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ABSTRACT

THE APPLICATION OF DATA ENVELOPMENT ANALYSIS TO PUBLICLY FUNDED K-12 EDUCATION IN MASSACHUSETTS IN ORDER TO EVALUATE THE EFFECTIVENESS OF THE MASSACHUSETTS EDUCATION REFORM ACT OF 1993 IN IMPROVING EDUCATIONAL OUTCOMES.

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ANDREW D. J. HALL, B.A., UNIVERSITY COLLEGE LONDON

M.B.A., UNIVERSITY OF MASSACHUSETTS AMHERST

Ph.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Robert Nakosteen

The Charnes Cooper Rhodes ratio DEA model (“CCR”) is used, with panel data from a large sample of Massachusetts’ school districts, to test three propositions concerning the Massachusetts Education Reform Act of 1993 (“MERA”). First, did the degree of positive correlation between Socio-Economic Status (“SES”) and educational outcomes decrease, secondly did educational opportunity become more equal among towns in Massachusetts, and finally were education standards raised overall?

The CCR model is a Linear Programming method that estimates a convex production function using Koopmans’ (1951) definition of technical efficiency and the radial measurements of efficiency proposed by Farrell (1957). It has been widely used in Education Production Function research.

The pursuit, through state and federal courts, of equitable funding, allied to the belief that smaller class sizes improve outcomes, has made K-12 education expensive. The belief that outcomes are in constant decline has led to calls for “Accountability” and to “Standards” reform.

Standards reform was combined, in MERA, with reform of state aid formulas and additional state funding, to ensure a minimum basic level of education pursuant to the decision of the Massachusetts Supreme Court in *McDuffy v. Robertson*.

The one certain relationship revealed by decades of research is a strong positive correlation between SES and outcomes. If MERA ensured a higher basic level of education, then the correlation between SES and outcomes should have weakened as the education of less well SES-endowed children improved. The CCR model was used first to measure “correlation” between multiple input and multiple output variables. Strong positive correlation was shown to exist and it appeared to strengthen rather than weaken. Next the CCR model was used to determine if there were changes in the distribution of per pupil expenditures and, lastly to determine whether outcomes improved between after MERA. The analysis suggested that the distribution of expenditures improved but that outcomes deteriorated. This deterioration seems to be closely related to the changes in the proportion of all students, in a grade, actually taking the tests.

There is little evidence that MERA achieved anything and no basis upon which to argue that it achieved nothing.