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Part Two of Three Part Series on Grade Retention

Cost-Benefit Analysis of Grade Retention

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Despite decades of research, the issue of grade retention remains controversial and has been hotly debated among researchers, educators, and policymakers. Previous studies have mostly focused on the effects of grade retention on students' academic adjustment and socio-economic outcomes. This brief provides a possible economic framework to quantitatively evaluate the costs and benefits to society of retaining one student in a grade level for an additional year. Using the standard criteria for looking at the costs and benefits of social programs, costs and savings are identified in three areas: education costs, costs associated with economic well-being, and costs associated with crime (see Appendix).

Other Policy Briefs in the three part series on Grade Retention by Claire Xia and Elizabeth Glennie:

- Grade Retention: *A Flawed Education Strategy*
- Grade Retention: *The Gap Between Research and Practice*

Education

Grade retention incurs education expenditures for school services during the retention year. In theory, students who are retained will consume an extra year of education because they are going through one grade twice. According to National Center for Education Statistics, the average education expenditure per pupil is estimated to be $7,524 for the school year of 2001-2002.[1] So, for every retained child, the cost of retention in grade for one year is $7,524.

Past research shows that prior retention experience is associated with higher rates of retention in later grades.[2] Costs associated with retention in later grades can be estimated by: the increased probability of retention in later grades times the average annual expenditure per pupil. A few studies have shown the correlation between prior retention experience and special education placement.[3] However, no causal links between the two has been identified. If causal relationship can be identified in future research, costs of retention associated with special education placement can be estimated by: the increased probability of special education placement times the difference between the average annual expenditure per pupil attending special education and average annual expenditure per pupil attending regular schools.

Research has consistently found that retained students are at a higher risk of dropping out of school.[4] It has been reported that retained students are two to eleven times more likely to drop out.[5] All things being equal, a student retained for one year in the third grade and who drops out in the 10th grade will consume fewer educational resources than a non-retained student who completes all twelve years of school. A student, who drops out of school, consumes fewer educational resources, saving the amount of annual education expenditure times the number of grades left until the graduation of high school. Education savings associated with a higher rate of dropout among retained students can be estimated by: the increased probability of dropout times the average savings in education expenditures due to dropout.

Economic Well-being

Some research has shown a negative relationship between grade retention and later employment.[6] Grade retention may lead to decreases in lifetime earnings and compensation either directly, or through the higher probability of dropping out of school among retained students.[7] The costs/benefits of retention policy on economic well-being can be quantitatively evaluated from two perspectives: from the individual's perspective and the taxpayer's perspective.

First, from the retained student's perspective, individual loss of a retained student in lifetime earnings and compensation can be estimated by: the increased probability of dropout times the individual loss of a dropout student in lifetime earnings and compensation for ages 18 to 65. Individual loss of a dropout student in lifetime earnings can be measured by the average earning difference between those with high school diplomas and those having less than high school education by using Census data.

Second, from the taxpayer's perspective, retention policy should be evaluated in terms of its effects on tax revenues. Individual loss in lifetime earnings will lead to a proportional decrease in tax revenues to the state and federal governments. Loss in government tax revenues can be calculated by: the loss of individual lifetime earnings times the estimated tax rate.[8]

Crime

Many studies have shown the negative effects of retention on behavior problems, substance use, and earlier age of sexual debut.[9] However, little has been written on the impact of grade retention on youth crime. Conventional wisdom predicts that retention is associated with a higher rate of crime, because old-for-grade students are more likely to engage in substance abuse and risky behaviors.

The costs/benefits of retention policy on crime can be quantitatively evaluated from two perspectives. First, from the taxpayer's perspective, retention policy should be evaluated in terms of its effects on criminal justice costs, including criminal justice costs for juveniles and adults. For youth crime, criminal justice costs can be estimated by: the increased/decreased probability of having juvenile arrests times the average expenditures for juvenile criminal justice.

Average criminal justice expenditures for juvenile delinquency include two parts: administrative expenditures associated with arrest, and cost of juvenile delinquent treatment. In Aos et al.'s study, the administrative expenditures[10] associated with arrest ranges from $1,100 for misdemeanor to $109,585 for murder per arrest in Washington D.C. in 1995 dollars.[11] Cost of juvenile delinquent treatment can be measured by the weighted average of costs for residential treatment, community treatment or probation services, and release.

According to Reynolds et al., expenditures to the criminal justice system for juveniles in Chicago are estimated to be $13,690 per person in 1998 dollars.[12] Aos et al. estimated that, in Washington D.C., operating cost per unit of crime ranges from $1,928 for juvenile local probation to $36,000 for residential treatment in juvenile rehabilitation facility in 1995/1996 dollars.[13]

Since juvenile delinquency is the strongest predictor of adult crime, projection of juvenile arrests can be used to estimate the probability of adult crime. The criminal justice costs for adult crime can be calculated by: the increased/decreased probability of adult crime times the average expenditures for adult criminal justice.

The method to estimate the criminal justice expenditures for adult crime is similar to that of the juvenile costs. Reynolds et al. estimated expenditures to the criminal justice system for adults in Chicago to be $32,973 per person

in 1998 dollars, including the costs of arrest, judicial processing, and treatment.[14] Aos et al. estimated that, in Washington D.C., the operating cost per unit of crime is $17,047 for adult jail with local sentence, $2,688 for adult community supervision with local sentence and post-prison supervision by the Department of Corrections, and $18,400 for residential treatment in the Department of Corrections in 1994/1995 dollars.[15]

The second perspective to evaluate the effects of retention on crime is from crime victim's point of view. The effects of retention on crime victim costs can be estimated by: the increased/decreased probability of having juvenile and adult arrests times the average victim costs per crime. Examples of victim costs include loss of lives, direct personal or property losses, and psychological consequences. Since some victim costs are intangible, it is very difficult, sometimes even impossible, to quantify the magnitude.

Recent studies divide crime victim costs into two types: direct, monetary costs incurred as a result of delinquent or criminal behavior, including medical and mental health care expenses, property damage and losses, and the reduction in future earnings incurred by crime victims; and quality of life cost which quantifies the value of the pain and suffering incurred by crime victims.

Miller, Cohen and Wiersema estimated that, in 1993 dollars, tangible losses per crime range from $370 to $1,180,000.[16] Their estimates for quality of life cost, in 1993 dollars, range from $0 to $1,995,000 per crime.[17] Aos et al. estimated that, in 1995 dollars, monetary costs per crime range from $0 for misdemeanor to $1,098,828 for murder and the quality of life cost ranges from $0 for misdemeanor to $2,038,965 for murder.[18] However, the quality of life victim cost calculations are controversial for use in the public policy analyses.

As a result, some researchers only include the tangible costs of crime in the calculation of victim costs. Reynolds et al. excluded the victim costs associated with pain and suffering, and estimated the direct expenditures per person to

victims of juvenile and adult crimes to be $14,354 and $34,572 respectively in 1998 dollars.[19]

Future Research

Past research has documented the effects of grade retention on educational outcomes including academic achievement, dropout, and retention in later grades. However, it is unclear whether there's a causal relationship between grade retention and special education placement. Moreover, little is known about the impact of retention on crime. Well-designed experiments are essential in order to understand the links, and to estimate the costs and benefits of grade retention associated with special education placement and crime. ■

Appendix

Costs and Benefits of Grade Retention

		Costs	Benefits
Education	Expenses in the Retention Year	Average annual expenditure per pupil ($7,524)	N/A
	Retention in Later Grades	Increase in the probability of retention in later grades x average annual expenditure per pupil	N/A
	Special Education	Increase in the probability of special education placement x (average annual expenditure per pupil attending special education – average annual expenditure per pupil attending regular schools)	N/A
	Early Dropout	N/A	Increase in the probability of dropout x (average annual expenditure per pupil x average number of grades left until the graduation of high school among dropout students)
Economic Well-Being	Life Time Earnings	Increase in the probability of dropout x individual loss of a dropout student in lifetime earnings and compensation for ages 18 to 65 = Increase in the probability of dropout x average earning difference between those with high school diplomas and those having less than high school education	N/A
	Government Tax Revenues	Lifetime earnings loss x estimated tax rate	N/A
Crime	Juvenile Delinquency	Increase/decrease in the probability of having juvenile arrests x average expenditures for juvenile criminal justice	
	Adult Crime	Increase/decrease in the probability of adult crime x average expenditures for adult criminal justice	
	Crime Victims' Costs	Increase/decrease in the probability of having juvenile and adult arrests x average victim costs per crime	

NOTES

[1] U.S. Department of Education, 2002, "Table 166: Total and Current Expenditure Per Pupil in Public Elementary and Secondary Schools: 1919-20 to 2001-02," *Digest of Education Statistics, 2002,* Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, available at http://nces.ed.gov/programs/digest/d02/tables/dt166.asp.

[2] Jenny Nagaoka and Melissa Roderick, 2004, *Ending Social Promotion: The Effects of Retention,* Chicago: Consortium on Chicago School Research; Daniel J. Safer, 1986, "Nonpromotion Correlates and Outcomes at Different Grade Levels," *Journal of Learning Disabilities, 19*(8), 500-3; Anne Wheelock, 1998, *Social Promotion and Grade Retention,* Chestnut Hill, MA: Consortium for Equity in Standards and Testing.

[3] Ibid.

[4] Eric R. Eide and Mark H. Showalter, 2001, "The Effect of Grade Retention on Education and Labor Market Outcomes," *Economics of Education Review, 20*(6), 563-76; Robert M. Hauser, 1999, *Should We End Social Promotion? Truth and Consequences,* CDE Working Paper No. 99-06; C. Thomas Holmes and Janice Saturday, 2000, "Promoting the End of Retention," *Journal of Curriculum and Supervision, 15*(4), 300-14; Shane R. Jimerson, 1999, "On the Failure of Failure: Examining the Association between Early Grade Retention and Education and Employment Outcomes during Late Adolescence," *Journal of School Psychology, 37*(3), 243-72; Shane R. Jimerson, 2001, "Meta-analysis of Grade Retention Research: Implications for Practice in the 21st Century." *School Psychology Review, 30*(3) 420-38; Shane R. Jimerson, Gabrielle E. Anderson, and Angela D. Whipple, 2002, "Winning the Battle and Losing the War: Examining the Relation between Grade Retention and Dropping out of High School," *Psychology in the Schools, 39*(4), 441-57; Melissa Roderick, 1994, "Grade Retention and School Dropout: Investigating the Association," *American Educational Research Journal, 31*(4), 729-59; Melissa Roderick, 1995, "Grade Retention and School Dropout. Policy Debate and Research Questions," *Phi Delta Kappa Research Bulletin, 15;* Russell W. Rumberger and Katherine A. Larson, 1998, "Student Mobility and the Increased Risk of High School Dropout," *American Journal of Education, 107*(1), 1-35; Lorrie A. Shepard, 2001, "Understanding Research on the Consequences of Retention: An Overview of the Research," *The CEIC Review, 10*(5), 18-9; Judy Temple, Arthur Reynolds and Suh-Ruu Ou, 2001, "Grade Retention and School Dropout: Another Look at the Evidence," *The CEIC Review, 10*(5), 5-6 & 21; Charles L. Thompson and Elizabeth K. Cunningham, 2000, "Retention and Social Promotion: Research and Implications for Policy," *Eric Clearinghouse on Urban Education Digest, 161.*

[5] Jimerson, 2001; Roderick, 1994, 1995; Rumberger and Larson, 1998.

[6] Eide and Showalter, 2001; Jimerson, 1999.

[7] Georges Vernez, Richard A. Krop and C. Peter Rydell, 1999, *Closing the Education Gap: Benefits and Costs,* Santa Monica, CA: Rand Corporation.

[8] Arthur J. Reynolds et al., 2002, "Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Centers," *Educational Evaluation and Policy Analysis, 24*(4), 267-303; Vernez, Krop and Rydell, 1999.

[9] Robert S. Byrd, Michael Weitzman and Peggy Auinger, 1997, "Increased Behavior Problems Associated with Delayed School Entry and Delayed School Progress," *Pediatrics, 100*(4), 654-61; Peg Dawson, 1998, "A Primer on Student Grade Retention: What the Research Says," *NASP Communique, 26*(8); Panayota Y. Mantzicopoulos, 1997, "Do Certain Groups of Children Profit from Early Retention? A Follow-Up Study of Kindergartners with Attention Problems," *Psychology in the Schools, 34*(2), 115-27; Samuel J. Meisels and Fong-Ruey Liaw, 1993, "Failure in Grade: Do Retained Students Catch Up?" *Journal of Educational*

Research, 87(2), 69-77; William A. Owings, and Leslie S. Kaplan, 2000, "Standards, Retention, and Social Promotion," *National Association of Secondary School Principals Bulletin, 85*(629), 57-66; Michael D. Resnick et al., 1997, "Protecting Adolescents from Harm: Findings from the National Longitudinal Study of Adolescent Health," *Journal of the American Medical Association, 278*(10), 823-32.

[10] Include per arrest operating costs for police and sheriff's offices, and per conviction operating costs for superior courts and county prosecutors; Steve Aos et al., 2001, *The Comparative Costs and Benefits of Programs to Reduce Crime,* Washington D.C.: Washington State Institute for Public Policy.

[11] Estimates vary depending on the type of crime convicted.

[12] Reynolds et al., 2002.

[13] Estimates vary depending on the type of crime and type of treatment; Aos et al., 2001.

[14] Reynolds et al., 2002.

[15] Aos et al., 2001.

[16] Estimates vary depending on the type of crime and severity of the consequences; Ted R. Miller, Mark A. Cohen and Brian Wiersema, 1996, *Victim Costs and Consequences: A New Look,* Research Report, Washington D.C.: National Institute of Justice.

[17] Estimates vary depending on the type of crime and severity of the consequences.

[18] Estimates vary depending on the type of crime convicted; Aos et al., 2001.

[19] Reynolds et al., 2002. ■

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