



1126 East 59th Street
Chicago, Illinois 60637

James J. Heckman
Henry Schultz Distinguished Service
Professor of Economics

National Commission on Fiscal Responsibility and Budget Reform
1650 Pennsylvania Avenue NW
Washington, DC 20504

Dear Senator Simpson, Mr. Bowles and Members of the Commission:

Thank you for your efforts to restore fiscal responsibility and to recommend the necessary steps to reduce America's budget deficit. One doesn't need to be an economist to know that spending too much is bad, or that spending too little can be harmful. But it is helpful to have an economist analyze value and point out the critical investments necessary to achieve greater returns in productivity. It is in this spirit that I offer my help and observations on how America can reduce its debt while advancing its economic and social standing in the world.

Budget deficits are created by unwise spending. Budget deficits are solved by wiser spending informed by data and decision-making highly attuned to achieving greater value on investment.

The cost of post-9/11 spending on homeland security and the wars in Iraq and Afghanistan have significantly added to our nation's debt. However, looking beyond these expenditures we see a budget that largely invests in building human and economic capital through a variety of incentives, programs and direct services. These are not misplaced expenditures. But we can, should and must deliver greater value for taxpayer investments.

Outcomes in education, health and sociability greatly influence our nation's economic productivity and future. Achieving better outcomes in these areas will create far greater productivity and prosperity than simply cutting spending to reduce deficits.

Human capital is and always has been one of our country's greatest natural resources. This is one of the reasons why I have dedicated my career to assessing the value of investing in human capital development. My work led to the development of what is commonly called *The Heckman Two-Step*, which is used by economists to remove bias selection and isolate the true causal factors of an investment or action. I received a Nobel Prize for that work and have subsequently put it to use to answer what I believe is a critical question: How can we best invest in human capital development to increase workforce capabilities, raise productivity and social cohesion and assure America's economic competitiveness in the global economy?

Data from economists, social scientists and medical experts conclusively shows that the answer is to invest in comprehensive early childhood development—from birth to age five—particularly in disadvantaged children and their families. I strongly urge you to keep this in mind when recommending ways in which to reduce America's debt and increase its productivity. Ignoring this finding will put our country's future in peril by producing a deficit of human capital that will take generations to correct.

I would like to outline why it is so important for us to invest in early childhood education for disadvantaged children, why it would be harmful to cut funding to existing programs and, finally, the kind of effective programs we should look to build. If you are interested, longer, more technical explanations can be found in published papers such as *Schools Skills and Synapses* and *The Economics and Psychology of Inequality and Human Development* (Heckman & Cunha), both of which are accessible at www.heckmanequation.org/tools.

Understanding the value of effective human capital development

Birth to five early childhood education for disadvantaged children is a cost efficient and effective investment in preventing downstream problems in education, health, social and economic productivity that place large burdens on local, state and national budgets, as well as weaken our global competitiveness and security. Understanding recent developments in the science of human skills development helps us understand why.

Successful nations invest in building equity. The term "equity" has two different meanings. From a social science point of view, equity is providing equal opportunities for success—a playing field that is as level as possible to create greater achievement among people from all walks of life. In economics, achieving equity is to build lasting value that builds upon itself. My work has shown that proper investment in people builds stronger equity on all fronts. Early childhood education is a proper investment economically and morally.

A large body of economic, health and social science data makes it clear that early childhood education is more than a social imperative; it is an economic one that has far reaching implications for our nation. My work has focused on the economic value of providing equal resources to disadvantaged children and their families in an attempt to equalize their children's possibilities for social and economic success.

For many years, Flavio Cunha from University of Pennsylvania, myself and colleagues at the University of Chicago, University of Dublin and other institutions have been synthesizing what is known from the fields of health, human development, education, cognitive science and economics to answer three questions:

- 1) When does inequality start;
- 2) Is worthwhile to reduce inequality by investing in education and health; and,
- 3) How best to invest limited financial capital to create more productive human capital?

The evidence is quite clear that inequality in the development of human capabilities produces negative social and economic outcomes at every level that can and should be prevented with investments in early childhood education, particularly in disadvantaged children and their families.

My colleagues and I have analyzed several existing longitudinal studies of early human development and their impact on school and adult outcomes—including Perry Preschool, Abecedarian and Nurse Family Partnership— and have derived five empirical conclusions:

- 1) Inequality in early childhood experiences and learning produce inequality in ability, achievement, health and adult success;
- 2) While important, cognitive abilities alone are not as powerful as the dynamic package of cognitive skills and social skills—defined as attentiveness, perseverance, impulse control and sociability. In short, cognition and character drive education and life success, with the character development often times being the most important factor;
- 3) The deterministic factors of genetic, parental and environmental resources can be overcome through investments in quality early childhood education that provide children and their parents with the resources they need to properly develop the cognitive and character package that drives productivity;
- 4) Waiting until age five to begin formal education is too late for disadvantaged children, as we miss the opportunity to build a solid foundation for success;
- 5) Investment in birth to five early education for disadvantaged children helps prevent the achievement gap, reduce the need for special education, increase the likelihood of healthier lifestyles, lower the crime rate and reduce overall social costs. In fact, every dollar invested in early childhood education produces a 10% per annum return on investment. Equitable early childhood education resources produce greater social and economic equity.

A look at the facts evidences the negative effects of inequality and shows how we can create a more level and productive playing field for all by making wise and timely investments in effective education.

Winning and losing the lottery of birth. Each of us is born into circumstances over which we have no control. Our parents, their genetic composition, education, health status, economic resources and environment are passed onto us in a family endowment. This endowment shapes the trajectory of our lives.

By nature and circumstance they are unequal. At birth, a child inherits different capabilities and the resources to capitalize on them. We can't completely change that picture. But we should change some of it. In particular, we should address the inequality in some of the resources families have to properly develop their child's potential.

It comes as no surprise that there are significant differences in family environments and the resources invested in children across socioeconomic groups. Gaps in cognitive and emotional stimulation for children from families of different socioeconomic status open up early. Family status makes a substantial difference. As you'll see in the charts below, intact families invest greater amounts in their children than do single parent families, although the exact reasons why are not known. These investments pay off in higher achievement.

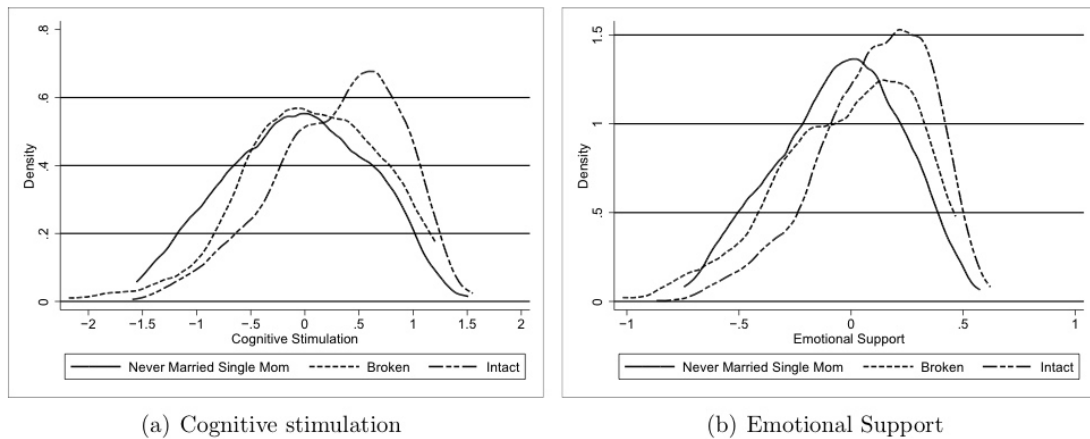


Figure 3: Age 0-2, female white children, by family type. Source: Moon (2008) analysis of CNLSY data. Cognitive stimulation is measured by how often parents read to children, and the learning environment in the home. Emotional support is measured by how often child receives encouragement (e.g., meals with parents).

We see large gaps in cognitive and emotional stimulation at early ages, they persist throughout childhood and very much influence adult outcomes. This evidence on disparities in child-rearing environments and their consequences for adult outcomes is troubling in light of the greater proportion of children being raised in such environments. The proportion of American children under the age of 18 with a never-married mother has grown from less than 2% in 1968 to over 12% in 2006. The fraction of American children under age 18 with only a single parent has grown from 12% to over 27% during this period.

The problem is not just income. Even though it is the standard basis for measuring poverty, recent research suggests that parental income is an inadequate measure of the resources available to a child. Good parenting is more important than cash. High quality parenting can be available to a child even when the family is in adverse financial circumstances. While higher income facilitates good parenting, it doesn't guarantee it. An economically advantaged child with bad parents is more disadvantaged than an economically disadvantaged child with good parents.

It is not feasible in a free society to insist that all children be raised by married parents or that individuals must pass a parenting test before having children. It is feasible to recognize the trends in our society and make adjustments in social investments to fill gaps and improve social and economic outcomes.

The problem is not just one of single parenting. We currently have a society that makes good parenting increasingly difficult. The cost of living often requires dual careers and incomes. Work hours and commutes are long, wages are stagnant and relatively few have generous parental leave benefits. In addition, we no longer live in intact, intergenerational families where good parental habits are taught among family members and parents are supported in the daily tasks of child-rearing by their parents and siblings.

When asked, a large majority of Americans agree that the interests of children are best served if one parent remains at home with the child. This is a bittersweet affirmation of a family value that is nearly impossible to fulfill for many middle-class families, let alone working-class and working-poor families. Parents need help, their children will suffer if they don't get it and society will pay the price in higher social costs and declining economic fortunes.

Poverty starts with poor parenting. But it need not persist. The equalizing factor is early access to education that changes the equation for the parent and the child. Like quality parenting, quality early learning is defined as developing the dynamic package of cognitive and character skills.

Cognitive and character skills propel success. Numerous studies have documented that cognitive ability, usually measured by scholastic achievement tests, predicts schooling, wages, participation in crime, health and success in many facets of life. Yet, non-cognitive abilities have also proven to be predictors of the same outcomes. These abilities are attributes of character—perseverance, motivation, self-esteem, self-control, conscientiousness and forward-thinking behavior.

Cognition and character work together—and determine future social and economic status. For example, the higher the cognitive and character capabilities, the more likely the individual will choose and succeed in a white collar job.

This was borne out in my recent work on the economic efficacy of the GED. Those who didn't graduate high school but obtained a GED were less successful economically than high school graduates. This had more to do with the package of cognition and character than any stigma related to the GED (after factoring out that many GED certificates are earned in prison). Individuals who persist in graduating high school are more likely to have character traits that help them persist on the job. They show up, they control their impulses, they work toward a goal and they work with others. Those with GED's may be as smart or smarter, but they tend to be characters rather than people with character who have greater value and potential for employment.

Simply put, cognition and character drive education success that ultimately results in economic success for individuals and society at large.

The same psychological traits that predict occupational achievement are also strongly predictive of a variety of diverse behaviors, such as smoking, employment, teenage pregnancy, wages, wages given

schooling and many other aspects of economic and social life—all of which affect local, state and national economies.

Poor parenting is defined as failing to provide children with cognitive and character development. Poor education is defined as the same. Quality early childhood education is the equalizing factor. It should not be cut to reduce the deficit. The fiscally responsible thing to do is to invest more resources in early childhood education. It is something for which we must find the dollars because it saves money as early as kindergarten and builds equity throughout the life of the child. Early childhood education creates a taxpayer who reduces his or her own tax burden through greater productivity, healthier living and stronger contributions to society.

Equity builds equity. We cannot possibly equalize all the factors that contribute to achievement and personal success. But we can invest wisely to correct disparities that create larger and persistent problems that threaten the well-being of our nation.

Gaps in the capabilities that play important roles in determining diverse adult outcomes open up early across socioeconomic groups. The gaps originate before formal schooling begins and persist through childhood and into adulthood. Remediating the problem is not as effective or cost efficient as preventing it.

For example, schooling after the second grade plays only a minor role in creating or reducing gaps. Conventional measures of educational quality—reduced class sizes and teacher salaries—that receive so much attention in policy debates have small effects in creating or eliminating gaps after the first few years of schooling. This is surprising when one thinks of the great inequality in schooling quality across the United States and especially among disadvantaged communities.

My colleagues and I looked at this and decided to control for early family environments using conventional statistical models. The gaps substantially narrowed. This was consistent with evidence in the Coleman Report (1966) that showed family characteristics, not those of schools, explain the variability in student test scores across schools.

Such evidence opens the question of which aspects of families are responsible for producing these gaps. Is it due to genes? Family environments? Family investment decisions? Can they be avoided or surmounted? The evidence from intervention studies, such as Perry Preschool and Abecedarian, suggest an important role for investing resources in better family environments in order to produce better education and adult outcomes. One important reason is that gene expression is governed by environmental conditions. Creating a positive early environment through parental support and/or formal early childhood education shapes abilities, capabilities and achievements.

Knowing this, we must invest in the foundation of school readiness through birth to five early childhood education for disadvantaged children—and build upon that foundation with high quality secondary education to sustain progress to college and career.

Enriching early family environments can compensate for disadvantage. The Perry Preschool Program is the flagship early childhood intervention program. Perry enriched the lives of low-income African-American children with initial IQs of 85 or below. The intervention was targeted to three-year olds and was relatively modest: 2.5 hours per day of classroom instruction, 5 days per week, and 1.5 hours of weekly home visits. Children participated for only two years and no further intervention was given. But the lives of participants were tracked for decades to see the effect on school and adult outcomes.

Perry did not produce lasting gains in the IQs of its male participants and produced at best modest gains in IQ for females. Yet the program has a rate of return of around 10% per annum for males and females — well above the post-World War II stock market returns to equity estimated to be 5.5%. This evidence defies a strictly genetic interpretation of the origins of inequality.

Even though their IQs after age 10 are not higher on average, achievement test scores of participants are higher. This evidence underscores the difference between achievement test scores and IQ. Achievement tests measure crystallized knowledge, not captured by tests of fluid intelligence. In addition, they are influenced by personality factors. The principle influence in the Perry Program was its positive effect on non-cognitive, or character, skills.

We see a similar situation with Head Start and Early Head Start, both of which are often unfairly judged and maligned. Yes, we can and should do a better job in those programs, but the focus on the so-called “drop-off” in elementary years is based solely on cognitive achievement, which data shows is less than half of the equation for success. It also overlooks the fact that many Head Start children move from a nurturing early education environment into low quality elementary schools. Gains made in early childhood education must be sustained with quality education. Yet, throughout the course of their education and lives, Head Start graduates tend to be more persistent in their education, more inclined to healthy behaviors and less inclined to be involved in criminal activity. Early Head Start and Head Start are programs on which to build and improve—not to cut.

Direct investment in children is only one possible channel for intervening in the lives of disadvantaged children. Many successful programs also work with mothers and improve parenting skills. The two inputs — direct investment in the child’s cognition and personality and investment in the mother and the family environment she creates — are distinct, but they complement each other. Improvements in either input improve child outcomes. Improvements in both are the wisest investment.

The Nurse Family Partnership program intervenes solely with pregnant teenage mothers and teaches them mothering and infant care. It has substantial effects on the adult success of the children of disadvantaged mothers. Olds (2002) documents that perinatal interventions that reduce fetal exposure to alcohol and nicotine have substantial long-term effects on cognition, socioemotional skills and health, and have high economic returns.

The evidence from a variety of early intervention programs summarized in Reynolds and Temple (2009) shows that enriching the early environments of disadvantaged children has lasting beneficial effects on adolescent and adult outcomes of program participants.

Beyond education: the benefits to health. Our recent analysis of The British Cohort Study clearly evidences the effects of early childhood experiences and the cognitive/social skills package. The British Cohort Study is a survey of all babies born after the 24th week of gestation from Sunday, April 5th to Saturday, April 11, 1970 in England, Scotland, Wales and Northern Ireland. There have been seven follow-ups to trace all members of this birth cohort: 1975, 1980, 1986, 1996, 2000, 2004, 2008. We looked at information from the birth survey in 1970, measurements from the second sweep in 1980 and outcomes from the fifth sweep in 2000.

Birth information took “family endowments” into account—parental resources that formed the foundation for early learning experiences. These included the mother’s age, education, father’s social class, and parity at birth. This was supplemented with family information at age ten (the second sweep in 1980) that included the gross family income, whether the child had lived with both parents since birth and the number of children in the family at age 10.

Measurements in the second sweep included scores on standard cognitive tests such as math, English, language comprehension and word definition. Also included were measurements of social and non-cognitive skills from tests on control, perseverance, cooperativeness, completeness, attentiveness and persistence. These were supplemented by basic physical measurements in height, weight, head circumference and the height of the child’s parents.

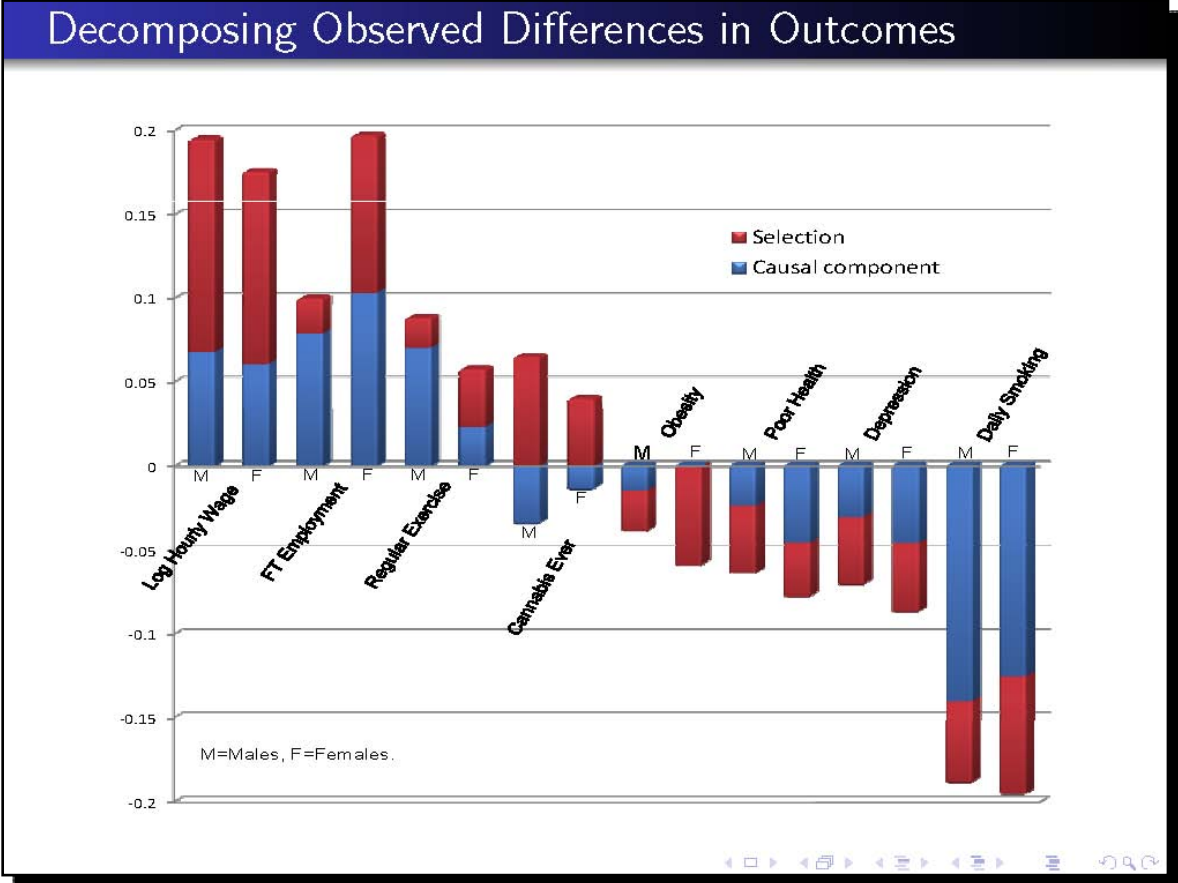
The fifth sweep in 1980 surveyed the adult outcomes of the child, taking into account the length of schooling, labor market outcomes in employment and wages, healthy behavior and health status.

Our analysis found that when we take into account the multiple facets of education, we see that all matter but have effects in different ways:

- Cognitive abilities influence schooling decisions and labor market outcomes.
- Social skills and early life experiences are important determinants of health and healthy behavior.
- Cognitive ability, social skills and early life experiences produce different health outcomes in men and women.
- Far too much credit is given to cognitive abilities alone when social skills and early life experiences often play pivotal roles in shaping economic and health outcomes.

The chart below shows a clear correlation between education and health. The length of each bar represents the difference in each outcome between high- and low-levels of education. We see that more educated individuals are more likely to work full time, earn higher wages and exercise regularly. In addition they are less likely to be obese, smoke daily, be in poor health and suffer from depression. The key

issue is to understand how much of the difference between high- and low-educated individuals is caused by education, and how much reflects early life factors (cognitive ability, social skills and early health) and family background characteristics. This is fundamental; if education has a causal effect, then increasing the education level of the population would be an effective health policy. If, instead, more educated individuals are healthier because they have better skills developed in children, then early intervention is a more effective strategy for reducing health disparities in adulthood.



A closer look at the picture reveals the drivers of each particular outcome according to gender. While each bar reflects the total difference by education, the blue portion quantifies the contribution of cognitive abilities, and the red portion quantifies non-cognitive skills, early health and family endowments. For example, early life factors (social skills and family endowments) account for at least half of the adult disparities in poor health, depression, obesity and wages.

Seeing this complex and dynamic interplay of cognitive and non-cognitive skills and early life experiences across a range of economic and health outcomes leads to a very solid conclusion: quality early childhood education can close the income gap, reduce health disparities and save taxpayers a bundle in lower health and social costs. It saves lives and it saves money. Early childhood education is a moral imperative with an economic payoff.

Investing in programs that make dollars and sense

Fiscal responsibility is not simply reducing costs. Fiscal responsibility is looking at costs and returns—and investing resources where returns are the greatest with the least amount of risk.

Evidence shows that supplementing the family environments of disadvantaged children with education resources is the most effective and cost-efficient way to provide equal opportunity, greater achievement and stronger economic success. Gains made in early childhood should be built upon with quality secondary and post-secondary education that continues the development of cognitive and character skills.

Concern over the costs of early childhood education are warranted, but should quickly evaporate when they are balanced with the returns. Programs such as Perry Preschool cost between \$7,000 to \$8,000 per year, per child. This is fairly close to the amount of money spent per child in secondary education in public schools. The rate of return for investment in quality early childhood education is 10% per annum. This rate of return is exponential and highly valuable: Every dollar invested in early childhood education returns ten cents annually *for the life of the child*.

Doing the math shows extraordinary value. Let's assume the child lives to be 65. To simplify matters, let's use the formula for compounding simple interest:

$$FV = PV(1+i)^n$$

This calculates the future value (*FV*) accruing at a fixed interest rate (*i*) for *n* periods. With this equation, we see that an \$8,000 investment at birth, with a 10% annual return compounded over 65 years provides nearly 100 times (\$789,395) the amount by age 65 with compounding interest:

$$\$789,395 = \$8,000 (1 + 0.10)^{65}$$

It is quite clear from an economic standpoint. We can gain money by investing early to close disparities and prevent achievement gaps, or we can continue to drive up deficit spending by paying to remediate disparities when they are harder and more expensive to close. Either way we are going to pay. And, we'll have to do both for a while. But, there is an important difference between the two. Investing early allows us to shape the future and build equity; investing later chains us to fixing the missed opportunities of the past—for which we will pay dearly.

Recommended actions for fiscal responsibility and budget reform

Investing in human capital development creates solid economic returns, provided the investments come early, they are comprehensive and cohesive and sustained over time. This investment need not require significant new funding as much as rethinking current funding priorities that extend far beyond the relative pittance devoted to early childhood development. Given that early childhood education is the driver of

better outcomes and returns in secondary and higher education, health and economic development, it is important to carefully weigh the returns delivered by a myriad of programs and incentives in those areas.

The question is not where to cut. The question is where to invest—and in what. Based on the large body of education, health and economic evidence, I recommend that the Commission consider the following solutions for fiscal responsibility and budget reform:

- **Invest significant resources in a quality early childhood education system for disadvantaged children.** The United States has no comprehensive or cohesive early childhood education. It is desperately needed to reduce social disparities and their attendant economic costs.
- **Put money in quality programs.** Quality early childhood education starts at birth and goes to age five, whereupon progress must be maintained in a quality secondary education setting, especially in grades K-3. Quality early childhood education programs develop the package of cognitive and character skills necessary for learning, education achievement and college and career success. They include parental education to provide a nurturing environment in the home—and also attend to the health needs of the child.
- **Expand upon proven models.** We need not reinvent the wheel on early childhood education, just get it moving. Long-term programs such as Perry Preschool and Abecedarian should be replicated. Programs based on these models, such as EduCare, show great promise. Early Head Start and Head Start could be expanded to cover the birth to five continuum and improved by increasing access, streamlining intake procedures, using professionally trained instructors, improving curriculum and incorporating necessary child health services.
- **Braid funding streams.** Effective early childhood development cuts across the silos of education, health and economic development—as well as local, state and federal programs and funding for child education, health and welfare. Current spending is inefficient because it is not coordinated and comprehensive, nor is it focused on a single approach with singular goals. Proposed legislation such as the Early Learning Challenge Fund and the reauthorization of ESEA are opportunities to build cohesion and align funding priorities with desired returns.
- **Collect and analyze data.** Access to short- and long-term data is critical to tracking the progress of children from early childhood education through to college and career. The ability to analyze and share solid data is necessary to improve programs and guarantee the highest returns on investments.

In closing, it is a natural reaction to cut spending when faced with a budget deficit. Make no mistake, reducing spending in some areas is necessary and warranted. However, when one has dug themselves into a hole, the solution is not to stop digging as much as to start digging the hand and toe holds that facilitate climbing out. Investing in early childhood education is that hand and toe hold.

Sincerely,

A handwritten signature in black ink, appearing to read "James J. Heckman". The signature is fluid and cursive, with the first name "James" and last name "Heckman" clearly distinguishable.

James J. Heckman

Henry Shultz Distinguished Service Professor of Economics

The University of Chicago