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Poverty Capstone

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The Achievement Gap, Proficiency & The Kentucky Education Reform Act

I) Introduction

The achievement gap that exists between students from lower socio-economic backgrounds and their more privileged counterparts is one of the most alarming aspects of public education in the United States. While this gap cannot be considered a product of the educational system alone, it has certainly been exacerbated by years of substandard schooling for children from the country's lowest income brackets. Disadvantaged children are more likely to drop out of school, less likely to attend college, and less likely to remain in college than children from higher income backgrounds. Recent educational reform efforts have targeted the achievement gap in order to increase the equity of education offered in the United States. The underlying idea is that a student's opportunity for educational achievement should not be contingent upon his or her economic background. By ensuring that arbitrary social characteristics do not determine an individual student's prospects for success (eliminating the achievement gap), the educational system could establish a level of equality that has never before realized in the United States.

This paper will provide an in-depth analysis of the U.S.'s most extensive state education reform, the Kentucky Education Reform Act (KERA), and assess its impact on student achievement. In a 1991 Kentucky Office of Education Accountability report, the

state elucidates its intentions for education in Kentucky. The report emphatically states, “The children of the poor and the children of the rich, the children who live in the poor district and the children who live in the rich district must be given the same opportunity and access to an adequate education” (OEA, December 1991:1). Nearly 18 years after KERA’s implementation, this paper will gauge the success of the act’s curriculum, accountability, and governance reforms in reducing the achievement gap in the state and providing access to “adequate education”. The analysis of the state’s accountability test scores (KIRIS and CATS), national test scores (ACT, NAEP), and other, non-standardized measures of school district performance (drop-out rates, graduation rates, college attendance) will show that KERA has not produced its desired results.

Consideration of deep-seated cultural norms will suggest that education reform is a necessary, but not sufficient means of combating educational problems within the state. Equal access to adequate education will not be available in Kentucky until the stagnant effects of poverty are addressed more broadly—including, but not limited to, the way that the state administers public education.

II) Methods for Measuring Student Achievement

The Achievement Gap

The socioeconomic achievement gap is, on average, the difference between the academic performances of students from high and low socioeconomic backgrounds. This phenomenon highlights the failure of public educational systems to provide equal access to educational opportunities regardless of students’ individual economic situations. In an ideal world, schools would operate like machinery: equal inputs would ensure equal outputs. Give every school the same curriculum, the same amount of money to spend on

students, the same quality of teachers, and the same facilities (proportionate to the number of students attending the school)—and every school should provide its students with the same prospects for success. Differences in achievement would be contingent upon intelligence and effort. But unfortunately, education does not work this way. Wealth generally affords individuals social environments more conducive to academic success. As long as individual social influences impact education, children from more advantaged backgrounds will have a leg up on students whose environments inhibit academic achievement.

Although the absolute equalization of academic achievement between the wealthy and poor students may exist only as an egalitarian ideal, pragmatic considerations should by no means deter public schools from attempting to reduce the achievement gap as much as possible. Incremental increases in achievement in poor districts that move them closer to the levels of achievement in wealthier ones¹ are tangible signs of progress. Such reductions to the achievement gap should be taken into account in evaluations of education reform. On the other hand, achievement increases in impoverished districts that are accompanied by proportionate increases in wealthier ones² are not as promising and may be the result of a change in methods for assessing achievement. Gap reductions that come about merely as a result of reductions in the achievement of wealthier districts³ are similarly questionable.

¹Changes such as: Poor District Achievement Level 1 (PDAL1)—50, Wealthy District Achievement Level 1 (WDAL1)—75 <TO> PDAL2—57, WDAL2—78 [Gap from 25 to 21]

²Changes such as: PDAL1—65, WDAL1—75 <TO> PDAL2—70, WDAL2—80 [Gap from 10 to 10]

³Changes such as: PDAL1—50, WDAL1—75 <TO> PDAL2—50, WDAL2—70 [Gap from 25 to 20]

Adequacy (or Proficiency)

Another important factor to consider in evaluating education reform is “adequacy”. Adequacy refers to level that states deem sufficient academic instruction. Because defining and reaching a specific level of achievement is easier to measure and control than something as transient as an achievement gap, many states enumerate their education goals in terms of adequacy. Ensuring access to adequate education is concrete. In a system where equal inputs (per-pupil spending, quality of teachers) do not ensure equal outputs (educational achievement), education reformers hedge their bets when they can. This is not necessarily a bad thing as long as the level of achievement that the state deems “adequate” actually meets that description. The achievement gap phenomenon is apparent in assessments of adequacy. Wealthier districts typically reach that benchmark while impoverished ones have a more difficult time doing so.

Other Forms of School District Performance Measures

Some additional, non-standardized performance measures are also useful in gauging the impact of education reform on student achievement. Attendance and dropout rates at the district level are important because they provide information about the number of eligible students actually being affected by reform efforts. Attendance rate refers to percentage of students attending school on a daily basis, and dropout rate is the percentage of students who leave high school before graduation. Goals of education reform usually include equalization of academic opportunities for ALL public school students, so it is imperative that such reforms encourage increased school attendance and decreased dropout rates. Other measures include district level college attendance rates and the percentage of unsuccessful college transitions. The college attendance rate of a

district is the percentage of graduates who choose to attend college, and the unsuccessful college transition (UCT) rate is the percentage of students who start college, but are unable to remain there. These characteristics indicate the extent to which high school graduates are prepared for the rigors of college curriculum.

All of these measures meaningfully affect poverty in an area because of the increased earning potential of both high school graduates and individuals who have attended college. Higher educational attainment generally leads to less economic disadvantage, so it is in a school district's best interest to encourage both graduation from high school and post-secondary education. Analysis of attendance, graduation, college attendance, and UCT rates also tends to reveal an achievement gap between wealthy and impoverished districts. Wealthier districts usually have higher attendance, fewer dropouts, more students attending college, and fewer unsuccessful college transitions than do impoverished ones. These measures also reflect independent social attitudes about the extent to which education is encouraged in an area.

KERA Overview

Kentucky is not a state most individuals would identify as having an exemplary educational system. The poor public perception of the state's schools probably has to do with the negative way many individuals view education in rural, southern states. This negative prejudice has no doubt been reinforced by the fact that, until around 1990, the state was consistently close to the bottom of the state-by-state quality of education rankings. Most are not aware however that by 2004 the state ranked 7th in overall teacher quality (Clayson). Reform in Kentucky began when the (Kentucky) Supreme Court, fed

up with years of poor academic performance, ruled in *Rose v. Council for Better Education* (1989) that the state's entire system of public education was unconstitutional. The Supreme Court found the educational system to be "inadequate and fraught with inequities" (*Rose v. Council for Better Education*). The historic Kentucky Education Reform Act (KERA) resulted from this decision. While other states had implemented court mandated education reforms, no state had attempted reform on the same scale as KERA. Representing the first attempt at a *comprehensive* education reform, KERA redesigned Kentucky's entire system of public education. It changed not only the way that education in Kentucky was financed, but also its curriculum, system of accountability, and governance. In order to evaluate the impact KERA has had on education in Kentucky, it is necessary give a brief overview of the reforms implemented by the program.

School Finance Reform

KERA's main financial goal was to equalize per-pupil expenditures among all Kentucky school districts. In order to accomplish this, the state legislature set up what it called the "Support Education Excellence in Kentucky" (SEEK) fund. In order to determine how this fund would be allocated, the legislature mandated a base level of per-pupil expenditures for every district that would be decided upon each year. The KERA finance reform also included an incentive designed to coax poorer districts into levying local taxes in excess of the amount needed for the base guarantee. By ensuring that local taxes above the minimum amount influence poor districts' per-pupil expenditures to the same extent that similar taxes in areas well above the median do, the state hoped to increase the likelihood that poor districts would administer such taxes. The previous

trend, which had exacerbated the disparity in educational equality, was that only wealthier districts would spend more on education than required. KERA was designed to rectify this.

Curriculum & Accountability Reform

In addition to finance reform, KERA introduced sweeping curriculum reforms that put all schools on a “standards-based” curriculum. This introduced broad standards focused on problem solving, communication, and organizational skills (as opposed to memorization) that students were to meet at every grade level. The new curriculum was designed to be testable according to the statewide assessment tests introduced in conjunction with the reform. These tests were then used as the basis for a “high stakes accountability” system implemented at the individual school level. Designed to provide incentives for individual schools to improve, the accountability system provided bonuses to teachers at successful schools. It did not, however, sanction underperforming schools monetarily. Instead, it required them to formulate plans for improvement and, in extreme cases, provided them with additional funding and consultation from teachers deemed “distinguished” or “highly-skilled educators.” The curriculum reform also included a controversial primary program that grouped Kindergarteners through 3rd graders into one group where students are not graded. The idea is that without the pressure of grades, students would be encouraged to learn at their own pace and benefit from the experience of the older children with whom they are grouped (Adams 87). Additional changes were made to include out-of-school tutoring, family and youth services centers, and extended professional development programs, among others. (Clark 8-10)

Governance Reform

KERA also changed the system of governance for schools in Kentucky, increasing the autonomy of the Department of Education and allowing it to take over individual schools if they happened to be performing poorly. Simultaneously, it increased the autonomy of individual schools, granting them jurisdiction over issues previously determined at the state and district levels. This was accomplished through the establishment of school councils. These bodies, more in tune with the needs of the community they served, could make certain curriculum and pedagogical determinations based on their individual student bodies. This, for example, allowed for the continuation of certain programs in rural areas, like agriculture, that were not needed in urban settings. Extension of power to both the Department of Education *and* specific schools curtailed the fear that the state would make decisions without sufficient input from the individuals most directly involved with the students. (Clark 10)

Methods for Measuring Student Achievement

State Accountability Tests: KIRIS & CATS

The cornerstones of Kentucky's accountability system under KERA have been the **Kentucky Instructional Results Information System (KIRIS)** and **Commonwealth Accountability Testing System (CATS)** tests. KIRIS, the original accountability test that was introduced in 1993, consisted of multiple-choice questions, open response questions, and a writing portfolio. It was administered at various grade levels, and the results of the test's writing portfolios and open response sections were used, along with "nonacademic indicators" (Clark 9) like attendance, dropout, and retention rates, to determine an accountability index (from 0 to 140) for every school in the state. KIRIS results were

weighted to represent 85% of this accountability index with nonacademic indicators contributing the other 15%. The long-term goal of this accountability system was to have every public school in the state reach 100 points on the accountability index by the year 2014. This benchmark (100 out of 140 points) was the “proficiency” level mandated by the Kentucky legislature to represent adequate schooling in the state. Of the four levels of school performance that the government defined—novice, apprentice, proficient, and distinguished—proficient is the third highest and indeed represents a lofty goal for an educational system that had a first year average of 35.9 accountability points. Individual school progress was evaluated every two years, and (as indicated above) schools that were deemed to be progressing toward their 2014 goal were rewarded with bonuses to be distributed among their teachers. (Clark 9, Roeder “KERA Endgame” 3)

In late 1997, some began to question the KIRIS testing system. There was concern that a test custom-made for the state of Kentucky, which did not rely on any other national or norm-referenced test, might not represent academic standards comparable to those in the rest of the country. The bonuses that went along with higher accountability scores provided significant incentive for teachers to change their student’s answers on the test. Others questioned the validity of scores because the significant increases in KIRIS scores from 1993-1995 were not reflected in the results of the results of the nationally standardized tests that students in Kentucky took during that period. In response to these complaints, the state legislature passed a bill that required the creation of a new accountability testing system. The test this legislation mandated was developed through the collaborative effort of teachers, parents, administrators, and testing experts. It included a norm-referenced test designed to make its results easier to validate, allowed

individual students to track their progress over time, and reduced the interaction time of teachers and students in the creation of their writing portfolios. Gene Wilhoit, who was at that time the Commissioner of Education proudly proclaimed that the “new student performance standards came from the most comprehensive standards-setting process ever undertaken by any state-level education testing system” (2001). After much anticipation, the newly developed **Commonwealth Accountability Testing System (CATS)** was given to the students of the Bluegrass State in April 1999. Charting the progress of accountability in Kentucky would never be the same.

Part of the recalibration of the accountability system in Kentucky at the dawn of the third millennium was the establishment of a new baseline score for biennial accountability assessments. The results from each school’s CATS test in 2000 were taken as the new starting point from which accountability progress would be determined. In August 2001, the government issued a “growth chart” to every school with a line starting at the school’s accountability score in 2000 and extending to a score of 100 in 2014 (at that juncture only two schools, Masonville Elementary and Goshen Elementary, had reached the 100 point threshold). Keeping fast to program’s initial goal (of all schools meeting 100 points by 2014), the state created three accountability classifications:

- 1) Meeting the Goal—for schools scoring at or above the line on their growth charts. These schools receive cash rewards for their progress.
- 2) Progressing—for schools scoring just below the line on their growth chart and within a defined “safety zone”. These schools are also eligible for cash rewards, provided that their score has gone up from the previous assessment.

- 3) **Needing Assistance**—for schools scoring below the line on their growth chart and also below their safety zone. These schools receive no rewards and may be subject to “scholastic audits” to determine what needs to be done to improve their progress.

These growth charts also included recalculated accountability scores for the first two years that CATS was administered (1999, 2000) in order to adjust for the inconsistencies the new testing system may have caused. (Roeder “KERA Endgame” 8-9, Appendix C)

Table 1
KERA Accountability Scores Over Time

YEAR	# of Schools	MEAN SCORE	MIN-MAX	AVG CH/YR
1993	1158	35.9	19.1-69.8	
				5.7
1994	1186	41.5	24.6-76.5	
				4.02
1995	1180	45.6	25.1-79.6	
				1.43
1996	1181	44.2	24.2-75.6	
				4.3
1997	1145	48.4	27.6-80.9	
				-0.48
1998	1179	48	25.1-77.4	
				11.72
1999*	1207	59.7	33.3-88.7	
1999 (adj)**	1184	64.9	35.9-99.2	16.84 (adj)
2000	1217	61.1	35.6-94.5	
2000 (adj)**	1192	66.7	36.9-103.2	1.86 (adj)
2001	1210	69.1	39.7-106.9	2.46 (adj)

* In 1999, the accountability system changed from KIRIS to CATS

** In 2001 the accountability scores for 1999 and 2000 were adjusted to reflect

(Roeder “KERA Endgame”, Table 3)

Table 1 charts the progress of state average accountability scores after the implementation of KERA. It highlights the drastic impact that the change from the KIRIS to the CATS test had on scores in the state. During the years that the KIRIS test was used (1993-1998), accountability scores tended to increase, although they also

decreased between 1995 and 1996 and again between 1997 and 1998. In 1999, the first year that the CATS test was given, average scores shot up an astronomical 11.74 points from the previous year. The adjusted number, taken from the calculations used in the government-issued growth charts, is even more surprising. According to this adjusted number, average accountability scores increased more from 1998 to 1999 (16.84 points) than they did during the entire five-year period from 1993-1998 (12.11). This curious statistical change seems to have been almost entirely the result of the change in testing systems that occurred that year. It is interesting that student's scores improved so much from KIRIS to CATS, and even more interesting that the government recalculated the number to indicate an even more substantial gain during that transition. This anomaly serves to frustrate attempts to predict the number of schools that will reach their 2014 goal of 100 accountability points, and perhaps more importantly questions the validity of the state's accountability revamp that led to an average gain of 35% in just one year.

Table 2
Projections of 2014 Accountability Scores

	Method A	Method B	Method C
Trend Years	1993-2001	1993-1998	1993-1998, 1999-2001
Avg. Yearly Change	4.12	2.4	2.34
Base Year for Projection	2001	1998	2001
Mean Score 2014	122.5	86.4	99.3
# Schools 100+ pts in 2014	917	318	483
# Schools 98+ pts in 2014	937	339	513
# Schools 140+ pts in 2014	232	34	41
# Schools <80 pts in 2014	16	455	188

(Roeder, "KERA Endgame", Table 4)

In an effort to determine how close Kentucky will come to reaching its accountability goal in 2014, Political Scientist Phillip Roeder conjectures several methods for estimating yearly accountability increases from 2001 to 2014. He first considers taking the average yearly change from 1993 to 2001, or 4.1 points, multiplying

that number by 13 years (the number of years from 2001 to 2014), and adding the result (53.3) to each schools score in 2001⁴. Roeder refers to this as “Method A”. This method results in 917 of the 1,078 schools in continuous operation from 1993-2001 reaching their proficiency goal, or about 8 in every 10 schools. Roeder concludes that this number is entirely too high because it doesn’t adequately treat the variation of average scores from year to year, and barring another accountability assessment change that substantially increases average scores over a short period of time, such results are very unlikely.

For comparison Roeder also offers “Method B”, which estimates the number of schools that would have reached proficiency if CATS had never been implemented and schools had continued along the path that they were on during the KIRIS testing. Method B multiplies the average yearly change in scores from 1993 to 1998 (2.4) by 16 (years from 1998 to 2014) and adds the result to each school’s score in 1998. This approximation projects that only 317 of 1,078 schools, or about 1/3rd, will reach the accountability goal of 100 points by 2014. According to this result, the KIRIS to CATS policy intervention could be the difference between 1/3rd and 4/5^{ths} of schools reaching proficiency. Like Method A, however, Method B is also unrealistic because it is unlikely that the government would adjust the 1999 accountability scores down, even if they were found to be substantially inflated.

Roeder’s most realistic projection, “Method C”, includes the scores from the transition to CATS in 1999, but omits that year from the calculation of average yearly change. Score increases in the years following 2001 are expected to follow the average percentage change between all years except 1998 and 1999. This means that 2.34 (Avg.

⁴ Method A: $4.1 \text{ (Ch/yr)} \times 13 \text{ years} = 53.3 \text{ points}$.
 Proficient Schools $\rightarrow (2001 \text{ score}) + 53.3 > 100$

change between 1993-1998 and 1999-2001) is multiplied by 13 (years from the 2001 to 2014) and added to the 2001 baseline score of each school. Method C indicates that 483 of 1,078, or 45% of schools will reach their proficiency goals by 2014.

When state average accountability scores are broken down to the district level, more is evident about the state of education in Kentucky after the inception of KERA. Phillip Roeder's paper, "School District Performance in Kentucky (1993-2001)", analyzes the achievement gap between the state's advantaged and disadvantaged school districts. Advantage in this context is defined by the assessment of 3 characteristics of districts: proportion of students eligible for free or reduced price lunches, state to local per-pupil revenue in 1988, and student success (dropout rate and proportion of students going to college). The advantaged schools referenced in this analysis are the 18 school districts who ranked in the top 10% of districts in Kentucky in the aforementioned criteria. Disadvantaged districts fall in the bottom 10% in relation to those criteria. Table 3 (below) compares the average accountability scores of advantaged and disadvantaged districts from 1993 to 2001.

Table 3
Accountability Achievement Gap Between Advantaged and Disadvantaged Districts and Top and Bottom Performing Districts

	1993	1994	1995	1996	1997	1998	1999	2000	2001
All Districts	36.6	42.1	45.4	43.8	48.4	47.8	64.7	66.5	68.4
Advant (n=18)	41.6	48	51.3	49.2	55.2	55.1	74.6	75.5	77.8
Disadv (n=18)	33.6	39	42	40	43.8	42.8	58.2	60.3	62.8
GAP	8	9	9.3	9.2	11.4	12.3	16.4	15.2	15
*GAP%	23.8%	23%	22%	23%	26%	28.7%	28%	25%	23.8%
**Avg GAP% (1993-2001)	24.8								

*GAP % is the percentage of the gap in relation to the average disadvantaged accountability score for that year. It is determined by (gap)/(avg disadv score).

** Avg GAP% is simply the average percentage gap for the years 1993-2001.

According to this data, KERA led to an *increase* in the gap of accountability test scores between advantaged and disadvantaged districts during the period examined. The absolute achievement gap (which only looks at the numerical difference between scores) starts at 8 points and trends generally upward until it reaches its highest point in 1999 at 16.4 points. From 1999 to 2001, the gap decreases slightly yet remains nearly double the level it was (in absolute terms) during the early stages of KERA. An increase in the numerical size of the achievement gap is not necessarily a cause for alarm, however, because this measurement was being taken over a period of time when the achievement scores of both advantaged and disadvantaged school districts were increasing rather rapidly. Imagine a scenario in which the average score for the advantaged districts is 20 and the average for the disadvantaged is 15. The absolute achievement gap in this case would be 5 points. If the scores of both groups doubled during the course of the next year (to 40 and 30), the absolute achievement gap between the two groups would increase to 10 points even though the relationship between the two has essentially remained the same. Because of this, a proportional measure of the achievement gap is more useful.

A proportional measure of the achievement gap represented in Table 3 can be determined by looking at the absolute achievement gap as a percentage of the average disadvantaged districts' accountability score⁵. These percentages are presented in the GAP% row of Table 3. Taking a look at the percentages in the table reveals that the proportional achievement gap increased slightly between 1993 and the transition to CATS in 1999 and then gradually settled back to its 1993 level of 23.8% in 2001. The average of these percentages is 24.8%, about one percentage point higher than the initial

⁵ This could also be accomplished by computing the ratio between the scores of the advantaged and disadvantaged districts for a given year

percentage in 1993. It can be concluded from this data that the KERA reforms did very little to close the achievement gap between advantaged and disadvantaged districts accountability scores from 1993 to 2001. If anything, education reform led to a partial widening of the gap.

Phillip Roeder also analyzes the correlation between accountability scores from 1993 to 2001. He says that even the weakest correlation of scores between years (.68 between 1993 and 1995) is still moderately strong. Correlation between scores tends to grow increasingly stronger as more achievement tests are taken, and the position of districts relative to one another remains largely the same over the period analyzed. This means that few districts are progressing or declining enough that they surpass or fall behind other districts. According to Roeder, this performance stability might be evidence of the validity of accountability testing at the district level. It might also suggest, however, “that [the] relatively stable characteristics of districts may be determining performance rather than changes in school and classroom practices and behaviors due to KERA” (Roeder “School District Performance” 10).

While the use of KIRIS and CATS accountability data has been instructive, reliance on such measures exclusively would fail to do justice to KERA’s nuanced approach to broad-based education reform. The merit of these state-administered tests has been their ability to convey intra-state, district-to-district feedback on the reform’s impact—feedback that has been consistently and uniformly collected [with perhaps the only notable exception being 1999, the year of transition between KIRIS and CATS] over the course of the legislation’s entire history. From these tests it is possible to discern certain aspects of students’ general academic preparedness, and also to some extent their

teacher's success in conveying pertinent material. In addition to serving as the linchpin of the state's own 2014 proficiency goal, the continuity and compulsory nature of KIRIS and CATS rank them among the best available sources of information for evaluation of the achievement gap in Kentucky. What they don't provide is reliable information as to whether the reforms that were implemented have actually improved the overall quality of education in Kentucky. Scores on accountability tests have gone up, although it is dubious whether this improvement is the result of better schooling or merely increased familiarity with the testing systems. Dramatic statistical increases like those that occurred during the transition from the KIRIS test to CATS indicate that the tests may be employed as a political tool—casting doubt upon their status as a genuine gauge of academic achievement. Perhaps they are only government's method of reassuring residents that the state is addressing parents' academic concerns. Although this seems unlikely given the inordinate amount of money that the government has spent on educational reform, it is necessary for the sake of consistency to look beyond these somewhat subjective assessments of achievement toward other measurements that do not fall under the umbrella of the state government's jurisdiction

National Standardized Tests: ACT & NAEP

In her paper "Education Reform, Redistribution, and Student Achievement: Evidence From the Kentucky Education Reform Act," Melissa Clark attempts to ascertain the program's effect on student achievement through the comparison of ACT and NAEP test results within Kentucky through the 1990's and also between Kentucky and its surrounding states during that same period of time. Believing KIRIS to be a questionable assessment of progress because the jumps in achievement it displayed were

too large to be believable, Clark favored the ACT results because she viewed the test to be more objective (unlike both KIRIS and CATS, the ACT was not mandated by the Kentucky Legislature, nor meant exclusively to be taken by Kentucky students) and because it was taken by the majority of college-bound Kentuckians. She also considered the ACT to be a “particularly good measure of what students have learned in school” (25) because it is designed to be more curriculum based than the SAT. This basis in high school curriculum, was intended validate the relationship between the results of her (ACT-based) research model and the effectiveness of the KERA curriculum reform. The difference-in-difference model that she used to compare the ACT scores of students from Kentucky and Tennessee found that Kentucky test-takers tended to score higher, but that these differences in score were not statistically distinguishable from zero. (33)

Clark also incorporated into the results of her research a comparison of the National Assessment of Educational Progress (or NAEP) test scores of middle school students from Kentucky and the scores of students from the surrounding states of Alabama, Arkansas, Indiana, Louisiana, and Ohio. She specifically analyzed the results of 8th grade math score from the NAEP tests because these provided her with the most opportunities to draw relevant comparisons. The results of her research model for NAEP scores were very similar to those from the ACT model; students from Kentucky typically scored slightly higher than the students from surrounding states, yet not highly enough for the differences in score to be considered statistically significant. (36) In a final difference-in-difference model that Clark uses to estimate KERA’s effect on the income gradient in ACT scores, she found that income had remained as powerful a determining factor in ACT scores as it had been before the reform. (35) In sum, the results of her

research suggested that KERA had not improved the overall quality of education in Kentucky to a significant degree when compared to the relatively similar states that surround it, and that it had been equally unsuccessful in weakening the connection between wealth and educational achievement.

Although Clark used well-established research models in the formulation of all of her data, she was forced to control for a large number of variables that may have convoluted her results. Her comparison of ACT scores between Kentucky and Tennessee was made particularly difficult by the fact that Tennessee had introduced an educational measure in the mid 1990's that required all high school students to take the ACT. Only students who are required to take the exam for college admittance purposes sit for the exam in Kentucky. The fact that there was no statistical difference between the scores in the two states may indicate that this complication was of little significance (one would assume they it would skew the results in favor of Kentucky test takers). In addition, Clark's decision to use the comparison of ACT data itself as the basis for the claims about the success of education reform in Kentucky is also somewhat questionable. It is difficult to make a general assessment of the achievement or progress of a state's public school system based on data from a test that compounds already complex subject matter with the added difficulty of timing the test correctly. Assuming that the ACT does adequately reflect general high school curriculum, this timing pressure may lead to mistakes that have nothing to do with command of high school material (perhaps understating the progress of education in a state).

Using the ACT as a proxy for measuring the relationship between socioeconomic background and academic achievement also likely overstates the influence that wealth

has on performance. One's ability to afford exorbitantly expensive ACT-prep classes plays a significant role in a person's ability to score highly on the test. These classes have nothing to do with public education—they are completely privately financed, and above-average performance on the ACT does not necessarily correspond with above-average performance in the classroom. Any progress KERA made in the reduction of the achievement gap was likely overridden in Clark's model by the ACT-specific tutoring opportunities available to the wealthy.

Drop-Out Rates, Graduation Rates, and College Attendance

**Table 4:
Gaps in School District Performance (1994-2000)**

	1994	1996	1998	2000
Attendance				
Advantaged	95.6	95.3	95.3	95.5
Disadvantaged	94.4	93.5	92.8	92.9
Difference	1.2	1.8	2.5	2.6
Dropout				
Advantaged	1.9	2	2	1.7
Disadvantaged	4.3	4.4	4.7	4.2
Difference	2.4	2.4	2.7	2.5
College Attendance				
Advantaged	67.9	66.3	65.1	65.3
Disadvantaged	40.6	39.5	40.7	41.8
Difference	27.3	26.8	24.4	23.5
Unsucc. Transition				
Advantaged	2.1	2.4	3.3	2.6
Disadvantaged	10.6	9.4	10.4	10.2
Difference	8.5	7	7.1	7.6

(Data from Roeder, "School District Performance in Kentucky" Appendix B, Table B-4)

When additional, non-standardized measures of school district performance are considered, the difference between advantaged and disadvantaged school districts remains significant. As Table 4 indicates, in 1994 disadvantaged school districts experienced higher dropout and unsuccessful college transition rates, and lower (high school) attendance and college attendance rates than the commonwealth's advantaged school districts. This pattern remained constant through 2000. Despite the two groups' consistent relationship to one another, patterns in the data across subsequent years are less discernible. According to this data, the post-reform gaps between the attendance rates and dropout rates of advantaged to disadvantaged districts in Kentucky appear to have increased. Over the same period, college attendance and unsuccessful college transition gaps have to some extent narrowed. Although the six-year period in question may be too short to establish reliable trends in the data, it should be noted these measurements remain relatively consistent despite yearly statistical fluctuations.

The most consistent pattern in Table 4 is the declining attendance rate among disadvantaged school districts in the state—a downward trend has occurred during a period of time when the attendance rates of schools in advantaged districts have remained relatively stable. Although daily attendance is perhaps less consequential than the other statistics in question, it is discouraging to see a decline in attendance that appears specific to disadvantaged school districts. Evidence from dropout rates, which also remained quite stable from 1994 to 2000, suggests that KERA has not been successful at encouraging more students in disadvantaged school districts (or advantaged districts either for that matter) to stick with their education until graduation. Although it initially appears encouraging that the gap in college attendance rates between advantaged and

disadvantaged districts has narrowed, a closer look at the data allays this fleeting excitement. This gap reduction is less attributable to the increased matriculation of high school graduates from disadvantaged districts, and more attributable to a decline in the number of college-bound graduates from advantaged districts. College attendance of students from disadvantaged districts lingered just over 40% for most of the six years represented in the table. The significant differences in unsuccessful college transition (UCT) rates are perhaps the most troubling figures presented by Table 4. On average, the UCT of graduates from disadvantaged districts is nearly four times higher than that of graduates from advantaged districts! While both the disadvantaged districts' UCT rate itself, and the UCT gap appear to be declining somewhat, the sheer size of the gap remains unsettling because it may suggest that many of the graduates of disadvantaged districts just aren't adequately prepared for college.

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While consideration of the data in Table 4 is essential to an analysis of KERA's impact on educational achievement in Kentucky, the data must also be viewed rather cautiously. Although the statistics that it presents are accurate, they may fail to tell the whole story of district performance in the state. It has been suggested, for example, that public education has only a secondary and partial impact on drop out rates. Evidence from throughout the 20th century indicates that dropout rates in Kentucky are primarily determined by overall economic conditions. As the earnings of high school dropouts relative to high school graduates increases, so does the number of students who choose to leave school early to start working. Certain parts of the state are especially susceptible to this economic pressure because the extremely limited employment opportunities often force all individuals seeking employment in a place into positions as unskilled laborers.

If a person's choices after graduation will necessarily boil down to taking a job in one of only two factories in a town, neither of which require an applicant to possess a high school diploma, the opportunity cost of finishing high school is likely to be forgone. During the energy crisis of the 1970's and the subsequent boom of the coal industry, graduation rates fell significantly in Kentucky. In the mid to late 1990's, when the rise of the service sector of the national economy had already taken hold and the value of a high school diploma in relation to an undergraduate degree was plummeting, it would make sense that the state could also see a similar slump in graduation rates. Individuals who had already ruled out college as an option would not see graduating from high school as providing them much in the way of additional opportunity. So essentially, KERA's failure to decrease the dropout rate and the slight increase that rate experienced after KERA's implementation do not necessarily indicate a reform failure.

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After KERA there was no significant shift in college enrollment. These statistics are pretty straightforward. The statistics concerning UCT in advantaged and disadvantaged districts, on the other hand, likely present a perspective that is somewhat skewed. Because advantaged districts send a far greater number of students to college than disadvantaged districts, the gap in these groups' UCT rates probably gives the impression of a larger gap than actually exists. Disadvantaged districts tend to be in rather isolated, sparsely populated areas of the state, while the advantaged districts cluster around the population centers of Louisville, Lexington, and their suburban communities—meaning that (for example) 40% of advantaged district graduates represents far more individual students than does 40% of disadvantaged district graduates. Take into account the fact that advantaged districts, on average, also sent

about 25% more of their graduates to college than disadvantaged districts did, and it can be concluded that the number of students attending college from advantaged districts is much higher than the number from disadvantaged ones. Roeder calculated the percentage of UCT by looking at the students who started college in a given fall and then determining which of them were still enrolled the following fall. Aside from the disproportionate likelihood of students from disadvantaged districts to take “time off” in order to work and save money for school, each student who “fails to make a successful transition to college” represents a much larger percentage of a small pool of students than he or she would represent in a large one. For this reason, the representation of a UCT rate for disadvantaged districts that is nearly four times the rate of advantaged ones should be taken with a grain of salt.

Interpretation of the Measures of Achievement

There are a number of conclusions suggested by the findings of the separate assessments of KERA’s impact on student achievement mentioned above. First, it should be noted that KERA is considered a resounding success for its efforts to equalize state finance of public education. What was once considered one of the greatest injustices of the educational system in the Bluegrass State has since been replaced by KERA’s school finance reform. This reform took a system that for generations had seen the state’s highest per-pupil expenditure rates and teacher salaries connected only with the state’s wealthiest districts, and created one that has directed the highest-paid teachers and the

highest expenditures toward the pupils who reside in the most poverty-stricken regions of Kentucky⁶.

Unfortunately, however, this equalization of funding has not prompted the leveling of educational achievement across the state's various school districts that many had hoped it would. Analyses of statewide accountability scores from the KIRIS and CATS tests indicate that over the post-reform period from 1993-2001 the proportional achievement gap between the state's advantaged and disadvantaged districts at best remained at about the same level—though average accountability scores indicate that the proportional gap actually increased during the years in question. When KIRIS and CATS scores are used to help formulate projections of individual school's future accountability scores (85% of which comes from the school's CATS score), the results are similarly disheartening. Estimates indicate that the educational system will likely fall short of the government's stated goal of proficiency in 2014. Only 483 of 1,078 (45%) schools are on pace to meet the deadline according to Roeder's most realistic projection scheme.

Analyses of Kentucky students' test scores on two nationally standardized tests, the ACT and the NAEP, avoid any potential biases from KIRIS or CATS (tests designed by the Kentucky Legislature specifically for Kentucky students). ACT and NAEP scores also provide a way to gauge any academic improvement attributable to KERA by juxtaposing the scores of students from Kentucky, with those from the surrounding states. Melissa Clark's difference-in-difference research models using ACT and NAEP data indicate that KERA did not significantly raise the quality of education in Kentucky in

⁶ For more on this topic see my previous paper that discusses the KERA finance reform in further detail.

comparison to nearby states. Her research also shows the influence of wealth on academic performance (measured by ACT scores) in Kentucky to be as strong as ever.

KERA has also done little to affect trends in non-standardized measures of school district performance. Traditionally, disadvantaged school districts have suffered from low rates of attendance and college attendance (among graduates), in conjunction with high rates of dropouts and UCT. These trends have been just as prevalent among disadvantaged districts in the post-KERA era as they were before the reform—and statistics hardly appear to have been affected by the reforms at all. From this it seems that KERA has been ineffective in addressing the measures of school district performance that are primarily determined by the social environment of the district.

Although there is evidence to question the validity of much of the information that discounts KERA's effectiveness, the weight of many different studies that have focused on various and divergent aspects of the reform act have consistently come to a similar conclusion. The questionable nature of certain individual statistics do not necessarily discount the study of which they are a part. Evidence that suggests that KERA has had a positive effect on educational achievement in Kentucky is few and far between. Contrary to its commitment to ensuring access to equal academic opportunity, KERA was shown over a significant period of time to have failed to improve the achievement gap in the Commonwealth of Kentucky.

Social Factors that Inhibit Full Realization of KERA

Despite the broad-based, comprehensive education reform attempted by Kentucky in the early 1990's, the government was not able to ensure equal educational outcomes. Even with the development of one of the country's most effective school finance

equalization systems this goal could not be accomplished. In education, no outcome can be guaranteed. The unpredictable variable is the human interaction involved in the education itself. Development of innovative educational curriculum and similarly ground-breaking attempts to create stable environments for individuals are consistently frustrated by the economic and social issues that refuse to buckle under the most stalwart educational efforts.

For years the Kentucky economy thrived on the farming and coal industries. As economic conditions have changed, the manufacture of coal has become less labor intensive and the prospect of farming has become less profitable, leading to significant disadvantages in the state. Some individuals find themselves stranded in isolated mountain towns, product of a family who moved there during a boon time that has long since passed. Intense familial and social ties, especially in the state's more isolated areas, often discourage individuals from leaving their hometown despite the fact it has little opportunity for them. Many times, social beliefs and characteristics become so engrained in a town's character that these beliefs frustrate any attempts to change the existing status quo. This is the dilemma faced by educational reform in Kentucky. While school systems may attempt to counteract what they see as detrimental societal influences, the truth is that the school day is relatively short in comparison to the amount of time that a person spends in the company of their primary social influences. The expectation that education reform will somehow be able to use six hours of a person's day to counteract the other 18 is somewhat unrealistic on an individual basis. That same expectation of an institution that serves a state's entire population is almost an impossibility.

Conclusion

As has been shown in the case of KERA, education reform, by itself, is not enough to significantly reduce the achievement gap or guarantee access to adequate schooling because of the significant role that district specific environmental factors play in academic achievement. For every child to actually receive an adequate education, many of the economic and social hindrances to academic achievement in the state must be addressed.

One alternative that might be able to address the toxic social influences that often prevent the fulfillment of real equality of educational opportunity would be a charter school in the form of the Kipp program that started in Houston. While there are many examples of charter schools around the urban areas of Kentucky, much could be accomplished if one of these charter schools could be maintained within one of the state's more impoverished rural communities. In certain rural areas there is no escape. An innovative school with the ability to break the traditional norms of its community and spark intellectual curiosity in its students would allow those students to live beyond their home even if they never physically left it. It is the isolation that many feel in small rural communities that tends to lead to problems with drug and alcohol abuse. Perhaps these social problems could be counteracted if people were taught from a young age to think independently. If such a school could effectively replace feelings of isolation with intellectual escapism, the most detrimental social aspect of living in some of the state's most impoverished areas could be avoided.

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