catholics appear to have been a little less favorable to a tax increase for the public schools than Protestants. None of the other variables had very large impacts on the referendum voting.³⁰

The analysis presented in this article, as well as the more extensive efforts of other scholars, belies the statement of Franklin quoted at the outset.³¹ Postbellum Kentucky blacks were fully cognizant of their increased freedom to convene, petition, and agitate, and they did so repeatedly. Aware of the legal tools available to them under the equal protection clause of the Fourteenth Amendment, they sued and won. Willing and able to use the political power granted by the Fifteenth Amendment, they effectively pressed most white Republicans, as well as some Democrats, to pledge themselves to meet the blacks' most important goal. In short, Kentucky blacks exercised the rights of equal citizenship promised by the postwar amendments to guarantee their children an equal share in educational spending in Kentucky, at least on the state level. In the school year 1882–83, in fact, figures in the state auditor's report indicate that the total common school expenditures per child from six to twenty, state and local, were \$1.61 for whites and \$2.01 for blacks.³²

30 To see more precisely how the figures in Table 9 were arrived at, consider the entry in the first row of the first column. After the parameters of the regression equation were estimated by computer, I calculated the probability of voting for equalization in a county where the Democratic percentage was one standard deviation above the statewide Democratic mean, while all the other variables in the table were set at their means. I then repeated the calculation, setting the proportion of Democrats at one standard deviation below the statewide average for that party, while the other variables stayed at their means. Finally, I subtracted the second from the first probability, and divided the result by twice the standard deviation of the Democratic percentage in order to obtain the change in the probability of voting for equalization for each 1% change in the Democratic proportion in the 1880 race for the presidency. The other cell entries were calculated analogously.

31 Although many examples could be cited, one might start with Howard N. Rabinowitz, *Race Relations in the Urban South, 1865–1890* (New York, 1978).

32 Separate taxation and expenditure systems persisted in scattered areas until 1936, despite repeated court rulings against them, but there was apparently much less discrimination against the vast majority of black children in Kentucky than against those in states further south. Charles S. Mangum, *The Legal Status of the Negro* (Chapel Hill, 1940), 120–125; Leonard Ephraim Meece, *Negro Education in Kentucky: A Comparative Study of White and Negro Education on the Elementary and Secondary School Levels* (Lexington, Ky., 1938), 21–22, 60, 105, 118–119. Common school expenditures calculated from figures in *Report of the Kentucky State Auditor, 1881–1883*, 126–134, 220–227.

In their struggle to eliminate the grosser forms of racial inequality, the blacks succeeded only with the assistance of sympathetic whites. Bagby skillfully argued the *Ellis* case, obtaining a favorable result from two southern white Republican federal judges, Baxter of North Carolina and Tennessee and John W. Barr of Kentucky. Breathitt, a native white Kentucky Republican from the county with the second highest proportion of blacks in the state, was the chief proponent of equalization in the legislature, as well as a forceful proponent of seating blacks on juries and the principal adversary of the whipping post. A member of a family which produced two of the state's governors and a lieutenant governor, Breathitt proved by later becoming the state's attorney general that an association with blacks' struggles was no bar to office in postbellum Kentucky. The great mass of Republican voters, moreover, staunchly backed the merging of funds in the referendum. In fact, southern white Republican support of measures upholding black equality and repelling attempts to increase discrimination, although by no means universal, was common enough to suggest the propriety of their inclusion on Woodward's list of the forces restraining the South's "capitulation to extreme racism" in the late nineteenth century.³³

A substantially smaller number of southern Democrats, especially those from affluent urban areas and from counties which had few blacks, also stood up for equalization. Counties with strong Republican movements produced "regular" Democrats, whereas counties in which the GOP was weak sent to the legislature disproportionate numbers of both liberals and reactionaries. But the vast bulk of that party's legislators in 1882 opposed equal spending until the *Ellis* case made it a *fait accompli*, and some continued to protest against the inevitable even then. Further-

33 Barr concurred in *Ellis* and wrote a similar opinion in *Claybrook v. Owensboro*, 16 Fed. 297 (1883). On Barr and Baxter, see Harold Chase et al., *Biographical Dictionary of the Federal Judiciary* (Detroit, 1976), 15, 17; on Barr, see also Levin, *Lawyers and Lawmakers*, 159-160; on Baxter, see Mary U. Rothrock (ed.), *The French-Broad-Holston Country: A History of Knox County, Tennessee* (Knoxville, 1946), 376. On Breathitt, see William Henry Perrin (ed.), *County of Christian, Kentucky, Historical and Biographical* (Chicago, 1884), 94, 128-129, 184, 345-346; E. Polk Johnson, *A History of Kentucky and Kentuckians* (Chicago, 1912), II, 659-660; "Breathitt Family File," Kentucky Historical Society, Frankfort, Kentucky. For his actions on the rights of blacks and extensive reports of his speeches, see *Louisville Commercial*, Jan. 10, 21, April 24, 1882. C. Vann Woodward's list in *The Strange Career of Jim Crow* (New York, 1974; 3rd rev. ed.), 44-64, contains neither blacks nor white southern Republicans.

more, in the August referendum, about two thirds of the Democrats who voted seem to have deserved the "Bourbon" label attached to them by scornful Republicans.

If political parties differed sharply in their adherence to racism, so did denizens of different types of counties. Counties which contained comparatively large proportions of Catholics were less favorable to equalization in the referendum than more heavily Protestant areas, presumably as a result of a greater degree of opposition to taxation for public schools. Whites from heavily black counties and rural counties were much more likely than Kentuckians from urban areas and from largely white counties to oppose equalization in the August vote, and the same patterns held among Democrats and Greenbackers in the legislature. In short, racist behavior was neither pervasive nor equally prevalent among white Kentuckians. Republicans, urbanites, and those who lived in counties with relatively few blacks were much more willing to accept the postwar settlement than Democrats, Greenbackers, country folk, and especially residents of former plantation areas. Historians who have neglected to distinguish degrees of racism among southern whites or failed to note that, outside the Deep South at least, blacks in the post-Reconstruction era were neither powerless nor friendless should reassess their generalizations.

Finally, many of these substantive conclusions could be reached only because of the availability of sophisticated quantitative techniques, specifically logit analysis. The usefulness of this technique, not only in disentangling the correlates of legislative behavior, but also in allowing logically satisfactory estimates of voters' actions, should stimulate more historians to employ it.³⁴

34 Logit and probit can also be used in cases where the dependent variable is nominal. For instance, it can be employed to determine the correlates of moving or staying in analyses of social or geographic mobility. For an example, see Michael P. Weber and Anthony E. Boardman, "Economic Growth and Occupational Mobility in Nineteenth-Century Urban America: A Reappraisal," *Journal of Social History*, 11 (1977), 52-72.

Appendix A

The variance of the error term in a regression based on data aggregated over geographical units which differ widely in population is not constant, yet OLS assumes that variance is constant. We can partially remedy the situation, however, if we first recognize why the error variance is not constant.

Suppose one is interested in how individuals vote. Then for each individual, we can estimate a probability that he will vote, say, Democratic, given certain traits, by an equation such as:

$$(1) \quad Y_{ij} = \beta' X_{ij} + U_{ij},$$

where the i subscript refers to counties, the j subscript to individuals, the Y is a vector of voter choices, the X a matrix of traits or independent variables, and the U a vector of error terms with expected value zero.

The variance of the error term is

$$(2) \quad \text{Var}(U_{ij}) = E(U_{ij})^2 = E(Y_{ij} - \beta' X_{ij})^2,$$

which is assumed in regression to be constant.

Unfortunately, we observe data only on the county, not the individual level, so that equation (1) becomes:

$$(3) \quad \sum_{j=1}^{N_i} Y_{ij}/N_i = \beta' \sum_{j=1}^{N_i} X_{ij}/N_i + \sum_{j=1}^{N_i} U_{ij}/N_i,$$

where the N_i s refer to the number of people in county i , and the summations are across all individuals in each county.

The variance of the error term here is:

$$(4) \quad E \left(\frac{\sum_{j=1}^{N_i} U_{ij}}{N_i} \right)^2 = E \left(\frac{\sum_{j=1}^{N_i} Y_{ij}}{N_i} - \beta \frac{\sum_{j=1}^{N_i} X_{ij}}{N_i} \right)^2.$$

Since the errors are assumed to be independent across all individuals, the expectation for each county of the square of the errors is equal to the sum of the expectation of the errors squared, or

$$(5) \quad E \left(\frac{\sum_{j=1}^{N_i} U_{ij}}{N_i} \right)^2 = \sum_{j=1}^{N_i} \left[E \left(\frac{U_{ij}}{N_i} \right)^2 \right] = N_i \left[E \left(\frac{U_{ij}}{N_i} \right)^2 \right].$$

And since the N_i in the denominator is a constant, its expected value is just itself, so we have

$$(6) \quad E \left(\frac{\sum_{j=1}^{N_i} U_{ij}}{N_i} \right)^2 = \frac{N_i}{N_i^2} [E(U_{ij})^2] = \frac{1}{N_i} [E(U_{ij})^2] \\ = \frac{1}{N_i} [E(Y_{ij} - \beta' X_{ij})^2]$$

which differs from (2) by the factor of $1/N_i$.

To correct for this divergence, we multiply the whole equation through by $\sqrt{N_i}$, or the square root of the population in each county, giving us:

$$(7) \quad \sqrt{N_i} \left(\frac{\sum_{j=1}^{N_i} Y_{ij}}{N_i} \right) = \beta' \left(\sqrt{N_i} \frac{\sum_{j=1}^{N_i} X_{ij}}{N_i} \right) + \sqrt{N_i} \frac{\sum_{j=1}^{N_i} U_{ij}}{N_i}$$

which reduces to

$$(8) \quad \frac{\sum_{j=1}^{N_i} Y_{ij}}{\sqrt{N_i}} = \beta' \frac{\sum_{j=1}^{N_i} X_{ij}}{\sqrt{N_i}} + \frac{\sum_{j=1}^{N_i} U_{ij}}{\sqrt{N_i}}.$$

And the error variance is

$$(9) \quad E \left(\frac{\sum_{j=1}^{N_i} U_{ij}}{\sqrt{N_i}} \right)^2 = E \left(\frac{\sum_{j=1}^{N_i} Y_{ij}}{\sqrt{N_i}} - \beta' \frac{\sum_{j=1}^{N_i} X_{ij}}{\sqrt{N_i}} \right)^2.$$

By the same arguments as stated earlier, we can take the sums and constants outside the expectations, giving us

$$(10) \quad \frac{1}{N_i} \sum_{i=1}^{N_i} [E(U_{ij})^2] = \frac{1}{N_i} \sum_{i=1}^{N_i} [E(Y_{ij} - \beta X_{ij})^2],$$

and the sums on both sides are equal to N_{ij} , giving us finally

$$(11) \quad \frac{N_i}{N_i} [E(U_{ij})^2] = \frac{N_i}{N_i} [E(Y_{ij} - \beta X_{ij})^2].$$

All the N_i s cancel, and we see that if we estimate the parameters by first multiplying both the independent and dependent variables through by $\sqrt{N_i}$ for each county, we have equation (1).

Appendix B

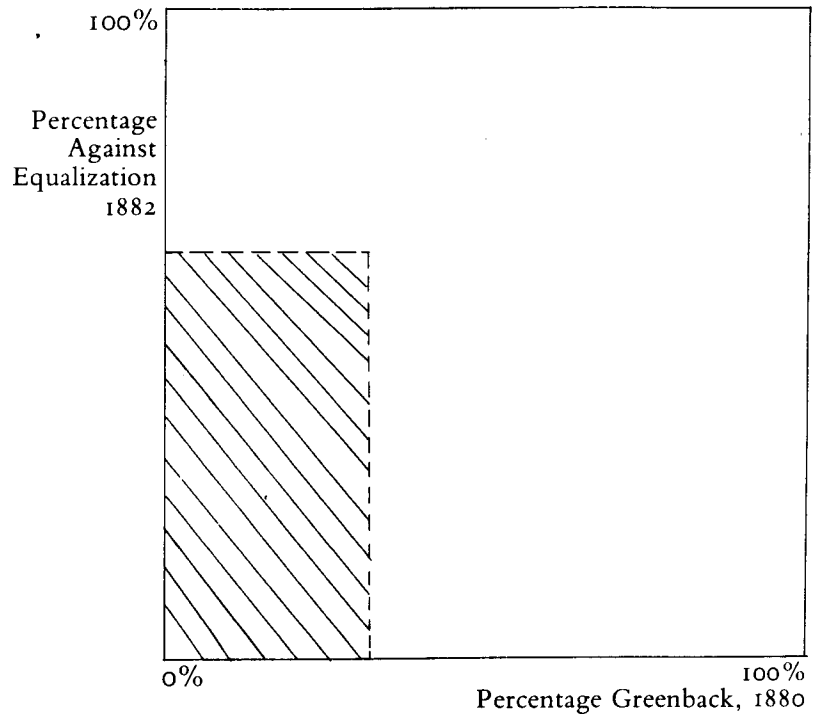
We can obtain estimates from aggregated data which fall outside the 0-100 percent logical boundaries for three reasons. Often, we have a fairly small sample of observations, and by chance the slope of the regression line gives us unreasonable estimates. If we had a very large sample, the slope would be different, and the estimates of, say, the probability of Greenbackers voting "no" in the referendum would be admissible. Usually, such estimates are not very far outside the bounds, and it is sufficient to set them at the logical limits and recalculate the equations accordingly. But it may be that the logical complications arise because we have tried to extrapolate too far beyond our data points or that we have estimated the wrong model.³⁵ In such cases, logit may be useful.

Consider the problem in estimating what proportion of Greenbackers voted against equalization. The maximum percentage of the adult males who voted in the 1880 presidential race was 31.7 percent. The highest proportion of votes against equalization in 1882 was 62.4 percent. As Figure 2 shows, all the data points are concentrated in the rather small shaded rectangle in the lower left-hand corner of the graph. But in trying to estimate what percentage of the Greenbackers voted against equalization, we are, in effect, predicting how a county which was composed only of members of that party (i.e., which was 100 percent Greenback) would vote. To do this, we have to project the linear regression line to the point at which it cuts the vertical line on the right-hand side of the graph. Yet this is far beyond the data, all of which lie in the shaded box. If our data extended beyond the shaded area, they might lie on a different linear regression line, or even on a nonlinear curve. The point is that it is dangerous to extrapolate so far beyond the available data, and we should not be too surprised to get nonsensical results if we do so.

It is also unreasonable to believe that the world will always be linear. If, in fact, the relationship between two or more variables were not linear, we may get illogical estimates because we have estimated an incorrect model. Besides graphing the bivariate relationships and examining them to see whether they fall into obvious nonlinear patterns (log-linear, quadratic, etc.), we might also consider relationships which follow the form of the logit. The logit function describes an S-shaped curve, as in Figure 1, which has an appealing behavioral interpretation. For data in the middle ranges of each variable, the logit relationship is approximately linear. For data on the extremes, however, the curve tails off quite quickly, and asymptotically approaches the X axis and the line parallel to the X axis at Y = 100 percent. Substantively, the theory underlying the curve states that a change in the independent variable from, say, 40 to 60 percent causes a large change in the dependent variable, but a change from 0 to 20 percent or from 80 to 100 percent

35 Kousser, "Ecological Regression and the Analysis of Past Politics," *Journal of Interdisciplinary History*, IV (1973), 252-262.

Fig. 2 Bivariate Relationship between Percentage of Greenback, 1880, and Percentage Against Equalization, 1882 Referendum



does not. Once a county is overwhelmingly "X" or "not X," changes in the value of X make little difference in Y. If the analyst has reason to believe that such a behavioral assumption is appropriate for his data, he should consider trying to fit a logit model. Moreover, the logit model may also provide a better extrapolation from a limited set of data, such as that in Figure 2, for it allows a relaxation of the very strong linear assumption. It is for this reason that I used logit to estimate the relationships in Table 8.