

The economic case for investing in young children

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Investments in the education and skills of young children can have a substantial impact on their success as students, workers, and citizens. That is, one of the most efficient means to boost the productivity of the work force is 15 to 20 years is to invest in today's youngest children.

Early investments increase labor productivity as adults; that is, the amount produced per hour worked. Strong labor productivity in turn supports economic growth. Countries that have highly skilled workforces have stronger economic growth relative to countries with lower-skilled workforces. Within the United States, those states with a higher percentage of population with a college degree tend to have higher levels of per capita personal income.¹

In the United States, growth in the working-age population is expected to slow as the baby boom generation retires.² The same trend is expected for most developed countries, and even in China the growth of the working-age population is expected to slow in the near term and eventually shrink somewhat. Meanwhile, the types of jobs that require higher levels of education and training are expected to grow faster than jobs requiring lower levels of education and training. Those jobs requiring more skills pay higher annual wages. For example, in the United States a job requiring at least a bachelor's degree on average pays three times more than a job that only requires on-the-job training.³

Recent evidence suggests that employers across the globe are having more difficulty finding skilled workers to fill open positions. According to the Manpower Group's 2012 annual survey of global talent, respondents from 41 countries indicate growing difficulty finding applicants with the appropriate set of skills to fill open positions at their companies.⁴

Employers worldwide will demand workers with more skills and education into the future. Preparing for tomorrow's workforce today requires effective schools and universities; however, the foundation for labor productivity begins well before children arrive at the kindergarten door. A child's quality of life and the contributions that child makes to society as an adult can be traced to his or her first years of life. During these first few years of life, 700 new neural connections are formed every second.⁵ If this sensitive period includes support for growth in language, motor skills, adaptive abilities, and social-emotional functioning, the child is more likely to succeed in school and to later contribute to society.⁶

The skills employers look for – including ability in math and language, to work well on teams, self-motivation and persistence – are shaped during the first few years of life. According to

James Heckman, Nobel laureate economist at the University of Chicago, skills learned later in life build on those learned as a young child, thus “skills beget skills.”⁷ When a child is off to a good start, future investments pay larger benefits than if a child is not prepared early.

Investments in ECD have a high public return on investment

Since early childhood is a sensitive period for development, costs to government and society are high when a child is not prepared to succeed in school. Without support during the early years, a child is more likely to drop out of school, depend on government assistance, and commit crime—thereby imposing significant costs on society.⁸

The early years not only have an impact on the degree to which children are ready to succeed in school, a substantial body of research demonstrates that early environments have a lifelong impact on health. As articulated by the National Scientific Council on the Developing Child at Harvard University, early experiences are built into the body (for better or worse) and significant adversity early in life can produce physiological disruptions that persist far into adulthood and lead to lifelong impairments in both physical and mental health.⁹ For example, according to analysis of data collected in the Adverse Childhood Experiences study, adults who suffered multiple adverse experiences in childhood were three times more likely to suffer from heart disease.¹⁰ Adverse experiences include excessive stressful environments, such as growing up in poverty; exposure to violence, abuse, or neglect; a household member incarcerated or mentally ill; and parental separation or divorce.

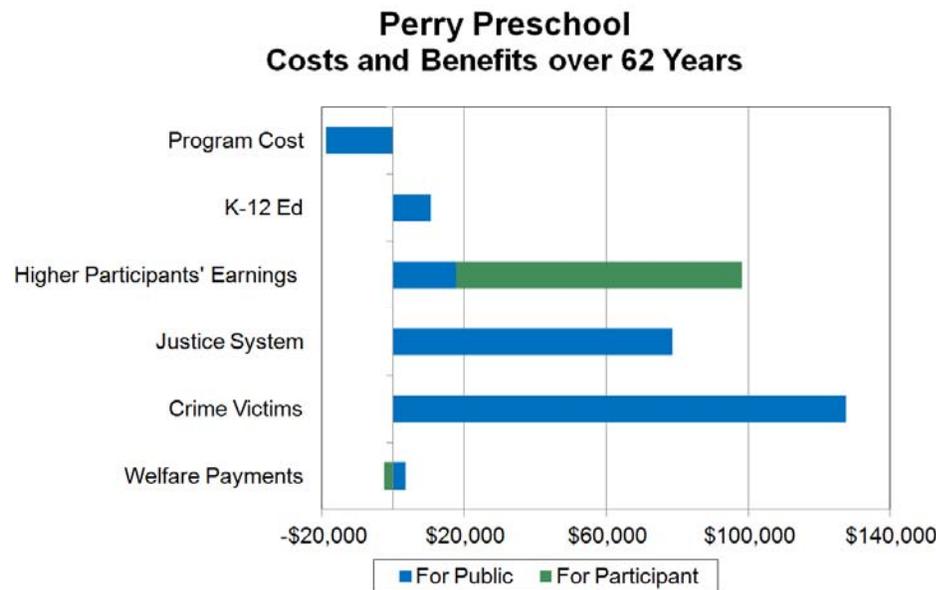
In response to the science of early childhood, ECD programs seek to nurture healthy development from the earliest years. Programs that provide enriched experiences for children and involve parents provide benefits for all children, but they have the strongest impact on children from disadvantaged environments.

Four key longitudinal evaluations in the United States demonstrate that early interventions can have a positive impact on young children from disadvantaged environments that lasts well into adulthood. The studies used well-matched comparison groups and cost-benefit analysis to compare the estimated dollar value of benefits to the cost of the programs. Analyses of the Perry Preschool Program,¹¹ the Abecedarian Project,¹² the Chicago Child-Parent Centers,¹³ and the Elmira Prenatal/Early Infancy Project¹⁴ showed annual rates of return, adjusted for inflation, ranging from 7 percent to just over 20 percent.¹⁵ The Perry Preschool Program and Chicago Child-Parent Centers provided preschool at ages 3 and 4, Abecedarian provided full-day care and education for children a few months old through age 4, and the Elmira Prenatal/Early Infancy Project provided home visits by a nurse to high-risk mothers during pregnancy until the child turned age 2.

The benefits attributed to these ECD programs include reductions in special education and crime, and increases in tax revenue. According to a study by Wilder Research, investment in early childhood education can save K-12 public schools money by reducing special education costs and grade retention and improving classroom productivity. A cost-benefit analysis in Minnesota suggests that the monetary benefits accrued to the school system come close to covering the cost of providing preschool.¹⁶

Reductions in the cost of crime play a large role in boosting overall rates of return, particularly for the Perry Preschool Program (see Chart 1). Only the Abecedarian Project did not include cost reductions due to decreases in crime because differences in crime rates between the treatment and control groups were not statistically significant.¹⁷ In each study, the drop in crime led to reduced costs for incarceration, police protection, and courts. Furthermore, the costs to the victims of crime decreased, including loss of property and suffering. Added together across all four longitudinal studies, the savings in crime alone could justify increased investment in high-quality ECD.

Chart 1



Source: Schweinhart, et al. (2005)

In addition to the longitudinal studies, a meta-analysis by Washington State Institute for Public Policy creates an average composite of 53 ECD programs to compare the return on investment with other intervention programs for youth. The results for early childhood education for 3- and 4-year-old children, the Nurse Family Partnership, and home visiting programs for at-risk mothers and children compared favorably with other intervention program types reviewed by the authors, including several parole supervision programs for juvenile offenders.¹⁸

In addition to reductions in remedial education and crime costs, the longitudinal evaluations show that children who take part in ECD programs have higher earnings and pay more taxes once they reach working age. According to a cost-benefit analysis of the Perry Preschool study, a child who attended preschool will pay \$38,000 to \$75,000 more in taxes over his or her lifespan than a child who did not attend.¹⁹

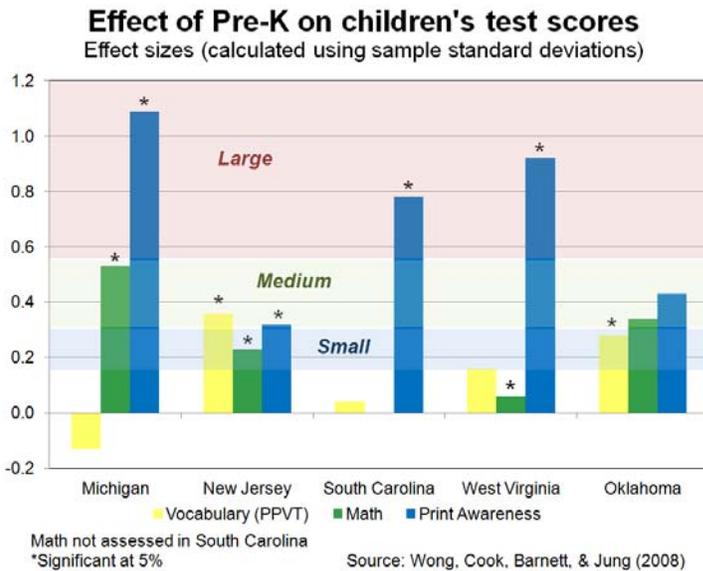
Rates of return for the longitudinal early childhood education studies compare favorably with the U.S. stock market, which on average earned between 5 percent and 7 percent, adjusted for inflation, over the past few decades. This suggests that disadvantaged youth are a better social investment than stock market equity.²⁰ Finally, while children and their families benefit in the studies, the majority of benefits accrue to the rest of society.²¹ That is, taxpayers receive proportionally more benefits than the ECD program participants.

More recent studies show children benefit from preschool

While the long-term benefit-to-cost ratios are based on studies that started 20 to 40 years ago, recent evidence from state preschool assessments provides additional corroboration that early childhood education programs help children prepare for school.

A five-state study using a regression-discontinuity design shows that children who attended a state preschool program at age 4 in five states (Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia) showed overall gains in vocabulary, math, and print awareness (see Chart 2).²² Using the same technique, an analysis of New Mexico's fourth year of offering preschool shows that vocabulary scores increased 24 percent of a standard deviation relative to the control group, math scores increased 37 percent, and early literacy increased 130 percent.²³ Similar gains are found in a study of Oklahoma's universal preschool program in Tulsa, with low-income children posting larger test score gains than higher-income children.²⁴

Chart 2



Two U.S. studies, one that examines child care in poor communities²⁵ and a second that includes a more diverse sample²⁶ both found that enrollment in center-based care was associated with positive cognitive outcomes for young children, particularly when child care providers had high levels of skill and education and child-teacher ratios were low. These positive effects were significant in both poor communities and more diverse communities even after other relevant factors such as family background and maternal education were controlled. However, an additional finding from these studies is an increase in children's physically aggressive behavior after participating in center-based care, particularly for children who spend large amounts of time in these care arrangements.²⁷

The early childhood education industry is a large employer with almost 2 million workers in the United States.²⁸ Furthermore, relative to many other industries, early childhood providers tend to buy a greater share of services and materials from local businesses, and child care workers tend to spend more of their earnings locally.²⁹ While other industries have been targets for economic development policy in the United States, such as receiving tax credits or subsidies, child care traditionally has not been. However, Mildred Warner notes that statewide surveys of economic developers in Wisconsin and New York found more than 80 percent believe the child care industry should be part of economic development policy while 58 percent note that their communities face an inadequate supply of quality child care.³⁰

The economic case for investing in early childhood education, therefore, is not only found through benefits that accrue several years down the road, but increased jobs and income in the near term. Tim Bartik concludes in his book, *Investing in Kids: Early Childhood Programs and Local Economic Development*, that early childhood education investments provide local

economic development benefits that significantly increase the near-term and long-run employment rates and wage rates of a state or local economy.³¹

¹ There is a strong correlation between the percentage of population with a college degree and per-capita income at the state level. Data from U.S. Census Bureau and Bureau of Economic Analysis.

² US Census Population Division. Population Projections. <http://www.census.gov/population/www/projections/>.

³ US Bureau of Labor Statistics. Employment Projections Program. <http://www.bls.gov/emp/>.

⁴ Manpower Group. 2012 Talent Shortage Survey Research Results. May 2012.

⁵ Center on the Developing Child at Harvard University. In *Brief: The Science of Early Childhood Development*.

⁶ Martha F. Erickson and Karen Kurz-Riemer. *Infants Toddlers, and Families: A Framework for Support and Intervention*. New York: Guilford Press, 1999.

⁷ James J. Heckman. "Schools, Skills, and Synapses." *Economic Inquiry*, Vol. 46, No. 3, 289-324.

⁸ Center on the Developing Child at Harvard University. "Excessive Stress Disrupts the Architecture of the Developing Brain." Working Paper No. 3, Summer 2005.

⁹ Center on the Developing Child at Harvard University. *The Foundations of Lifelong Health Are Built in Early Childhood*. July 2010.

¹⁰ Maxia Dong, Wayne H. Giles, Vincent J. Felitti, Sharon R. Dube, Janice E. Williams, Daniel P. Chapman, Robert F. Anda. "Insights into causal pathways for ischemic heart disease: Adverse Childhood Experiences Study." *Circulation* 2004; 110:1761-1766.

¹¹ Lawrence J. Schweinhart, Jeanne Montie, Zongping Xiang, W. Steven Barnett, Clive R. Belfield, and Milagros Nores. *Lifetime Effects: The High/Scope Perry Preschool Study Through Age 40*. Ypsilanti, Mich.: High-Scope Press, 2005.

¹² Leonard N. Masse and W. Steven Barnett. *A Benefit-Cost Analysis of the Abecedarian Early Childhood Intervention*. New Brunswick, NJ: National Institute for Early Education Research, 2002.

¹³ Arthur J. Reynolds, Judy A. Temple, Dylan L. Robertson, and Emily A. Mann. "Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Centers." *Educational Evaluation and Policy Analysis*, 2002, Vol. 24, No. 4, 267-303.

¹⁴ Lynn A. Karoly, Peter W. Greenwood, Susan S. Everingham, Jill Houbé, M. Rebecca Kilburn, C. Peter Rydell, Matthew Sanders, and James Chiesa. *Investing in Our Children: What We Know and Don't Know About the Costs and Benefits of Early Childhood Interventions*. Santa Monica, Calif.: RAND Corporation, 1998.

¹⁵ James J. Heckman, Rob Grunewald and Arthur J. Reynolds. "The Dollars and Cents of Investing Early: Cost-Benefit Analysis in Early Care and Education." *Zero to Three*, July 2006, Vol. 26, No. 6, 10-17.

¹⁶ Richard Chase, Brandon Coffee-Borden, Paul Anton, Christopher Moore, and Jennifer Valrose. *The cost burden to Minnesota K-12 when children are unprepared for kindergarten*. Wilder Research. December 2008.

¹⁷ The lack of a crime effect is likely due to relatively low crime rates in the study area compared with other parts of the country. See Jean Burr and Rob Grunewald. "Lessons Learned: A Review of Early Childhood Development Studies," Federal Reserve Bank of Minneapolis, April 2006.

¹⁸ Steve Aos, Roxanne Lieb, Jim Mayfield, Marna Miller, and Annie Pennucci. *Benefits and Costs of Prevention and Early Intervention Programs for Youth*. Olympia, Wash.: Washington State Public Policy Institute. September 2004.

¹⁹ Clive R. Belfield, Milagros Nores, and W. Steven Barnett. *The High/Scope Perry Pre-School Program: Cost-Benefit Analysis Using Data from the Age-40 Followup*. HighScope Educational Research Foundation, 2004. Values in 2010 dollars.

²⁰ Heckman, Grunewald, and Reynolds.

²¹ Ibid.

²² Vivian C. Wong, Thomas D. Cook, W. Steven Barnett, and Kwanghee Jung. "An effectiveness-based evaluation of five state pre-kindergarten programs." *Journal of Policy Analysis and Management*, 2008, Vol. 27, No. 1, 122-154.

²³ Jason T. Hustedt, W. Steven Barnett, Kwanghee Jung, and Allison H. Friedman. *The New Mexico PreK Evaluation: Impacts From the Fourth Year (2008-2009) of New Mexico's State-Funded PreK Program*. National Institute for Early Education Research. November 2010.

²⁴ William T. Gromley. *Small miracles in Tulsa: The effects of universal pre-K on cognitive development*. 2007. http://www.humancapitalrc.org/events/2007/hcconf_e cd/gormley-slides.pdf. Accessed January 3, 2011.

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- ²⁶ National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network. "Child Outcomes When Child Care Center Classes Meet Recommended Standards for Quality." *American Journal of Public Health*, 1999, Vol. 89, No. 7, 1072-1077.
- ²⁷ Burr and Grunewald.
- ²⁸ United States Government Accountability Office. *Early Child Care and Education. HHS and Education are Taking Steps to Improve Workforce Data and Enhance Worker Quality*. Report to the Chairman, Committee on Finance, U.S. Senate. February 2012.
- ²⁹ Mildred Warner. "Child Care Multipliers: Stimulus for the States." Linking Economic Development and Child Care Research Project. Cornell University, 2009.
- ³⁰ Ibid.
- ³¹ Tim Bartik. *Investing in Kids: Early Childhood Programs and Local Economic Development*. W.E. Upjohn Institute for Employment Research. Kalamazoo, Mich., 2011.