

**Early Childhood “Pay-For-Success” Social Impact Finance: A PKSE Bond Example to
Increase School Readiness and Reduce Special Education Costs**

A Report of the
Kauffman Foundation -- ReadyNation
Working Group on Early Childhood Finance Innovation

Robert Dugger
Board of Advisors Chairman
ReadyNation
Washington DC

Robert Litan
Senior Vice President for Research and Policy
Kauffman Foundation
Kansas City, Missouri

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Executive Summary

State and federal budget spending cuts sweeping America are forcing reductions in resources for education resources at every age level. This is occurring at the same time the importance of an educated workforce is clearer than ever. One solution to this challenge is social impact finance -- private investment working with philanthropy to achieve state and national goals on a “pay-for-success” basis. How to do this has been the focus of the Kauffman ReadyNation working group on early education finance.

This is a working group progress report. Final answers may be years away and will depend on regional initiatives. This report is written for business people, philanthropists, investors, investment advisors, government officials, and early childhood service providers. It describes social impact finance, early childhood programs and special education, and provides an example of how social impact bonds might be used pay for early learning services for three and four year-old children to increase school readiness and reduce public school special education costs.

A. Science, Innovation and Entrepreneurship

Every parent in America wants the best for their children and knows education is the key. Every school district is struggling to prepare students for a future that demands more education than ever before. And the lesson in every classroom is clear – school success, and ultimately life success, depends most on how ready children are when they first arrive at school. But how can school readiness be increased? Science, innovation and entrepreneurship provide answers.

Unemployment is high. Local economies are at risk. Government budgets are limited. History and the most recent economic research show that human capital is the key to job-creating innovation, restoring growth and regaining fiscal strength. This research shows that investing in young children improves parent and classroom productivity and increases local economic and per capita income growth. In fact, the research shows that investing in the youngest children, investing in school-readiness, strengthens local economies more than any other development strategy. Strong local economies mean a strong national economy.

But how can more school-readiness investment be paid for? Where will the money come from? Local and state budgets are empty, and federal spending has to be cut. Where will the resources come from? One answer is completely American – science, innovation and entrepreneurship combined with social impact finance.

Science tells us that social and emotional capacities and many cognitive skills necessary for school and life success are best developed before age five. From brain research it is clear that the first five years of a child’s life, when 85% of human brain development occurs, are the most important in child development and education. These are the years when crucial health, personality and cognitive traits needed for school readiness, workplace productivity, and life success are established. It is simply easier and much cheaper to teach some things to children when they are three or four years old than when they are seven or eight. This is the essence of the “skill begets skill” insight of Nobel Prize winner James Heckman. It is what is meant in human capital terms by business and engineering’s Six Sigma principle – quality depends most on what is done earliest. It is far cheaper to spend more on early engineering and design than to try to fix problems later during manufacturing and assembly. Whether it is a jet plane or a three-year old, the cost difference between doing things right early-on and doing repairs later are so great, the savings often more than cover the cost.

Economic science tells us that there is almost nothing a region can do to improve its growth and per capita income outlook more than investing in young children and their families to increase school readiness. Investing in kids increases parent productivity and attracts strong families, which in turn

attracts good businesses and increases incomes and property values. Good early childhood programs also generate public sector gains that reduce operating costs and increase revenues. These gains include lower special education assignments and improved classroom performance; lower grade retention, child welfare costs, teen pregnancy, and adolescent crime; and higher high school graduation rates, employment, family formation, business investment attractiveness, economic growth and per capita income.

Innovation involves linking previously separate ideas into workable new combinations. Experts have long believed that the economic returns on sound early childhood programs are so high it should be possible to pay for them with “invest-in-kid bonds”. This idea combined with rapidly evolving concepts of social impact finance, looks particularly promising. Social impact transactions are taking many forms. They “pay for success” in improving outcomes and take advantage of the overlap of for-profit and non-profit incentives.

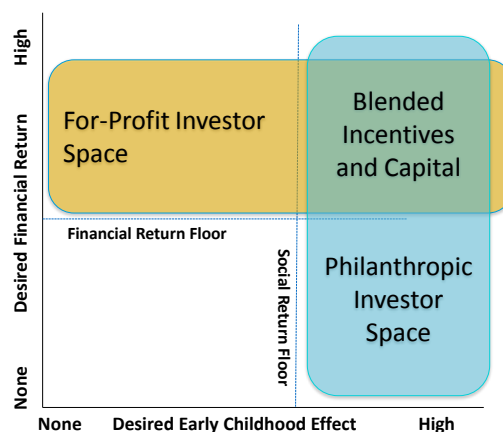
Social Impact Bonds (SIBs) are one kind of social impact finance. They pay for specific intervention services that reduce government costs or increase revenues. SIB earnings and repayment come from the government’s monetary benefits, according to the terms of the contracts among the SIB participants.

Entrepreneurship is business leaders combining these findings in new enterprises that can increase local school readiness and strengthen the local economy. Early learning capital partnerships are one example. Such partnerships could sell early learning bonds to pay for the services at-risk children need for school readiness. Bond interest and principle repayments would come from the cost savings from lower public school spending on special education, grade retention and English language training. Many names have been suggested for such bonds – for example, ELSIE bonds (“early learning social impact”), ELLIE bonds (“early learning”), and PKSE (“peek see”) bonds (“pay for pre-k to reduce special-ed costs”). All of which can be used to finance early health, parenting, and learning programs where benefit-to-cost ratios are high enough. This report refers to this class of social impact finance as PKSE bonds because the example presented focuses on reducing special education costs through early learning.

B. Social Impact Finance and PKSE Bonds

SIB “pay for success” financing approaches build on the overlap of for-profit and non-profit incentives.

Segments of Social Impact Investors



The three most important questions are: (1) Can research satisfactorily affirm that a particular early childhood intervention with a clearly identified group of children yields government cost savings or revenue increases? (2) Can those cost savings or revenue increases be monetized via enforceable contracts between a social impact bond (SIB) issuing institution, a few government agencies, and the providers of the intervention services? And (3) Can the cost savings or revenue gains be monetized within timeframes and risk levels that investors find acceptable?

SIBs can be used to fund early childhood care and education programs if information uncertainties and operational challenges are effectively addressed. Major challenges include these seven:

1. Unclear returns on the SIB investment project or intervention.
2. Long delays between the SIB intervention investment and the return.
3. Inability to link government cost reductions or revenue gains solely to the SIB investment intervention.
4. Multiple government jurisdictions with mobile young families and irreconcilable differences.
5. Resistance to paying SIB investors from public cost savings or revenue gains.
6. Limited capacity to administer and evaluate SIB program performance.
7. Incentive inconsistencies among the parties to the SIB financing.

To address the major challenges to early childhood SIB establishment and operation, the following are required:

1. Strong business, philanthropic and government support to provide essential regional knowledge, marshal the capital needed to conduct necessary statistical studies, pay SIB set-up costs, overcome jurisdictional and political differences, and in some instances take first-loss positions in the SIB capital structure.
2. Strong local child care and education community support and high-quality programs in the local area to provide expert guidance on child care and education economics, advocate for sector reforms such as quality ratings, and marshal youth human capital sector voter power to overcome jurisdictional and political opposition.
3. Rigorous statistical studies to demonstrate net benefits and serve as a foundation element of SIB contracts
4. Sound legal foundations for SIB issuing organizations
5. Clear enforceable contracts among SIB participating entities
6. Familiar investor terms and other features of the bonds or other SIB assets
7. Good investor relationships with the investment underwriting, institutional and foundation investor sectors

C. PKSE Capital Partnership Example

To attract strong investor interest, PKSE programs will need to demonstrate strong local business and philanthropic support. To provide this, in the example presented in this report, local philanthropy is given full responsibility for setting up and covering all the operating expenses of the bond issuing organization. To give investors the strongest sense that their funds will invest in children, all PKSE bond proceeds are allocated to fund pre-k scholarships for at-risk children. And to accommodate diverse kinds of pre-k providers and incentivize them to achieve higher quality, parents are permitted to use the PKSE scholarships to pay for pre-k services from any provider so long as they can show their quality is as good based on a rigorous quality rating and improvement system.

The example draws on the findings of the 2009 Pennsylvania Pre-K Counts evaluation, and is loosely based on the Bethlehem Area School District in eastern Pennsylvania, the third largest school district in the Pre-K Counts (PKC) study.

The PKC evaluation study spanned a three year period from 2005-2008 and involved 21 school districts and 10,002 children. The study projected that if Pre-K Counts services were available to all at-risk children it would reduce the rate of special-ed assignment from the 21 schools' historical average of 18%, to 2.4%. The evaluation raised the possibility that Pre-K Counts might generate special-ed cost savings for the county and state government but did not pursue the matter. The sample PKSE program assumes non-prek children are assigned to special-ed at an 18% rate, but increases the assignment rate for Pre-K Counts children three-fold to 7.5%.

The cost of pre-k is the actual amount the state government pays each year for full-day Pre-K Counts services. The cost of special-ed is estimated to be equal to 70% of the Bethlehem school district per child per year special-ed cost. In addition to these assumptions, the example limits the allows for 2% per year

out-migration of PKSE students, discounts future financial flows at a 5% discount rate, provides for operations, mentoring and monitoring costs, and incorporates local philanthropic and national PRI-type contributions.

PKSE scholarships are paid for out of the proceeds of PKSE bond sales. The PKSE bonds are basic 10-year interest-bearing bonds. PKSE operations are paid for by regional business-leader philanthropists. And future yearly rounds of PKSE financing are funded out of the net gains from the preceding round. The example shows positive resource generation with reasonable interest rate and operating cost assumptions, and becomes sustainable in six years. However, there is point when cash flow goes negative and more capital is needed because accumulated special-ed savings are not enough to pay off the bonds entirely. By introducing PRI financing to cover the capital shortage, the program becomes sustainable in two financing rounds.

Investment returns to for-profit and non-profit investors

The returns to for-profit investors are simply the interest rate paid on the PKSE bonds and any intangible sense that their capital is being allocated to sound economic activities. The returns to philanthropic investors are more complex. There are at least three bottom lines. Before describing them, a few words are needed about what is not in this report.

Absence of standard error estimates or analysis

Very few investors allocate capital without at least asking how returns varied in the past. If the average of past returns is high and variation is low, they have higher confidence in the investment. "Standard error" is a measure of past variation and is an important measure of investment risk in portfolios. If the standard error is high, investors perceive more risk and have less confidence they will earn the average return. An important aspect of calculating standard error is the number of observations. The more observations there are, the lower the standard error is. If the return on investment and its standard error are calculated from hundreds of observations – hundreds of individual stocks, for example, and hundreds of stock portfolios -- investors have more confidence that they understand the investment and will earn the average of past returns.

As complex as risk-return measures are in finance, they pale in comparison to those in early childhood research. In finance average returns consist of simple percentages, and average returns and standard errors are calculated from many hundreds of observations on assets and from portfolios of those assets, over many decades. Average returns in early childhood research consist of sometimes hard-to-define health, behavior and education effects. And these "returns" and their standard errors are calculated from relatively small numbers of children in individual studies and from only a handful of studies. The very small number of studies makes standard errors of expected "returns" quite large.

To be manageable, this report cannot explore standard error measurement. This is a task for future research. In this report, program effect returns are accepted as point estimates, and uncertainties about the returns are dealt with by using high social discount rates, by making conservative assumptions about special-ed assignment rates and the degree to which quality preschool can ameliorate learning disabilities, and by excluding key returns such as grade retention and English language learning cost reductions.

Three bottom lines of philanthropic investment

Non-profit investments in PKSE bonds have three bottom lines. The first is economic -- the improvement in school readiness and all its implications for the life success of PKSE scholars – higher third-grade reading and math scores, higher graduation rates, lower involvement in crime, fewer teen pregnancies, less drug use, higher rates of employment and future earnings, improved parent productivity, and stronger regional economic and per capita income growth. These benefits cumulate at the local and regional levels and strengthen national aggregate growth and job creation. To paraphrase Jim Heckman, "Benefits beget benefits."

A second bottom line is financial -- the reduction in special education costs. Investor purchases of PKSE bonds is just the way business leaders and philanthropists get outside for-profit capital to pay for what is needed to increase local and regional school readiness and cut special-ed costs. There are no bonds to purchase unless there are institutions, preferably local ones, to issue the bonds. The present value of regional business-leader philanthropic contributions to establish a small version of these institutions is \$412 thousand. The financial return on that philanthropic investment is the amount of special-ed cost savings. In the first round this is \$1.9 million. Success in this is measured by the ratio of special-ed savings to local philanthropic investment. In this case, the present value of the first round return is 464%. There are returns from successive rounds also. Including them increases first-round returns several times over.

The third is societal. The process of building PKSE organizations knits together local and national business leaders and philanthropic institutions into networks of people locally and nationally who understand the importance of youth human capital development, have built effective investment frameworks that can attract capital from many sources, and have the capacity to act at the levels of local, state and federal policymaking. PKSEs and arrangements like them can overcome some of the market obstacles to effective youth human capital investment, but only state and federal policymaking can address the major obstacles. One of the returns to philanthropic investment returns from establishing institutions like PKSEs is the creation of coalitions of hundreds of business leaders in every state that have the knowledge of what works and doesn't work in early child development and education. These are the people who can and ultimately will affect state and federal policy.

D. Action Items for Local and State Business and Philanthropic Leaders

To strengthen local and state economies despite limited budget resources, regional business and philanthropic leaders should –

1. Form local and state business leader early childhood investment councils.
2. Develop broad business sector support for quality prenatal through age five programs for children and their families.
3. Work with national foundations that specialize helping business leaders establish regional and state business coalitions and provide technical assistance in setting up SIB arrangements such as PKSEs.
4. Establish local "school readiness capital partnerships" to increase regional per capita income and economic growth through youth human capital investment.
5. Identify what early childhood programs the region needs most to reduce school special education, grade retention and English language learner (ELL) costs.
6. If, for example, quality preschool is needed, carefully study of the effect of specific preschool programs on special-ed, grade retention and ELL costs. Great care needs to be taken that the results are not biased in favor of a preschool program by "pre-selection". Pre-selection is a critical issue. Regarding the benchmark study, PKSE organizers need to be sure that children selected to be the preschool program being studied are not less likely to be assigned to special-ed, biasing the results in favor of the preschool program. And organizers need to be sure their PKSE scholarship granting process does not exclude children more likely to be assigned to special-ed.
7. If the study is promising, implement a PKSE program beginning with educating regional business and philanthropic leaders on SIB financing and how PKSE bond programs work. Carryout a PKSE benchmark study and complete contract arrangements among PKSE participants. Sell regional PKSE bonds to banks, investors and foundations. Closely monitor and evaluate progress and performance.

E. Action Items for National Philanthropy

To support and facilitate from-the-ground-up strategies for restoring economic growth and fiscal sustainability, large regional and national foundations should --

1. Develop SIB design, technical assistance and implementation expertise.
2. Support non-profits that are dedicated to establishing local, state and federal business and philanthropic early childhood investment councils and coalitions.
3. Fund local "effect-studies" to determine how much specific early childhood interventions actually reduce local school costs.
4. Make Program-Related Investments in promising PKSE programs to finance periods when they are cash-flow negative and to serve as a first-loss risk taker.
5. Provide background information to support business leaders in obtaining local and state statutory or regulatory changes to recognize SIB finance approaches and where appropriate to define criteria for state income tax exemption.

F. Action Items for State Governments

To encourage city and county officials and business leaders to make the best use of social impact finance to promote near-term school readiness and long-term workforce strength, state governments should --

1. Authorize, by statute and regulation, state agencies, school districts and other government entities to enter into contracts with SIB capital partnerships.
2. Authorize state entities to rebate cost savings and/or revenue increases to SIB capital partnerships as provided for in partnership contracts.
3. Establish criteria for SIB-issued debt to be income-tax exempt.

G. Action Items for the Federal Government

The federal government provides funding to states under federal law for many state-provided services such as special education. If a SIB capital partnership reduces state spending on special education, it also reduces federal spending. To encourage local public-private arrangements like SIB capital partnerships, Congress should --

1. Authorize, by statute and regulation, federal agencies to enter into contracts with SIB capital partnerships in parallel with state entities.
2. Authorize federal agencies to rebate cost savings and/or revenue increases to SIB capital partnerships as provided for in partnership contracts.
3. Amend federal laws and regulations such as the banking Community Reinvestment Act, which encourage businesses to engage in socially-desired purposes, to include investment in early child development and education.

Acknowledgments

This is a working group progress report. Final answers may be years away and will depend on regional initiatives. This report is also a group effort. It reflects the input of many people but any errors are the responsibility solely of the authors.

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Kauffman-ReadyNation Working Group

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Kauffman-ReadyNation Early Childhood Finance Innovation Working Group was organized in early 2010 to explore development of early child care and education social impact finance methods and, where possible, assist in implementing demonstrations of their effectiveness. The working group's goal is to facilitate creation of "invest-in-kid bonds" that can be underwritten individually or aggregated into asset backed securities, which can be invested in by individuals and institutions worldwide.

This report incorporates the analysis and finding of its November 2010 report "Early Childhood Finance: Meeting Notes and Initial Findings of a Conference Convened by the Kauffman Foundation and the Partnership for America's Economic Success".¹

Kauffman Foundation

The Kauffman Foundation in Kansas City is dedicated to strengthening American entrepreneurship and believes "education should lead students on a path to self-sufficiency, preparing them to hold good-paying jobs, raise their families, and become productive citizens", with particular emphasis on "advancing student achievement in science, technology, engineering and math (STEM)."²

ReadyNation

ReadyNation³ is an affiliate of America's Promise Alliance⁴ and is dedicated to "amplifying the voice of business leaders in support of policies that strengthen our economy and workforce"⁵ ReadyNation is formerly known as the Partnership for America's Economic Success, a project of the Pew Charitable Trusts' Center on the States.

Working Group Participants

<u>Name</u>	<u>Affiliation</u>
Timothy Bartik	W.E. Upjohn Institute for Employment Research
Duane Benson	Minnesota Early Learning Foundation
Daniel Blitz	Finance and Investment Consultant
Flavio Cunha	University of Pennsylvania
Andy Davis	Illinois Student Assistance Commission
Lindsay Dolce	Early Learning Ventures
Janis Dubno	Voices for Utah Children
Robert Dugger	Hanover Investment Group
Daniel Epstein	Learning Care Group
Phillip Wm. Fisher	Mission Throttle
Mark Gross	Family Central Inc
Robert Grunewald	Federal Reserve Bank of Minneapolis
James Heckman	University of Chicago, Department of Economics
Paul Hirschbiel	Eden Capital
Randall Kroszner	University of Chicago, Booth School of Business
Robert Krupicka	ReadyNation
Jesse Leinfelder	The Children's Trust
Jeffrey Liebman	Harvard University
Robert Litan	Ewing Marion Kauffman Foundation
Lance Lochner	University of Western Ontario
Harriett Meyer	Ounce of Prevention Fund
Miguel Palacios	Vanderbilt University, Owen School of Management
George Overholser	Nonprofit Finance Fund
Diana Rauner	Ounce of Prevention Fund
Art Rolnick	University of Minnesota, Humphrey Institute
Jeff Schoenberg	Pritzker Family Foundation
Felipe Vergara	Lumni Inc
Sara Watson	ReadyNation
Elaine Weiss	Economic Policy Institute

Introduction

A. Human capital, Economic Growth and Early Child Development

Many factors determine national growth and development, but human capital is indisputably the most important. A population's health, social capacities, and education are the foundations for a nation's ability to provide for families, communities, vital creative markets, strong legal and political institutions, economic competitiveness and national security.⁶

America's workforce, our human capital, is our greatest national resource. Without it none of our other aspirations are possible. Among the many things we do privately and publicly to strengthen our workforce, the most important is successfully raising and educating children to young adulthood. The young adults we need are healthy, caring, team-oriented, educated and on-track to become productive citizens. They have high-school or comparable degrees, are physically fit, and have no criminal records. They have wide ranges of abilities and interests, and their diversity is an asset, especially in view of the range of economic and environmental uncertainties we face.

Global Competitiveness

Like other mature economies, America is an aging society in a global economy. It must compete head-to-head more intensively than ever with every other economy in the world. The usually mentioned competitive factors – entrepreneurship, innovation, rule of law, democracy, etc – all depend on human capabilities. Aging and competition mean that more than anything else, to remain competitive America needs young adults who are team-oriented, educated and fit.

America cannot be a competitive leader, and restore economic growth and fiscal sustainability if its young adult population is weakened by preventable health and fitness problems, inadequate educations, and criminal activity. The Department of Defense finds that 75% of American young adults for these reasons cannot qualify for employment in the armed services.⁷ American business may not have military level fitness requirements, but their standards for education and law-abidance are certainly as high.

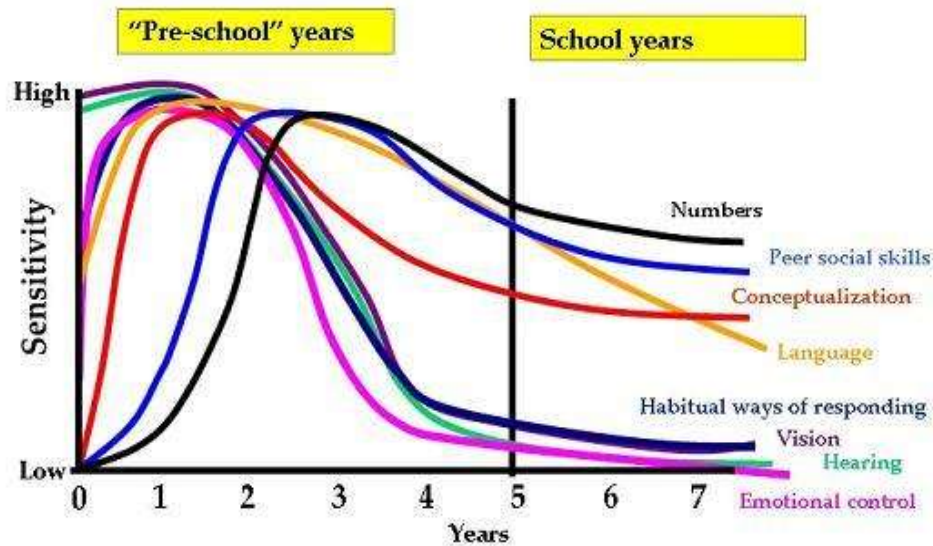
High nationwide dropout rates, low reading and math test scores, and business survey results indicating general lack of young adult workplace readiness attest to weaknesses in America's prenatal to age-18 child-raising and education capabilities. If America cannot strengthen everything it does from conception to age-18, we condemn millions of children to be under-performers and ourselves to worldwide second or third-tier competitiveness.

Early care and education "return on investment"

The first five years of a child's life, when most of human brain development occurs, are the most important in raising and educating the young adults America needs. These are the years when crucial health, personality and cognitive traits needed for school readiness, workplace productivity, and life success are established.^{8,9}

Birth - 2 years	2 - 4 years	4 - 5 years
Vision	Peer social skills	Numbers
Hearing	Language	Language
Language	Conceptualization	Peer social skills
Emotional control	Numbers	Conceptualization
Conceptualization		

'Sensitive Periods' in Early Brain Development



Graph developed by Council for Early Child Development (ref: Nash, 1997; Early Years Study, 1999; Shonkoff, 2000.)

Early learning and Productivity

The most forceful articulation of the contribution of early learning to national economic strength is still Nobel Prize-winner, and working group member, James Heckman's 2004 paper, "The Productivity Argument for Investing in Young Children" --

Our logic is simple and compelling. Education and human skill are major factors determining productivity, both in the workplace and in society at large. The family is a major producer of the skills and motivation required for producing successful students in schools and workers in the market. The most effective policy for improving the performance of schools is supplementing the childrearing resources of the families sending children to the schools. ... A family improvement policy is a successful anticrime policy. Our emphasis on early childhood interventions does not deny the importance of schools or firms in producing human skill. Indeed, if the policies we recommend are adopted, schools will be more effective, firms will have better workers to employ and train, and the prison population will decline. At lower cost to society, bolstered families will produce better educated students, more trained workers and better citizen¹⁰

Focusing specifically on the drag on economic growth from crime, Heckman points out that though some crime rates have fallen, the levels and costs of crime in terms of damages to victims, resources spent on preventing crime, resources spent on incarceration and foregone output are almost 10% of GDP. He explains it is amply documented that dysfunctional families are major producers of criminals and that early intervention programs targeted at disadvantaged families have proven track records in reducing participation in crime.¹¹

Criminal activity is a major burden for America, costing almost \$1.3 trillion per year and \$4,818 per person. ... A large fraction of our population is in prison and spending on the justice system is still growing. Enriched early childhood programs appear to reduce future crime, and in the long run they are the least-cost, most effective way to reduce crime -- far more effective per dollar than additional expenditures on police or incarceration.¹²

Heckman concludes --

On productivity grounds alone, it appears to make sound business sense to invest in young children from disadvantaged environments. An accumulating body of evidence suggests that early childhood interventions are much more effective than remedies that attempt to compensate for early neglect later in life. Enriched pre-kindergarten programs available to disadvantaged children on a voluntary basis, coupled with home visitation programs, have a strong track record of promoting achievement for disadvantaged children, improving their labor market outcomes and reducing involvement with crime. Such programs are likely to generate substantial savings to society and to promote higher economic growth by improving the skills of the workforce.¹³

Early Learning and Economic Development

The most detailed documentation of early childhood investment on economic development and per capita income growth is the book, *Investing in Kids: Early Childhood Programs and Local Economic Development*, written by another working group member, Timothy Bartik of the Upjohn Institute. Bartik exhaustively examines three early childhood programs – Abecedarian, Nurse Family Partnership, and Perry Prekindergarten -- and finds that, even under quite conservative assumptions, all three are stronger investments than state business subsidies, when viewed from a long-term economic development and national growth perspective. Bartik specifically shows --

- From a state perspective, business subsidies can boost a state's job growth, but that ignores the costs to other states of using subsidies to lure jobs away;
- While business subsidies provide a greater short-term boost to state job growth, early childhood programs provide a greater long-term boost, as participants enter the workforce;
- From a national perspective, all three early childhood programs provide earnings effects that are greater than their costs, with ratios of earnings effects to program costs ranging from 2.5 (NFP) to 3.0 (Abecedarian) to 3.8 (pre-kindergarten for all), while business subsidies have a ratio of earnings effects to program costs of only 0.65;
- If implemented at full scale, nationally, in an ongoing manner, by 2088 the three early childhood programs could be expected to produce substantial numbers of new jobs: NFP would produce just under half a million, pre-k for all would produce 3.3 million, and Abecedarian would produce 5.3 million; and
- While Abecedarian has a moderate ratio of earnings effects to program costs because of its high cost, it generates by far the most long-term earnings effects, because of the large investment associated with full-scale implementation of this program.¹⁴

B. Long-term versus Short-term Gains and the Role of Social Impact Finance

The results of the early milestone Perry, Abecedarian, and Nurse Family Partnership studies convinced policymakers beginning in the 1970s of the importance of early childhood investments. The documented high economic returns are now well understood and accepted, and contributed to state and federal governments enacting a wide range of child nutrition, health, and education legislation, including Head Start, Early Head Start, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Temporary Assistance for Needy Families (TANF), and Individuals with Disabilities Education Act (IDEA), and their state counterparts.

The gains these state and federal "macro" policies are attempting to capture, such as reductions in criminal justice costs, are long-term. Pre-k's impact on teen crime, for example, takes ten or more years to occur. Though the big gains are long-term, there are near-term "micro" gains that are important. Children with good social-emotional skills acquired in prekindergarten do better in elementary school.

Classrooms are more settled, and teachers are more productive. School operating costs are lower -- fewer children are assigned to special education and fewer have to repeat grades.

Though near-term gains have been referenced and understood for many years, they are not part of the policy calculations that determine resource allocation. As a consequence, as a nation, we almost certainly under-invest in youth human capital in general and early education in particular. As a further consequence, we have too many young adults who are not prepared for global competition and too few who are. Quantifying the actual fiscal cost savings that result from investing in young, particularly at-risk, children will allow a more accurate "pricing" or valuation of early investment.

If we could find a way to capture near-term micro gains, we would invest more in youth human capital and overtime have a stronger workforce and more sustainable fiscal situation. It is here that social impact finance may be able to serve a constructive role. Pay-for-success programs may be able to fund programs that can realize specific micro gains such as lower public school special education costs.

C. Organization of this Report

Chapter 1 reviews social impact finance and early childhood interventions with the highest scientific statistical quality. The famous milestone parent training, child abuse treatment, and prekindergarten research studies make it clear that certain interventions do yield significant long-term government cost savings and revenue gain benefits. However, the benefits most cited are realized well beyond the time horizon of most investors, and the benefits accrue to numerous local state and federal government agencies, making it unlikely that enforceable contracts could be devised to monetize the gains. Moreover, in the years since the studies were done, interventions provided by government and private institutions have proliferated. Children now are exposed directly and indirectly to the effects of several kinds of interventions. This makes it very difficult to separate the effects of one intervention from another and answer the most basic question – exactly how much should an agency rebate to a SIB issuing institution for financing a specific intervention.

Chapter 2 provides a very basic overview of special education in the U.S. and reviews the findings of the landmark primary studies of prekindergarten effects on special education assignment. It concludes that none of the major primary studies can serve as benchmarks for SIB programs. Each SIB program will require a local benchmark study of pre-k costs and special-ed savings that documents the effects, captures distinct characteristics of the area served and can be used to calibrate contracts.

Chapter 3 presents a simplified example of a PKSE social impact bond arrangement intended to overcome inefficiencies in market allocations of capital to youth human capital development. The example does not include grade retention or English language learning (ELL) service costs, though like special education costs, research shows quality early learning can significantly reduce these costs also. To aid understanding, a specific sample program is presented based on the findings of the Pennsylvania Pre-K Counts study and cost information from the Bethlehem Area School District in the Lehigh Valley of Pennsylvania.

Chapter 1

Pay-for-Success Social Impact Finance and Evidence-based Early Child Development

In this chapter we summarize what is meant by social impact finance and review the landmark early childhood program research that suggests social impact finance might be usable. The chapter lays out seven major obstacles to using social impact finance in child development and identifies ways to address the obstacles.

Social impact finance can mitigate capital market inefficiencies that cause America to under-invest in human capital. As Lance Lochner and others document, credit and capital market constraints in education are pervasive and have profound effects.¹⁵ These constraints in early youth investment are the result of a lack of understanding of the high returns on early childhood investment and the absence of developed ways to capture those returns. Unlike college and graduate-level education, there are no developed private markets for assets that finance early learning or other early childhood interventions. This financing gap can be partially filled with social impact assets.

Social Impact Bonds (SIBs) are one kind of social impact finance. They pay for specific intervention services that reduce government costs or increase revenues. SIB earnings and repayment come from the government's monetary benefits, according to the terms of the contracts among the SIB participants.

A. Review of "Pay for Success" Social Impact Finance

Over the past two decades philanthropic and profit-seeking investment to generate social and environmental benefits has moved from the periphery of investing to become a mainstream financial activity that takes many forms. An important triggering component was the development and use of equity-like income-contingent instruments to finance higher education. Miguel Palacios, a Kauffman-ReadyNation working group member, describes these efforts in *Investing in Human Capital: A Capital Markets Approach to Student Financing*.¹⁶ Income-contingent contracts and pay for success social impact finance have merged and now constitute one of the most promising ways for philanthropic and private capital to improve the life circumstances of millions of people.¹⁷

Philanthropic Investment

George Overholser, a working group member and cofounder of Third Sector Capital Partners, provides on his firm's website a thorough review of philanthropic pay for success finance. Third Sector is a leader in this area of investment. The five basic elements of social impact finance, as identified by Third Sector, are:

1. *Government contracts for social service programs to address a societal need.*
 2. *Philanthropic funders provide the financial resources to pay for the program.*
 3. *Government, service providers and philanthropic funders agree upon targeted social outcomes.*
 4. *Independent evaluators monitor program performance.*
 5. *Should the program achieve the agreed metrics, the government will be able to reimburse the initial funders for their "invested capital" and reinvest in the program. If the program fails to meet the targeted outcomes, the state agencies are not obligated to repay the investors.*
- Under the Pay for Success construct, performance risk is transferred to the philanthropic funders. An additional attraction is that often these programs drive fiscal savings along with improved outcomes for the targeted population.*¹⁸

For-Profit Investment

Much of the expanded interest in social impact finance is an explicit recognition that philanthropy or government alone cannot solve the problems that confront modern society. Instead, combinations of philanthropic and for-profit private capital are needed to scale-up solutions that work. Two reports,

Monitor Institute's *Investing for Social and Environmental Impact: A Design for Catalyzing an Emerging Industry*,¹⁹ and Bridges Ventures and The Parthenon Group's *Investing for Impact: Case Studies Across Asset Classes*,²⁰ provide descriptions of a wide range of applications and finance structures.

Specific strategies for using philanthropic and for-profit social impact bonds (SIBs) to reduce government operating costs and improving productivity are described in Jeffrey Liebman's *Social Impact Bonds: A Promising New Financing Model to Accelerate Social Innovation and Improve Government Performance*.²¹

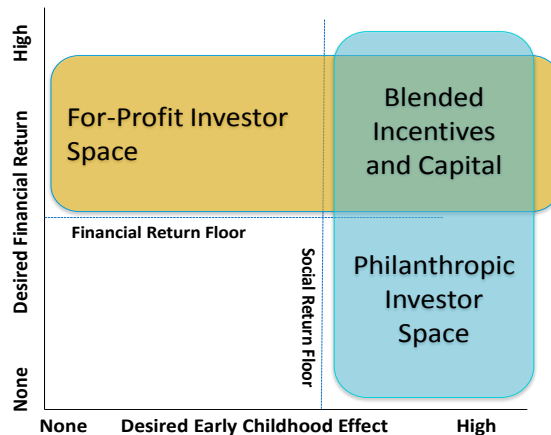
The transactions described in all these reports range from simple straight bond financing to complex mixes of equity, debt, working capital lines of credit, and loan guarantees. The examples include investments in microfinance, community development, and clean technology.²²

Bridges Ventures and the Parthenon Group emphasize that --

*Governments and charities do not have sufficient capital or the complete skills set required to solve the world's pressing challenges. At the same time, the recent economic crisis has shaken established orthodoxies about the risk and return profiles of traditional investments. The Impact Investment sector is emerging as a partial answer to the twin challenges that these two realities present: Impact Investment unlocks substantial capital to build a more sustainable and equitable global economy while allowing for diversification across geographies and asset classes.*²³

As suggested in the chart below, adapted from the Monitor Institute's report *Investing for Social and Environmental Impact: A Design for Catalyzing an Emerging Industry*²⁴, philanthropic and for-profit capital combined in effective financing strategies.

Segments of Social Impact Investors



The Monitor Institute highlights an example of blended finance sources involving the New York City Acquisition Fund for affordable housing construction. In this example, private foundations made \$32 million in low-interest, subordinated loans, a city-based charitable trust invested \$8 million on similar terms, and commercial banks raised more than \$160 million through placing commercially priced debt.²⁵ The example shows how capital from socially-motivated sources and for-profit sources can be effectively blended in transactions where socially-motivated investors accept below-market risk-adjusted rates of return to enable a transaction to offer returns that are attractive to profit-motivated investors. This symbiosis allows profit-motivated investors to obtain market rates of return and socially-motivated individuals and institutions to leverage their capital to achieve significantly more social impact than they could if investing on their own.

Where will the money come from? Monitor Institute lists these sources of social impact capital²⁶ --

- Family offices of wealthy individuals

- Clients of private banks
- Private foundations that partner with investment banks, development finance institutions, and other foundations
- Private equity funds that aim to provide growth capital profitably to businesses that generate social and environmental returns
- Mutual funds that have dedicated a portion of their assets to social impact finance
- Pension funds and sovereign wealth funds
- Corporations
- Governments

B. Applying Social Impact Finance Concepts to Early Child Development

Historically, society has spent on child and family health, nutrition, safety and education because it contributed to increased growth and rising per capita income. Investing in human capital development clearly makes economic sense, and as the Upjohn Institute's Timothy Bartik documents in his book, *Investing in Kids: Early Childhood Programs and Local Economic Development*, doing so in the earliest years of life makes especially good sense.²⁷ When compared with other tax subsidized development projects such as sports stadiums or office parks, Bartik's analysis makes clear that investing in early childhood programs is as good or better than any other strategy to strengthen regional economic development and per capita income growth.

Though frequently talked about as a very recent innovation, for-profit forms of social impact finance have many similarities to a wide variety of public finance techniques used for centuries to pay for constructing roads, bridges and other regional and national capital assets. Transportation infrastructure is part of a nation's wealth, part of the capital stock on which future growth is built. The fitness, education and teamwork skills of a population are also a form of national wealth, in fact, the most important form of national wealth.

Social Impact Bonds

Because of government's significant involvement in human capital development, the perspective examined by Jeffrey Liebman is particularly pertinent. Liebman is the Malcolm Wiener Professor of Public Policy John F. Kennedy School of Government, Harvard University. In his report *Social Impact Bonds: A Promising New Financing Model to Accelerate Social Innovation and Improve Government Performance*, Liebman focuses specifically on reducing government costs and increasing productivity and describes a generic "social impact bond" or SIB.²⁸

SIBs are investment arrangements that pay for specific intervention services that result in government monetary cost savings and/or revenue increases. The investment returns and repayment of capital are paid from the government's monetary benefits, according to the terms of contracts among the parties participating in the SIB arrangement.

In Liebman's analysis, a standard SIB is characterized by:

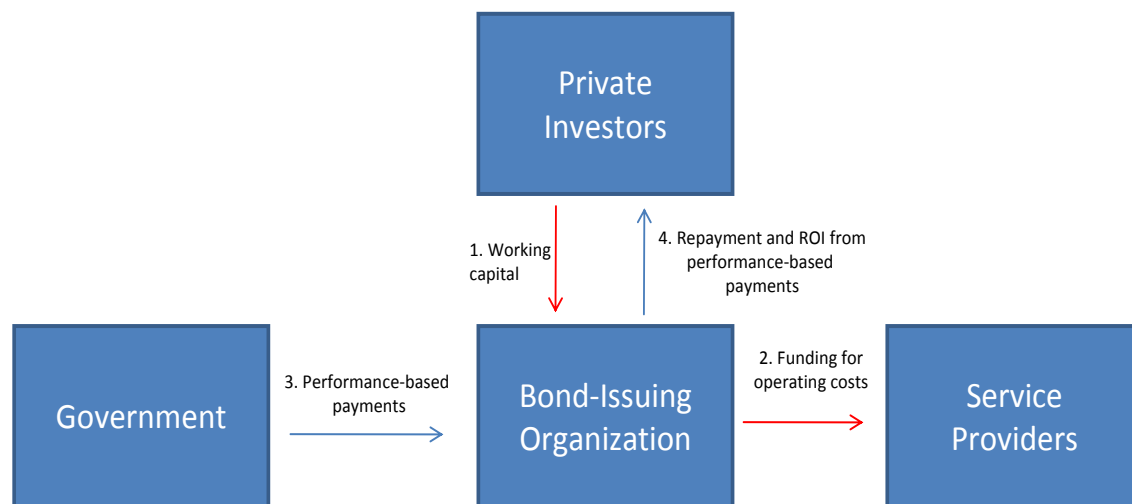
1. Payment of return on invested capital to investors
2. Repayment of invested capital
3. Government cost savings or revenue increases cover the full cost of the projects or services financed by the SIB

The reasons for using performance-contingent or "Pay for Success" funding include²⁹

1. Improving performance and lowering costs.
2. Payment is based on achieving outcome targets.

3. Focuses government agencies and social service providers on achieving program objectives and improving performance in a way that is transparent to taxpayers.
4. Accelerating adoption of new solutions.
5. Government pays only if program delivers on its promised impact.
6. Shifts risk of failure (and of wasting taxpayer dollars on programs that don't work) to private sector.
7. Can also break down the budget silos that hinder investment in prevention.
8. More rapid learning about what works and what doesn't.

Schematically, standard SIB financing looks like this³⁰:



Standard SIB arrangements require an agreement that establishes the SIB-issuing organization itself and separate enforceable contracts between pairs of all four of the major participating parties.

- ✓ the bond-issuing organization and the government
- ✓ the bond-issuing organization and private investors, and
- ✓ the bond-issuing organization and service providers

Section C: Uncertainties in applying Social Impact Bond ideas to early childhood investment

In discussing Leibman's work and attempting to apply his framework to early childhood programs, working group members identified at least seven uncertainties or obstacles to the parties being willing or able to participate in a standard SIB arrangement.

1. Unclear returns on the SIB investment project or intervention
2. Long delays between the SIB intervention investment and the return
3. Inability to link government cost reductions or revenue gains solely to the intervention being financed by the SIB organization
4. Multiple government jurisdictions with mobile young families and irreconcilable political differences
5. Resistance to paying SIB investors from public cost savings or revenue gains

6. Limited capacity to administer and evaluate SIB program performance
7. Incentive inconsistencies among the parties to the SIB financing

Using SIBs to pay for early childhood care and education requires addressing all the uncertainties listed. Looking at each in detail, working group members made these observations --

Unclear returns Before a government entity like a school system can agree to turn over cost savings resulting from an early childhood intervention, school officials have to be very certain the cost reductions and/or revenue increases are actually going to occur. Benchmark studies are needed to project the amount of cost savings or revenue increases that can reasonably be expected. These benchmark studies need to be scientifically rigorous, thorough, current and usable in court.

Benchmark projections must be statistically sound. They must be thorough in the sense that they cover all the categories of children affected by the intervention, show that the intervention led to the cost reductions, and rule out possibilities that the cost reductions are the result of other interventions or unrelated factors. They have to be based on current data and be revised as new data becomes available. Moreover, because contracts have to be judicable, the cost-saving projection studies on which the contracts are based have to be of a quality and nature to be admissible in court.

Great care needs to be taken that the results are not biased in favor of a preschool program by "pre-selection". Pre-selection is a critical question in PKSE programs. Regarding the benchmark study, PKSE organizers need to be sure that children selected to be the preschool program under study are not less likely to be assigned to special-ed, biasing the results in favor of the preschool program. And organizers need to be sure their PKSE scholarship granting process does not exclude children more likely to be assigned to special-ed.

No benchmark study can be 100% accurate, and no school official will be willing to turn over 100% of projected cost savings. However, if a projection model meets thoroughness, timeliness and judicial tests, uncertainty about the accuracy of its projections can possibly be handled by compromises. In one compromise, school officials might agree to turn over only a portion of the projected savings to the bond-issuing organization in order to have a margin of error to be sure they do not cut spending below what is justified by the intervention. A 10% margin may be enough. If so, officials will be comfortable committing to allocate 90% of the projected savings back to the SIB bond-issuing organization. If projected investment returns are high enough, the bond-issuing organization and private investors may judge that 90% is acceptable. In another compromise, costs savings in one year are audited and confirmed in the following year and are turned over to the SIB-issuing organization only after the savings have been certified. Delays of six to nine months are possible. Combining the two compromises would involve immediate payment of a portion of projected savings, full payment of certified savings, and repayment if the immediately paid portion proves to have exceeded actual savings.

Long delayed returns High-quality parent training, prenatal health, home visitation, dental care, infant and toddler care and early education programs, all have been shown to have compellingly high potential net benefits. Almost all the benefits, however, require several years to be realized. For these returns to be investible and subject to a contract, it must be possible to monetize them; that is, it must be possible to see them expressed in lower operating costs or higher revenues and redirected from the government to the bond-issuing organization according to the terms of an SIB contract.

The longer it takes for economic benefits to be monetized, the more up-front capital is needed from private investors to support delivery of the services. More capital over longer periods of time means investors and the bond-issuing organization have to put up more money and bear higher risks. More money is needed because the services have to be operated for a longer period with no interest or capital repayments to investors. More risk is involved because there is no near-term confirmation to investors that the services actually work in the ways projected.

It has long been known, for example, that high-quality preschool services for very low-income three and four year-old children, significantly reduces the likelihood that they will become involved in crime in adolescence. It has also been conclusively shown that the reductions in state and local criminal justice

costs are substantial and represent very high net economic benefits.³¹ Furthermore, monetizing the cost reductions appears to be feasible. The problem has been this: the decade between when the preschool services are provided and when the child would engage in teen crime has been too long for organizational and investor uncertainties to be overcome.

A more feasible approach is to focus on benefits that can be monetized in shorter time periods. As we discuss at length below, it has long been known that high-quality preschool reduces the rate of assignment to public school special education programs, of physically healthy, low-income children. Because special education service costs are quite high relative to preschool costs, the benefits appear to be attractively large. They also appear to be monetizable within 36 to 48 months. In fact, the success of a preschool program in reducing special education costs may be evident when the children take kindergarten school-readiness tests, only 12 to 25 months after preschool services begin. This combination of factors may make SIB programs that provide funds for preschool in order to reduce special education costs, attractive. This feasibility is the main focus of this report.

Inability to link This challenge is an aspect of the first two but is so important, it deserves a separate discussion. The question is this: can the effects of several different intervention programs be separated? For example, lower special education costs, lower grade retention, higher third-grade reading scores and higher high school graduation are all outcomes that have been documented to result from program services as diverse as Nurse Family Partnership home visiting, prekindergarten, Early Head Start, Head Start, Part B and C Individualized Education Programs (IEPs) and Individual Service Plans (IFSPs) and Response to Interventions (RTIs) provided under the Individuals with Disabilities Education Act (IDEA) and Section 504 of the Americans with Disabilities Act (ADA). If a population of children has been exposed to some or all of these programs in one way or another in the early years of their lives, how can the effects of one program be separated from the others? Consider for example a SIB program developed to finance home visiting for infants and toddlers and paid for by government cost savings or revenue increases resulting from later higher high-school graduation rates. If the children in the program also receive dental screenings and preschool educations, can effects of home visiting be separated from effects of other services with sufficient clarity to serve as a basis for a contract that funds only home visiting?

Multiple jurisdictions For SIB arrangements to work, those who receive services paid for by a SIB have to stay in the jurisdictions of the governments which are parties to the contract. For example, if officials in County A sign a SIB contract with a bond-issuing organization to provide dental screening services in the county, all goes well as long as all the children enter and attend the county's schools. If any of the children move to County B, the benefits of the SIB's dental services will accrue to county B's government. County B will enjoy cost savings and/or revenue increases from the SIB investment, but because it is not a party to the SIB contract, it will not redirect a portion of the gains to the bond-issuing organization and the investors will receive lower than projected returns on their investments.

Persuading County B to sign the SIB dental screening contract may be complicated by the administrative costs of identifying and tracking the SIB children that move in from County A, possible differences in views on the merits of the particular service or doubts about the projected benefits, competitive political considerations, and even incentives to free-ride on County A's investments.

Resistance to paying SIB investors Most people have no objections to a county or state issuing bridge or harbor construction bonds and paying interest and principle on the bonds. However, some people have strong initial negative reactions to the idea that investors will somehow profit from providing early care and education services to young children. These reactions arise from the fact that the largest government benefits arise from services directed at the poorest children in a community, and helping these children seems more like charity – something that prosperous people should want to do without being paid. For people who see things this way helping such children is philanthropy, and being paid to help them is in some sense morally wrong. This sense of moral wrong might be reduced or eliminated if more children are helped. As we explain below, there is ample room for “philanthropic investors” in SIB financing. By leveraging their capital with for-profit capital, philanthropic investors can help far more

children. In addition, because of the strongly local nature of early childhood programs, setting up early childhood SIBs may not be possible without strong local philanthropic support.

Limited capacity Poor communities would likely benefit most from SIB financing. However, these communities have limited ability to set-up, administer and evaluate SIB performance. Remote rural areas, Native American reservations, many budget-strapped cities, migrant worker camps, etc. have little or no capacity to establish and oversee SIB arrangements. Capacity may also be prohibitively limited in average small towns, cities and even middle-income counties.

Generally, the poorer and more at-risk the children are in a given jurisdiction, the greater the benefits are for that jurisdiction's government from helping those children. Accordingly, the need for philanthropic capital is even more critical in limited capacity communities. A combination of disciplined philanthropic infrastructure funding and entrepreneurially provided technical assistance consulting might be ideal for successful and rapid establishment of SIBs generally, and especially in limited capacity regions.

Incentive inconsistencies In the best of all possible worlds, the goals of philanthropists, investors, non-profit administrators, and governments would consistently be focused on maximizing human capital productivity. Children and their families would be the highest priority at every level of society and government. But such planets have not been discovered yet. Instead, we have governments riven with election priorities and political polarization. We have non-profit administrators pressured by fundraising needs and hampered by every kind of resource limitation. We have investors focused mainly on short-term profits and quarterly corporate reporting schedules, and philanthropists occasionally distracted by "flavor-of-the-month" contributing but mainly trying to do what is best amid thousands of pressing needs and very limited information.

Historically, this cacophony had one benefit. It provided multiple perspectives. These perspectives revealed different ways to solve problems and provided incentives to act on the most promising. The same is true now. The art of successful investment, philanthropy and governance is making good use of different perspectives and constructively harnessing the energy from conflicting incentives.

Conflicting incentives can be crippling however. County A's and B's elected leaders may be from competing political parties. Longer-term economic development considerations would guide County B's leaders to make a policy choice to co-sign a SIB contract with County A's leaders. However, short-term political considerations may prevent this. Add to the incentives of competing political parties the latent and always present incentive to free-ride on a neighbor's good works, and the result is near-certainty in the short-term that County B will not cooperate with County A in an early childhood SIB arrangement.

D. Criteria for Social Impact Bond Success in Financing Early Childhood Services

Drawing together Jeffery Leibman's analysis and working group discussions and findings, implementation of successful Social Impact Bond programs for early childhood care and education, require the following –

- ✓ Strong state and local business, philanthropic and government support
- ✓ Rigorous statistical demonstrations of projected benefits for a clearly defined group of children
- ✓ Sound legal foundations for SIB issuing organizations
- ✓ Clear enforceable contracts among SIB participating entities
- ✓ Bonds or other SIB assets with terms familiar to investors
- ✓ Good working relationships with the investment underwriting, institutional and foundation investor sectors

- (1) Support of state and local leaders, including philanthropic, business and church leaders, early care and education providers, and government officials --

Because of the strongly local nature of early child care and education and because the benefits of quality early childhood programs accrue mainly to local and state governments, local and state support is

essential. In fact, without it, no SIB program can be expected to be successful or attractive to potential SIB investors.

Business

The starting point for setting up an early childhood SIB is business leadership. As we discussed earlier, well-run early childhood programs increase regional growth, job creation and per capita incomes. If local and state business leaders do not see benefits to their sustained commercial success, SIB success is impossible.

Earlier, we explained what it takes to overcome the seven main obstacles to SIB effectiveness. Of those, community business leaders may be the only people who can reliably address four of the most serious. Business leadership is needed to overcome the political resistance from multiple government jurisdictions, oversee SIB program establishment and administration, resolve conflicting incentives among SIB participants, and show simply that it is morally acceptable for investors to make money on investments in programs that improve school readiness and third-grade reading and math scores; reduce grade retention, adolescent crime and teen pregnancy; and increase high school graduation rates.

Business support for early childhood programs generally is increasing. ReadyNation works across the country to mobilize business to advocate for early childhood. During the June 2010 to June 2011 budget period, non-partisan business leader contacts with decision makers resulted in crucial policy victories. Business leaders in nine target ReadyNation states made more than 4,300 contacts with state and local policy makers this year, educating them on strategic investments in young children, including: 1,470 in-person meetings, 2,209 letters, 195 calls, and 513 emails.³²

Examples of specific ReadyNation state initiatives during 2010 and 2011 include:

Alabama

A new statewide advisory committee was assembled, chaired by two business leaders, and charged with developing a plan for pre-k for all. The group's policy recommendations will be finalized and presented to policy makers prior to the 2012 legislative session. The advisory committee is engaging the National Institute of Early Education Research, with support from the Business Council of Alabama, to conduct a cost analysis for fully funding pre-k in Alabama. Colorado Executives Partnering to Invest in Children (EPIC) was launched in January 2010, securing the participation of six convening organizations and eight CEOs to sit on EPIC's CEO Roundtable. EPIC successfully led a lobbying effort to create a statute establishing the Early Childhood Leadership Commission, which is comprised of 35 members from across the state. The commission is charged with developing a statewide database to track investments made in children, prenatal to age five, and making legislative recommendations to improve systems and expenditures for young children. The group also developed and deployed an employer toolkit to provide low-cost/no-cost options for employers to participate in family-friendly policies, targeting children from birth to age five.

Pennsylvania

During the budget season many Early Learning Investment Commission (ELIC) members met with legislators and key staff to discuss the importance of investing in early learning. A difficult budget season resulted in many programs being dramatically impacted, but for the second year in a row the early childhood programs sustained only minimal cuts (3 percent). The legislative meetings were an effective strategy, the importance of which is reflected in the story of one ELIC member. This Commission member met with a high-ranking legislator to highlight the business community's commitment to investments in early learning and explain that the programs should be protected because of the

outcomes they achieve. Because of this timely meeting, the legislator protected early childhood programs from further cuts during the intense budget

New Mexico

In response to an effort initiated at the Partnership-funded Summit on Early Childhood Investment in November 2009, business leaders working with the state's Early Childhood Development Partnership contributed to the enactment of the New Mexico Early Childhood Care and Education Act, which created an Early Learning Council and secured funds for improving early education services.

Oregon

Business leaders met multiple times with legislators on both sides of the aisle, testified twice, appeared at a press conference with the governor, and had op-eds printed in two major papers. The state expanded its pre-k program and created a new Early Learning Council.

Tennessee

New governor Bill Haslam embraced pre-k as a strategy for reducing the achievement gap. As a down payment on his commitment to pre-k, the governor recommended (and the General Assembly approved) a small increase in pre-k funding for FY 2012.

Vermont

With the support of the Vermont Business Roundtable, the General Assembly passed legislation that lifts the state's cap on pre-k enrollment. This major policy win will provide incentive for local Vermont towns to expand pre-k to reach all three- and four year-olds.

Virginia

Company lobbyists, including those for Capital One, Dominion Power, and the law firm Williams and Mullen, included pre-k in their list of issues to raise in meetings with state policy makers. When House Appropriations Committee members attempted to cut funding for home visiting, business leaders in 29 districts contacted their legislators. Ultimately, the program received a 25 percent increase over FY 2010.

National

National business organizations such as the Manufacturing Institute, an affiliate of the National Association of Manufacturers, the National Association of Workforce Boards, and the American Chamber of Commerce Executives, took specific positions supporting strong early childhood programs to strengthen U.S. workforce development and economic competitiveness. There were also new endorsements of early childhood initiatives from 23 state and local business organizations, including the Oregon Business Council, Associated Oregon Industries, the Oregon Business Association, Vermont Businesses for Social Responsibility, Lake Champlain Chamber, Greater Burlington Industrial Council, New River Valley Economic Development Alliance, Verizon of Roanoke, Virginia Business magazine, and the Virginia Chamber of Commerce.³³

Philanthropy

At the level of cities and counties and also to a considerable degree states, business and philanthropy are inextricably linked. For hundreds of years philanthropy has been used by business leaders to strengthen their regions economically, steadily improving them socially and culturally, in an effort to persuade good families and businesses to locate in these regions.

Business leader support is essential for SIB success, and in the initial stages, this support takes the form of philanthropy, leavened with thorough knowledge of local conditions and hard business judgment. As discussed earlier in this report, while there may be instances in which early childhood SIBs are entirely feasible investments without philanthropic support, their attractiveness to for-profit investors, will require involvement of philanthropic capital, at least in the early years of their development.

There are many roles philanthropic capital can play in developing SIB structures.

First, there is a need for funding to pay for the initial benchmark effect projection studies, SIB contract drafting, and up-front administration and performance evaluation set-up costs.

Second, there is a need for longer-term capital to fund the provision of services until government savings occur. For services that require five to ten years before their effects are evident in government costs and revenues, the amounts of initial service-provision capital could be quite large. If regular performance evaluation shows that the service is year-by-year achieving projected goals and for-profit investor confidence in the project is rising, it will be possible to fund more of the service with non-philanthropic capital, in much the same way private equity investments are financed with capital calls based on success in meeting performance goals.

Third, philanthropic capital can be used to make SIBs more attractive to for-profit investors. Working in tandem with for-profit institutional investors such as pension funds and university foundations, philanthropic capital can be invested at below-market rates to better assure that for-profit investors obtain market rates, and take first-loss positions in the liability structure to de-risk SIB transactions and increase their attractiveness to for-profit investors. By blending the incentives and capital of philanthropic investors with those of for-profit investors, philanthropists can increase impact of their resources many times over.

And fourth, philanthropists can fund development of the state and national SIB infrastructure and technical assistance towns, cities, counties and states will need. Until SIBs are well-understood and broadly used, even the most prosperous communities will find it difficult to set them up. Examples and standards for benchmark effects-projection studies, contracts, and administration and evaluation procedures are needed. People will be needed who are able to travel and help governments and investor groups set up and operate SIBs. The people who do this work ideally should be entrepreneurial in outlook. If much of their compensation is performance based, their focus will be on successful SIB establishment and operation and eventually on financial market recognition and acceptance.

In whatever role philanthropic investors chose to play, they will receive from SIBs something they rarely get from other philanthropic efforts – concrete reports on the dollar-for-dollar return on their investments.

Government

Investor and broader market acceptance of SIBs will depend on local and state acceptance. The due-diligence research of investors and investment institutions will detect if regional leaders in business, banking, philanthropy, churches, provider groups, and government support the SIB project. If the support is strong, investor interest will be strong.

Because money to pay interest on and ultimately redeem early childhood SIBs comes from state and local government institutions, such as public schools, acknowledgement of SIB liabilities under state law is especially desirable. In fact, an essential element of statewide SIB infrastructure may prove to be state law that sets down basic principles and standards for early childhood SIBs established at the city and county level.

- (2) Strong statistical foundations for the claim that a particular intervention will result in monetizable government cost reductions and/or revenue increases --

The first step in any SIB arrangement is showing statistically that the probability is very high that a specific intervention for a clearly defined group of children will cut costs or increase revenues. This study benchmarks the entire arrangement. At the heart of an SIB arrangement is an agreement by a government entity to make a predetermined payment to the bond-issuing organization if a service provider carries out an intervention in a precisely determined way. But how much exactly is the government required to pay? This amount is determined by the benchmark statistical study. This study projects the amount of cost savings or revenue increases that can be reliably expected from the intervention. Randomized control trials are the best way to benchmark projected benefits, but other techniques including case projection and statistical projection trials may be acceptable. In any case, nothing can happen until agreement is reached on how to conduct a reliable benchmark study if one is not already available.

- (3) Sound legal foundation for the SIB-issuing Organization

SIB-issuing organizations can take many forms -- non-profit or for-profit corporations, 501c3s, limited partnerships, or trusts – and the form may change as the SIB program moves from one stage to the next. At the outset, a SIB organization may consist of nothing more than an agreement among a group of business leader/philanthropists to conduct the needed benchmarking studies. If the studies indicate an SIB project is feasible, the group may set up an initial 501c3 to prepare needed contracts and SIB organization arrangements. If the SIB government and provider participants are agreeable with the contract terms, and a survey of possible investors reveals good interest, the group may proceed to set up a permanent SIB-issuing organization in whatever form is best under state and federal law.

- (4) Clear and enforceable contracts between SIB participants that lock in the responsibilities of the bond-issuing organization, investors, government, and service providers –

SIB arrangements are structures of interlocking commitments and performance agreements. It is simple to say, "A government entity commits to pay savings or revenues to a SIB issuer if a service provider carries out an intervention in a precisely described way". But in that sentence are thousands of questions and contingencies, multiple layers of administration and performance evaluation, and uncertainties. What exactly is the intervention service provider expected to do? How will the SIB issuer or the government know whether what was expected, is actually done? Who evaluates the performance of the service provider – the SIB issuer, the government entity, the investors, or someone else? And at the next level up, who is responsible for evaluating the service evaluator? What is done about failures to perform as expected at the provider level or at the SIB issuer level?

What is done if new data shows that the intervention should be modified for greater effectiveness? Who decides? How much disclosure of SIB operations and performance is optimal for investors, researchers, government officials and the public? What is done if a service provider ceases operations, or an investor is unable to meet investor requirements? What is done if the SIB issuer becomes illiquid or insolvent? Who is responsible for accident, injury or damages arising from SIB issuer or provider activities or misrepresentations?

All these and many other questions and contingencies need to be addressed in the inter-party contracts in order for the SIBs to have the market credibility needed to be attractive to investors.

- (5) Bond instruments with familiar terms comparable to those of other forms of debt and equity in the marketplace –

Media coverage of markets often emphasizes novelty and newness. The reality is, more than anything else, markets want familiarity. For this reason, to assure market acceptance, SIB issues need to have terms and conditions that are comparable to widely traded corporate and government liabilities.

Even with a "familiarity" requirement, the range of possible SIB issuance is very broad. SIBs can receive capital in the form of outright gifts and loans, and in exchange for issuances of permanent common

stock, dividend-paying preferred stock, and bonds of varying terms, maturity and seniority. And depending on state law, interest on SIB bonds may be exempt from state and federal taxation.

(6) Strong financial relationships with investment bankers, wealth managers, and philanthropic leaders –

Ultimately, the success of a SIB project depends on performance – marketing to individual investors and philanthropists, to investment institutions and foundations, and to domestic and foreign asset managers. Strong relationships with underwriting institutions and investor communities are vital. Those relationships will be helped significantly if during the design and early implementation stages, underwriting and investment advisory institutions are consulted regularly and involved in asset design. Also if small “proof of concept” financings are done, as a way of demonstrating to local families, business leaders, and government officials the effectiveness of an intervention in reducing government costs, it would be good to share the results of those projects with prospective financial partners.

Ideally SIBs should be scalable, enabling establishment of similar SIB programs in thousands of communities across the country. If scalability is evident, early childhood entrepreneurs, technical assistance consultants, philanthropic leaders, investment bankers, and others will be persuaded to allocate their time and energy to provide the human infrastructure necessary to establish a nationally and even globally attractive asset class. Scalability also assures diversification. Investors who like the idea and returns on early childhood SIBs will naturally prefer to invest moderate amounts in a large number of SIBs rather than a large amount in a few.

C. Early Childhood Interventions That Might Be Paid For with Social Impact Bonds

Many early childhood interventions have high documented microeconomic returns. As discussed in Chapter 1, whether they can be financed with SIBs depends on many things, but especially on whether their returns are monetizable within investable time frames. This chapter reviews three of the most researched and promising interventions and for each discusses important promises and challenges to social impact finance. The interventions include home visitation, child abuse and neglect prevention and treatment, and prekindergarten. Under the right circumstances, all of them could be financed with SIBs.

Home Visitation

Home visitation programs match parents, especially first-time low-income mothers, with trained professionals who help during the mother’s pregnancy and birth of the baby through age three. The professionals provide information and assistance. They help parents learn how to care for their children and themselves. As a result of home visitation programs, families are better able to care for infants and toddlers, and children are safer, healthier, better prepared to learn and more likely to become successful adults.³⁴ Home visiting professionals partner with expectant mothers to encourage them to receive regular prenatal care, stop smoking and drinking, and to eat balanced diets, in order to reduce the risks premature and low-birthweight births.

The evidence on home visitation program outcomes shows that the programs improve child success outlooks and reduce local and state health and criminal justice costs.³⁵ Some of these cost savings occur within 45 months and could be monetized through contracts with state and federal agencies.

Every low birthweight or preterm birth, for example, costs states between \$28,000 and \$40,000 in medical care and other related costs.³⁶ Research on New York State’s Healthy Families home visiting program showed that mothers who received home visits were half as likely to deliver low birthweight babies as mothers who were not enrolled.³⁷ Because these cost savings are so specific and identifiable, monetizing them through carefully constructed SIB contracts should be possible. This would be especially so if a contract with the federal government’s Medicaid program could be devised. Accordingly, it should be possible to structure investor-attractive SIBs that finance home visiting to reduce state and federal low birthweight and premature birth costs.

As we discuss at greater length below, special education costs states on average between \$5,000 and \$15,000 per year. Research shows that home visiting programs strengthen toddler pre-literacy skills and raise later achievement test scores. At age six, children, whose mothers participated in the Memphis

Nurse Family Partnership home visiting program, had higher cognitive and vocabulary scores than those in a control group, and at age nine, these children had higher grade point averages and achievement test scores in reading and math in the first through third grades.³⁸ It is quite possible that home visitation programs reduce public school special education costs. Documenting the effect of these programs will be difficult because it may not be statistically possible to separate the effects of home visitation and other interventions, including a wide range of IDEA related disability interventions and Title I funded preschool, to mention just the federal programs.

Child abuse and neglect prevention

Child abuse and neglect profoundly threaten child health and lifetime wellbeing and increase government costs in the short and long term. SIB arrangements based on reducing long-term costs probably cannot meet the three tests of social impact finance feasibility: statistical proof, contract monetization, and investor time horizon. SIB programs based on short-term cost reduction, however, may be feasible.

In 2010, there were more than 450,000 substantiated or indicated victims of child abuse or neglect in the United States, resulting in 1560 child deaths, of which nearly 80% were children less than four years old.³⁹ Research findings indicate that abuse and neglect increase a child's risk of negative consequences across multiple domains of function and development, including psychiatric, social, behavioral, academic, and interpersonal functioning.⁴⁰ In dealing with the results of child abuse and neglect, governments incur significant near-term and long-term costs.

Long-term costs

Research based on documented histories of childhood abuse and/or neglect show that victims have lower levels of education, employment, earnings, and fewer assets as adults, compared to matched control children. The cost to government and society in general is estimated to be in the billions of dollars. In their 2010 study, Janet Currie, Department of Economics, Columbia University, and Cathy Widom, Department of Psychology, University of New York, found that adult incomes could be increased more than \$15 billion through effective abuse and neglect intervention:

There is a 14% gap between individuals with histories of abuse/neglect and controls in the probability of employment in middle age, controlling for background characteristics. Maltreatment appears to affect men and women differently, with larger effects for women than men. These new findings demonstrate that abused and neglected children experience large and enduring economic consequences. ...The effects on education, employment, occupation, earnings, and assets are large and consequential. For example, the results presented here suggest that the experience of maltreatment reduces peak earnings capacity (these adults are measured close to this point in their life cycles) by about \$5,000 per year. Cumulated over a lifetime, this is a large loss. These economic consequences are also large relative to the effects of physical health problems such as chronic conditions and activity limitations on employment that have been estimated in other studies (Currie & Madrian, 1999). Thus, in addition to their social and psychological costs, the approximately one million substantiated cases of child abuse and neglect per year have significant costs in terms of foregone adult economic productivity.

...the Nurse Family Partnership Program (Olds et al., 1999) has demonstrated that home visits by professional nurses that start in infancy and continue through age 2 can reduce the incidence of substantiated cases of maltreatment by 50%. At a cost of about \$4,000 per child, the steady-state cost of providing this service to all children would be about \$14 billion per year (assuming that there are roughly 3.5 million children born each year). Some might object to paying \$4,000 for prevention, whereas the economic benefit would not be obtained until the children reached adulthood. However, based on our findings, if we assume that saving a child from abuse or neglect increases his or her earnings by \$5,000 from ages 18 to 60, the present discounted value of these higher earnings in the year of birth would be \$30,800. If we further assumed that the intervention would reduce the number of substantiated case of maltreatment from

*approximately 1 million to 500,000, then the value of the intervention in terms of increased earnings alone would be \$15.4 billion, which would more than offset the cost of the intervention program.*⁴¹

Clearly abuse and neglect have long-term cost and revenue effects on governments. But can early childhood programs reduce these costs or replace lost revenues? The answer is clearly yes, but the questions the working group asks are those that bear on the feasibility of social impact finance: is there an early childhood intervention that can be statistically shown to be the source of government cost savings or revenue increases; is the cost savings or revenue increase monetizable; and can the gains be captured within standard investor time horizons?

The answer to these questions is probably no in each instance. First, there are no statistical methodologies that can convincingly demonstrate in advance that the Nurse Family Partnership will be the sole source of Currie and Widom's projected \$15.4 billion of increased personal earnings. Second, the cost and revenue gains to local, state and federal governments are so diffuse it is hard to imagine how they could be monetized within a set of SIB contracts. And third, the gains arise well beyond the five to ten-year horizon of most investors. For these reasons, using social impact bond arrangements based on long-term gains to pay for abuse and neglect interventions is not promising.

Short and Medium Term Costs

To assess near-term cost feasibility, the working group focused on the findings of the Coalition on for Evidence Based Policy. The Coalition is a nonprofit, nonpartisan organization that seeks to increase government effectiveness through the use of rigorous evidence about what works.⁴² In the area of early childhood, the Coalition identifies four programs as having strong evidence-based proof of effectiveness – the Nurse Family Partnership, the Triple P System and the Perry and Abecedarian preschool programs. All are based on randomized control trial evidence, the highest statistical standard possible. The Coalition rated the Nurse Family Partnership and Triple P System as “top tier” and “near top tier” respectively.⁴³

We will quickly review the NFP program and the Triple P System. In the next section of the report, we will examine the Perry and Abecedarian preschool programs and focus specifically on the effects of preschool on subsequent public school special education costs.

Nurse Family Partnership

As described by on the Coalition website:

*The Nurse-Family Partnership program provides nurse home visits to pregnant women with no previous live births, most of whom are (i) low-income, (ii) unmarried, and (iii) teenagers. The nurses visit the women approximately once per month during their pregnancy and the first two years of their children's lives. The nurses teach (i) positive health related behaviors, (ii) competent care of children, and (iii) maternal personal development (family planning, educational achievement, and participation in the workforce). The program costs approximately \$12,500 per woman over the three years of visits (in 2010 dollars).*⁴⁴

By the highest standards of statistical evidence, the NFP program reduces near-term government costs associated with incidences of child abuse and neglect.⁴⁵ The evidence shows that the NFP program results in:

- 39% fewer healthcare encounters for injuries or ingestions in the first two years of life among children born to mothers with low psychological resources
- 56% reduction in emergency room visits for accidents and poisonings in the second year of the child's life
- 48% reduction in state-verified reports of child abuse and neglect by child age 15
- 50% reduction in language delays by child age 21 months
- 5 point increase in language scores on a test with a mean of 100 and standard deviation of 15 among 4-year-old children born to mothers with low psychological resources

- 67% reduction in behavioral and emotional problems at child age 6
- 9 percentile increase in math and reading achievement test scores in grades 1-3 among children born to mothers with low psychological resources

All of these effects reduce near-term local, state and federal government costs, and are certainly strong enough statistically to underpin an SIB program. However, because the effects emerge within a wide range of non-profit and for-profit institutions, and state and federal government health, welfare and education agencies, monetizing the effects in SIB contracts would be challenging. If contracts could be negotiated, achieving the cost savings would be well within the time horizons of most investors.

Triple P System

Quoting from the Coalition website:

The Triple P (Positive Parenting Program) System is a system of parenting interventions for families with children ages 0-8, which seeks to strengthen parenting skills and prevent dysfunctional parenting, so as to prevent child maltreatment and emotional, behavioral, and developmental problems. The System emphasizes five core principles of positive parenting: (i) ensuring a safe, engaging environment; (ii) promoting a positive learning environment; (iii) using assertive discipline; (iv) maintaining reasonable expectations; and (v) taking care of oneself as a parent.

...The trial randomly assigned 18 South Carolina counties to (i) a group that implemented the Triple P System county-wide for families with at least one child under eight years old; or (ii) a control group that provided usual county services without implementation of Triple P.

The counties were selected for the trial based on their population size (mid-sized, between 50,000 to 175,000 people). None had prior exposure to Triple P. All were rural or semi-urban, with an average African American population of 31% and poverty rate of 15%. The study estimated, based on a survey of service providers in the Triple P counties, that between 9,000 and 13,500 families in Triple P counties received Triple P services during the two-year study period.

...These are the county-level effects on all of the primary outcomes that the study measured at the two-year follow-up. All effects shown are statistically significant at the 0.05 level unless stated otherwise.

- *25% reduction in the rate of substantiated child maltreatment (11.6 cases of substantiated child maltreatment each year per 1,000 children age 0-8 in Triple P counties vs. 15.5 cases in control counties);*
- *33% reduction in the rate of out-of-home placements – e.g., in foster homes (3.4 out-of-home placements each year per 1,000 children age 0-8 in Triple P counties vs. 5.1 in control counties);*
- *35% reduction in the rate of hospitalizations or emergency room visits for child maltreatment injuries (1.3 each year per 1,000 children age 0-8 in Triple P counties vs. 2.0 in control counties). This effect was significant at the 0.10 level, but not the 0.05 level.⁴⁶*

Like the NFP program, financing Triple P services via a SIB arrangement has promising possibilities. The evidence is strong. The time frame is acceptable. The key challenge is negotiating SIB contracts with the diverse institutions within which the cost savings emerge.

Prekindergarten

As described on the Coalition for Evidenced-Based Policy website:

The Abecedarian Project, initiated in 1972, provided educational child care and high-quality preschool from age 0-5 to children from very disadvantaged backgrounds (most raised by single mothers with less than a high school education, reporting no earned

income, 98% of whom were African-American). The child care and preschool were provided on a full-day, year-round basis; had a low teacher-child ratio (ranging from 1:3 for infants to 1:6 for 5-year-olds); and used a systematic curriculum of "educational games" emphasizing language development and cognitive skills. The average annual cost of the intervention was about \$13,900 per child (in 2002 dollars).

Some of the participating children also received a school-age treatment in grades 1-3, in which a home-school resource teacher served as a liaison between the child's home and public school, and encouraged parents to work with their children each day on individualized curriculum packets. (As noted below, this school-age component was found to have only a marginal effect on most outcomes.) ...

At age 21, the study found that educational and life outcomes for the children receiving the child care/preschool treatment (groups (i) and (ii)) were much superior to outcomes for the children not receiving the child care/preschool (groups (iii) and (iv)). The results are summarized below. By contrast, the school-age treatment alone had only a marginal impact (results not summarized here).

Impact of child care/preschool on reading and math achievement, and cognitive ability, at age 21:

- An increase of 1.8 grade levels in reading achievement
- An increase of 1.3 grade levels in math achievement
- A modest increase in Full-Scale IQ (4.4 points), and in Verbal IQ (4.2 points).

Impact of child care/preschool on life outcomes at age 21:

- Completion of a half-year more of education
- Much higher percentage enrolled in school at age 21 (42 percent vs. 20 percent)
- Much higher percentage attended, or still attending, a 4-year college (36 percent vs. 14 percent)
- Much higher percentage engaged in skilled jobs (47 percent vs. 27 percent)
- Much lower percentage of teen-aged parents (26 percent vs. 45 percent)
- The study also found suggestive evidence of a reduction in criminal activity, but because of the small sample size, most of these effects were not statistically significant.⁴⁷

Perry Preschool

As described by the Coalition:

The Perry Preschool Project, carried out from 1962 to 1967, provided high-quality preschool education to three- and four-year-old African-American children living in poverty and assessed to be at high risk of school failure. About 75 percent of the children participated for two school years (at ages 3 and 4); the remainder participated for one year (at age 4). The preschool was provided each weekday morning in 2.5-hour sessions taught by certified public school teachers with at least a bachelor's degree. The average child-teacher ratio was 6:1. The curriculum emphasized active learning, in which the children engaged in activities that (i) involved decision making and problem solving, and (ii) were planned, carried out, and reviewed by the children themselves, with support from adults. The teachers also provided a weekly 1.5-hour home visit to each mother and child, designed to involve the mother in the educational process and help implement the preschool curriculum at home. The program's cost was approximately \$11,300 per child per school year (in 2007 dollars). ...

Educational outcomes for preschool group (versus control group):

At age 27 follow-up

- Completed an average of almost 1 full year more of schooling (11.9 years vs. 11 years).

- *Spent an average of 1.3 fewer years in special education services — e.g., for mental, emotional, speech, or learning impairment (3.9 years vs. 5.2 years).*
- *44 percent higher high school graduation rate (65 percent vs. 45 percent)*

Pregnancy outcomes for preschool group (versus control group):

At age 27 follow-up

- *Much lower proportion of out-of-wedlock births (57 percent vs. 83 percent).*
- *50 percent fewer teen pregnancies on average (0.6 pregnancies/woman vs. 1.2 pregnancies/woman)*

Lifetime criminal activity for preschool group (versus control group):

At age 40 follow-up

- *46 percent less likely to have served time in jail or prison (28% vs. 52%).*
- *33 percent lower arrest rate for violent crimes (32% vs. 48%)*

Economic outcomes for preschool group (versus control group):

At age 40 follow-up

- *42 percent higher median monthly income (\$1,856 vs. \$1,308).*
- *26 percent less likely to have received government assistance (e.g. welfare, food stamps) in the past ten years (59% vs. 80%)⁴⁸*

The long-term benefits of preschool pose the same problems for social impact financing as the long-term effects home visitation and child abuse and neglect programs.

There are short-term effects, however, that offer important possibilities. In a 2000 study of 13 state prekindergarten program performance evaluations, Walter Gilliam and Edward Zigler found that the programs resulted in significant child cognitive and social skills development, higher performance on achievement tests in the early grades and in some cases, reduced retention rates, producing substantial cost savings for school systems.⁴⁹

In studies spanning four decades, including analysis of the Abecedarian, Perry Preschool, and Chicago Child Parent programs, and state programs in Louisiana, Pennsylvania and Utah, repeatedly find that quality prekindergarten can significantly reduce public school special education assignments. Because the costs of special education are quite high relative to prekindergarten and because the costs emerge within one educational institution and any savings would begin to be realized within 24 months, it may be possible to finance prekindergarten services with SIB arrangements that monetize public school special education costs.

Chapter 2

Prekindergarten and Public School Special Education Costs

Chapter 1 highlighted that the challenge for SIB organizers is not finding high-return interventions to invest in. The challenge is getting a government agency to sign an agreement that commits the agency to give back a portion of the intervention gains. The question will always be, how much, in dollars calculated to the penny, must the agency give back? How can the agency be sure it is not giving back more than it should and uneconomically and unfairly reducing what is available for other programs? Answering these questions requires SIB organizers to answer these questions: (1) Can research satisfactorily affirm that a particular early childhood intervention with a clearly identified group of children yields government cost savings or revenue increases? (2) Can those cost savings or revenue increases be monetized via enforceable contracts between a social impact bond (SIB) issuing institution, a workably few government agencies, and the providers of the intervention services? And (3) Can the cost savings or revenue gains be monetized within timeframes and risk levels that investors find acceptable?

Chapter 1 also clarified that the famous milestone parent training, child abuse treatment, and prekindergarten research studies document that certain interventions do yield significant long-term government cost savings and revenue gain benefits but cannot be used as the basis for structuring a SIB financing. Separate up-to-date benchmark studies are needed for each SIB arrangement. Because in the years since the studies were done, interventions provided by government and private institutions have proliferated. Children now are exposed directly and indirectly to the effects of several kinds of interventions. This makes it very difficult to separate the effects of one intervention from another and answer the most basic question – exactly how much should an agency rebate to a SIB issuing institution for financing a specific intervention.

This chapter provides a very basic overview of special education in the U.S. and reviews the findings of the landmark primary studies of prekindergarten effects on special education assignment done over the past four decades. It concludes that none of the major primary studies can serve as benchmarks for SIB programs. Every SIB program will require a local benchmark study of pre-k costs and special-ed savings that captures the distinct characteristics of the area served.

Since the publication in 1996 of Steven Barnett's book *Lives in the Balance*⁵⁰, and affirmed in 2000 in "Long Term Benefits of Participation in the Title I Chicago Child-Parent Centers"⁵¹ by Arthur Reynolds and others, it has been well known that pre-k's largest near-term effect on school systems is reducing special education costs. The idea that the cost reductions are enough pay for the pre-k that generated them was put in doubt by the Chicago Child-Parent Centers (CPC) studies culminating with the 2002 "Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Centers".⁵² These studies of children born in 1980 and in elementary school in the late 1980s formed the basis of a series of secondary studies in the early-2000s that sought to estimate the benefits to states that would follow from funding pre-k programs. These secondary studies to a considerable extent carried forward the CPC finding that the cost of pre-k for the Chicago children in the 1980s was greater than the present value of the special-ed cost savings and strengthened a view that the ratio of pre-k cost to special-ed benefit is negative.

This view began to change when several state prekindergarten program evaluations, particularly Pennsylvania's Pre-K Counts study, revealed much larger effects on special-ed costs than indicated in the CPC research. The reasons for the larger effects include higher special-ed costs, better pre-k curricula, and a variety of other institutional and statutory factors. This chapter explores these possibilities in discussing the milestone and more recent studies in preparation for Chapter 3's presentation of models for SIB financing of regional pre-k programs.

A. Brief Review of Special Education in the United States

In the 1960s a quiet revolution took place regarding how to teach children with disabilities. Reflecting the emergent spirit of civil rights and the education research that led to experiments like the Abecedarian and Perry Preschool projects, views shifted from placing children with disabilities in isolated classrooms away from "normal" children to seeing child disabilities as treatable and as consisting of components that can

be addressed with a variety of interventions. From the enactment of the Education for All Handicapped Children Act in 1975, through the Individuals with Disabilities Education Act (IDEA) re-authorization in 2004, special education became a complex array of state and federal policy and law that now addresses disabilities from birth through age 21 and focuses on child and student intervention responses.⁵³ Special education in the United States is now best understood as a system of early identification of child needs, interventions to address them, assessments of responses to these interventions, and further assessments and interventions, all focused on bringing each child fully into the mainstream of education and society.

State and Federal Law

U.S. state and federal laws require special education services to be given to children birth to age 21, inclusive. The services are provided under state education laws and the federal 1990 Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act of 2004 (IDEA) and state laws that implement them. ADA is primarily a civil rights act and through section 504's accessibility requirements, it provides important education support for children with disabilities. IDEA is specifically an education act and through its Part B and Part C provisions it provides education and developmental support from mainly age 3 through 21 (Part B)⁵⁴ and mainly from birth to age 3 (Part C) for children and adolescents with one or more of 13 categories of disability. These services are provided via an Individual Education Program (IEP) designed by school special education teachers working closely with parents and others. IDEA Part C addresses the needs of children with disabilities, including child abuse and neglect, from birth to age 3, and in some cases can be extended to age 5. These services are provided pursuant to an Individualized Family Service Plan (IFSP). Part C awards grants to states to provide early intervention services to eligible children and to their families.

In addition, individual states have laws to provide special education for children with disabilities within their borders. These laws vary greatly depending on the strength of education mandates in their constitutions and the education commitments of elected leaders. Over the past 20 years, state law for the most part has been aligned with the requirements of federal law. These state and federal laws define what we generally refer to as "special education".

Population of Pupils Served

The population of students served under IDEA appears to have grown at nearly twice the rate of the general education population. According to the New America Foundation, the main driver of increased cost was the addition of "developmental delays" an IDEA-eligible disability category in 1997.

During the twenty-five year period between 1980 and 2005, the IDEA population increased by 37 percent, while the general education population grew by only 20 percent. Moreover, students served under IDEA today account for about 14 percent of the total education population, up from about 10 percent in the 1980s. The sudden increase in the percentage of the student population served by IDEA can be attributed to multiple factors. A significant portion of the increase in special education enrollment can be attributed to greater identification of students with disabilities from birth to age five and these students' participation in IDEA preschool and early intervention services. Another reason for the increase is that Congress widened the definition of "disabled" under IDEA in 1997 to include the population of "developmentally delayed" children age three to nine.⁵⁵

Under Part B and Part C, the term "developmental delay" means a delay in one or more of the following areas: physical development; cognitive development; communication; social or emotional development; or behavioral development.⁵⁶

National Special Education Spending

Our understanding of total national special education spending is hampered by the fact that the most recent national survey is for the school year 1999-2000. Nevertheless, according to the New America Foundation's Federal Education Budget Project, special education spending has increased at a much faster rate than general elementary and secondary education spending.

During the 1999-2000 school year, the most recent available national information, the United States spent \$50 billion on special education "support" services and an additional \$27.3 billion on regular education for disabled students (\$77.3 billion in total). Special education support costs accounted for 12.4 percent of the \$404.4 billion total spending on elementary and secondary education. With regular education expenses included, students with disabilities accounted for 19.1 percent of total national elementary and secondary education spending in 1999-2000, an increase of 13 percent from the 1977-78 school year.⁵⁷

Federal funding for special education under IDEA for school year 2011-2012, will be \$12.64 billion, of which \$11.58 billion is dedicated to IDEA Part B state grants.⁵⁸

IDEA authorized the federal government to fund up to 40 percent of a state's annual per pupil expenditure (APPE) to pay for special education. Amendments to IDEA in 1997 changed the funding rules to include a state's resident population and student poverty. In 1977-78, the federal allocation was 5.1 percent of the national APPE. By 2002-03, federal aid to states for special education was estimated by the U.S. Department of Education to equal 15.5 percent of the national APPE.⁵⁹

Between 1994-95 and 1998-99, total special education enrollment increased by 11 percent and total state spending increased by 24 percent, adjusted for inflation. Per student spending on special-ed increased by 12 percent. As a percent of the total student population, special education students were 12 percent 1994-95, and 13 percent in 1998-99. Between 1994-95 and 1998-99, total special education enrollment increased by 11 percent and total state spending increased by 36 percent.⁶⁰

There are large differences between state spending on regular and special education. In the 42 states which reported to the U.S. Department of Education in 1994-95, total regular education expenditures ranged from \$3,431 per student in Utah to \$9,175 per student in New Jersey. The average total expenditure per student was \$5,610. In 1998-99, total expenditures per student ranged from \$3,732 in Utah to \$10,153 in New Jersey. The average expenditure per student across all of the included states was \$6,465.⁶¹

Per Pupil Special Education Spending

Special education appears to cost about twice as much per student on average as regular education. Analysis by Thomas Parrish at the American Institutes of Research concludes:

Special education is financed through a complex combination of federal, state, and local monies using a variety of formulas. Although the federal government does not systematically collect data on special education spending due to the wide range of accounting and reporting procedures used by individual states, there have been several federal-funded attempts to collect such data. Based on the most recent national information available, in the 1999-2000 school year, per pupil special education spending averaged \$12,474, as compared to \$6,556 for non-special education students. This is more than double (in constant dollars) the average special education expenditure from the late 1960s, when it was first calculated.⁶²

The difference in the 1999-2000 school year between \$12,474 per pupil special ed cost, and \$6,556 per pupil regular ed cost, was \$5,918 -- the cost of special-ed alone. Rising enrollment, not rising per pupil costs, has been the primary driver of special education spending. It is true service costs associated with some high-need disabilities have increased. However, the main expansion of the children with disabilities population has been in the lower-cost developmental disability categories.

To get the current 2012 cost, we need to adjust it by inflation. Education inflation is a complex subject, but adjusting costs by the Consumer Price Index, yields usable estimates and is sufficient for the purposes of this report.⁶³ Assuming elementary and secondary education costs rose during the last 10 years at a rate equal to the Consumer Price Index, the annual per pupil cost of special-ed alone is \$8,162.

This \$8,162 number includes spending for disabilities of all kinds, disabilities ranging from deafness, blindness, and severe neurological disorders such as cerebral palsy, autism, to transient developmental delays in otherwise healthy children.

Decline in Special Education Assignment

Since 2004, the number of children and young adults in special education has declined somewhat.⁶⁴ Because of limited state and federal data, there are no conclusive reasons for the decline. It may reflect many factors – strong economic conditions through 2008, more prekindergarten and improved school readiness, effects of early childhood interventions of many kinds, reductions in special education assignment standards, and improvements in special education teaching, to mention just a few.

Exhibit 3.1

IDEA Part B Child Count for the U.S. and outlying areas, Ages 6-21

Disability	2004	2005	2006	2007	2008	2009	Percentage change 2004-2009	Percent to total in 2009****
Specific Learning Disability	2,839,694	2,780,218	2,710,476	2,620,240	2,525,898	2,486,419	-12.4%	42.2%
Speech/Language Impairments	1,151,260	1,157,215	1,160,904	1,154,165	1,121,961	1,107,428	-3.8%	18.8%
Other Health Impairments	511,869	561,028	599,494	631,188	648,398	678,970	+32.6%	11.5%
Intellectual Disability*	567,780	545,42	523,240	498,159	476,131	461,337	-18.7%	7.8%
Emotional Disturbance	484,488	472,384	458,881	440,159	418,068	405,475	-16.3%	6.9%
Autism**	166,424	193,637	224,594	258,305	292,818	333,234	+100.2%	5.7%
Multiple Disabilities	133,364	133,914	134,189	132,594	124,073	124,529	-6.6%	2.1%
Hearing Impairments	72,626	72,387	72,559	72,160	70,781	70,650	-2.7%	1.2%
Orthopedic Impairments	65,452	63,127	61,866	60,523	62,371	57,972	-11.4%	1.0%
Visual Impairments	26,130	25,996	26,352	26,423	25,816	25,848	-1.1%	.4%
Traumatic Brain Injury	23,248	23,509	23,932	23,864	24,866	24,402	+5.0%	.4%
Deaf-blindness	1,725	1,592	1,472	1,380	1,745	1,365	-20.9%	N/A
Developmental Delay***	74,377	79,070	83,931	88,629	96,923	104,528	+40.5%	1.8%
TOTAL	6,118,437	6,109,569	6,081,890	6,007,832	5,889,849	5,882,157	-3.9%	

Source: State-level data files, Data Accountability Center, available at www.IDEAdata.org

*Previously known as Mental Retardation

**Added as a separate disability category in 1990

***Added in 1997 as optional category for children through age 9 only

****Does not equal 100% due to rounding

Number of Children by Disability

The categories of disabilities that qualify a child to receive special education services under IDEA are: Autism, Blindness, Deafness, Emotional Disturbance, Hearing Impairment, Mental Retardation, Multiple Disabilities, Orthopedic Impairment, Other Health Impairments, Specific Learning Disabilities, Speech or

Language Impairment, Traumatic Brain Injury, Visual Impairment and Developmental Delay.⁶⁵ The number of children in special education nationally by disability is shown below.

Exhibit 3.2a

IDEA Disability Category	Number of Children Nationally by Disability
1. Specific learning disabilities	2,604,234
2. Speech or language impairments	1,481,246
3. Mental retardation	473,101
4. Emotional disturbance	435,026
5. Multiple disabilities	127,978
6. Hearing impairments	78,220
7. Orthopedic impairments	65,527
8. Other health impairments	641,782
9. Visual impairments	28,911
10. Autism	289,383
11. Deaf-blindness	1,454
12. Traumatic brain injury	23,726
13. Developmental delay	358,450
All disabilities	6,609,038

Source: U.S. Department of Education,
Office of Special Education Programs, Data
Analysis System (DANS), OMB #1820-0043:
"Children with Disabilities Receiving Special
Education Under Part B of IDEA, 2007,
Data updated as of July 15, 2008.

The Pennsylvania Build Initiative's 2005 report "The Cost Savings to Special Education from Pre-Schooling in Pennsylvania" presents the number of Pennsylvania children in special-ed by disability type.⁶⁶

Exhibit 3.2b

Special Education Enrollments by Disability (Ages 5-18)

Disability	Enrollment	%
Specific learning disability	138,619	54
Speech/language impairment	43,377	17
Mental retardation	26,325	10
Emotional disturbance	23,998	9
Other health impairment	6,911	3
Autism	6,328	3
Traumatic brain injury, deaf-blindness, visual and orthopedic impairment	3,377	1
Hearing impairment	2,812	1
Multiple disabilities	2,578	1
Developmental delay	2,076	1
Total	256,401	100%

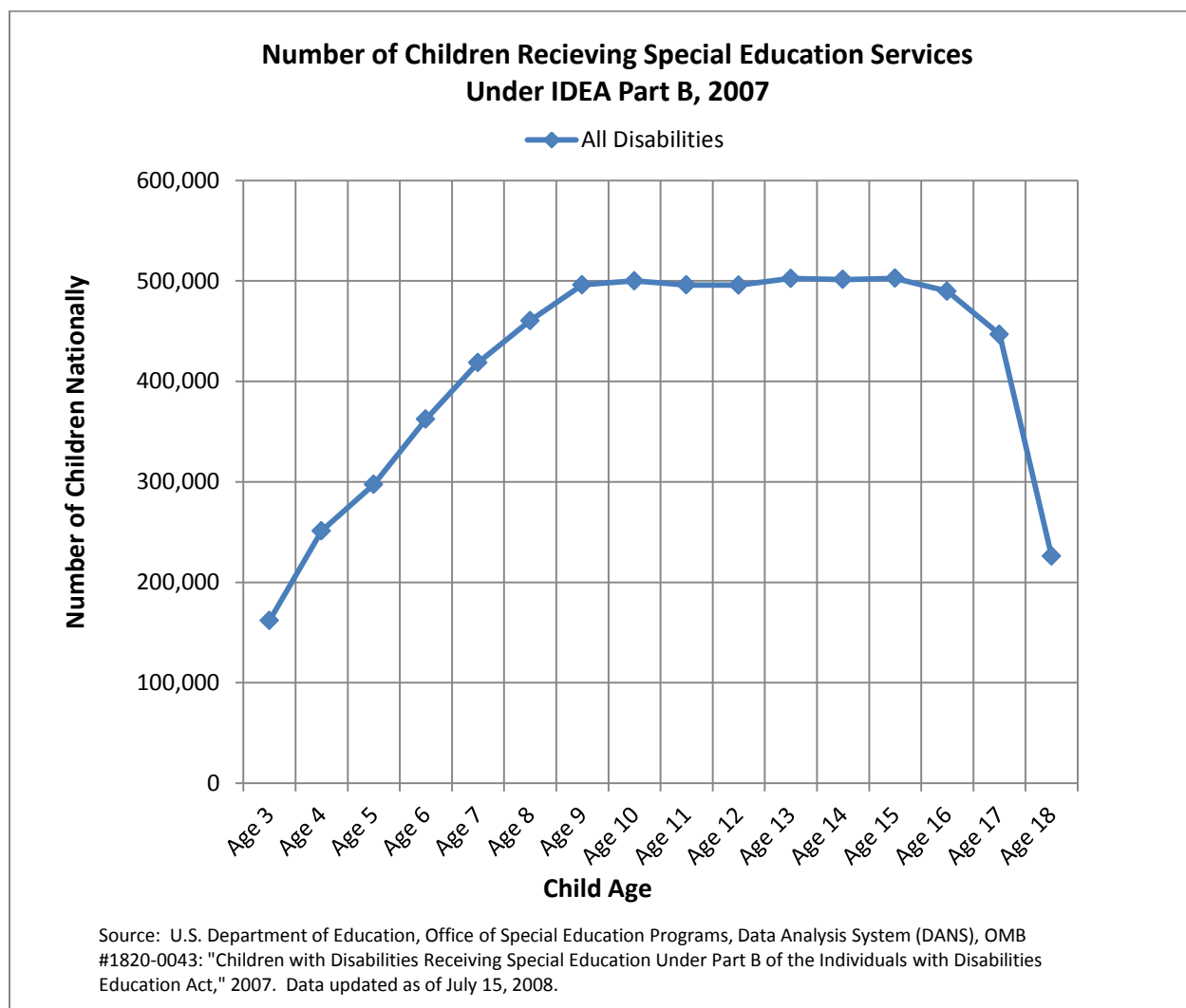
Source: PA Dept. of Education, Special Education Statistical Summary, 2003-2004 (Table 2).

Children in Special-ed by Age

The number of children in special education by age is shown below in Exhibit 3.3. This is a very important chart. Of the children receiving special-ed services by age-year in 2007 about 250,000 were under age 5. Through age 9, another 250,000 children received services, bringing the maximum number of children in special-ed by age-year to about 500,000. In high-school, the number by age-year declines, probably significantly as a result of dropping out of school. These are static "net" numbers. Some 6 year-old children who received services when they were 3 and 4 years old no longer needed them when they were 6 years old and do not appear in the data for 6 year olds. Others who were found to need services, for example, when they were 7, continued to need the services, and appear in the data, for example, at age 12.

Longitudinal “flow” data on children leaving and exiting special-ed is not available at the federal level. If it were, it would be possible to project when children enter special-ed and how long they stay. Can the national age-year data be used as an approximation of longitudinal data? Yes, if child demographic trends and special-ed program operations are relatively constant. For the limited purposes of this report, demographic and program constancy are assumed. From this chart and subsequent ones, it is easy to see why many people believe that once children enter special-ed they tend to stay in for at least five to seven years even for children with relatively mild disabilities, such as those targeted in the Chicago Child-Parent Centers and the Granite School District studies.

Exhibit 3.3



Cost of Disabilities by Child

National data on the cost of special education broken down by type of disability is not available, and availability at the state level appears to be very limited. It is well documented that children with serious permanent disabilities require more special-ed services and cost more than developmentally delayed but otherwise healthy children.⁶⁷ Using Pennsylvania data the Build Initiative's 2005 study presented the disability cost by child shown in Exhibit 3.4a Column 1 shows a 'best estimate' average and column 2 a lower bound estimate taking account of sampling error.⁶⁸

Exhibit 3.4a

Special Education Annual Unit Costs

	Unit Costs Average	Unit Costs Lower Bound
Across disabilities ^a	\$16,407	\$15,532
By disability:		
Specific learning disability	\$12,458	\$11,572
Speech/language impairment	\$12,930	\$9,898
Mental retardation	\$17,747	\$16,463
Emotional disturbance	\$16,697	\$14,048
Developmental delay	Na ^b	Na ^b
Other health impairment	\$15,587	\$13,902
Autism	\$22,170	\$18,773
Hearing impairment	\$18,874	\$16,170
Multiple disabilities	\$23,714	\$21,670
Traumatic brain injury, deaf-blindness, visual/orthopedic impairment	\$17,691-\$30,184	\$15,810-\$24,657

Notes: ^a Estimates by Pruslow (2001, 553) are lower, at \$9,010-\$13,827. ^b The unit cost for developmental delay is not available because classification varies significantly across states. All figures are in 2004 dollars. Sources: PDE (2004); CSEF (2003, Exhibit 1; 2004, Exhibit II-5).

Because of work underway within the Kauffman-ReadyNation working group that focuses on Northern Virginia, and following the path shown by the Build Initiative report, data was gathered on costs per child by type of disability for Alexandria City, and Arlington, Fairfax, Prince William and Loudoun counties for 2010. As shown below the evidence tends to affirm that more severe disabilities cost more per child.

Exhibit 3.4b

IDEA Disability Category	Northern Virginia Average County Cost Per Disability Per Student Per Year
1. Specific learning disabilities	\$15,060
2. Speech or language impairments	\$12,627
3. Mental retardation	\$18,935
4. Emotional disturbance	\$17,122
5. Multiple disabilities	\$21,363
6. Hearing impairments	\$23,478
7. Orthopedic impairments	\$21,118
8. Other health impairments	\$11,152
9. Visual impairments	\$23,526
10. Autism	\$17,653
11. Deaf-blindness	\$22,843
12. Traumatic brain injury	\$15,009
13. Developmental delay	\$15,521

Source: Virginia Department of Education at
the request of the authors

Weighting the Northern Virginia cost data by the number of children nationally yields an estimate of the percent distribution of special education costs by disability, as shown below.

Exhibit 3.5

IDEA Disability Category	Special-Ed Cost by Disability as a % of Total Special-Ed Costs per Pupil by Disability, Based on Northern VA Cost Data Weighted by National Data on Number of Pupils by Disability
1. Specific learning disabilities	39.54%
2. Speech or language impairments	18.86%
3. Mental retardation	9.03%
4. Emotional disturbance	7.51%
5. Multiple disabilities	2.76%
6. Hearing impairments	1.85%
7. Orthopedic impairments	1.40%
8. Other health impairments	7.22%
9. Visual impairments	0.69%
10. Autism	5.15%
11. Deaf-blindness	0.03%
12. Traumatic brain injury	0.36%
13. Developmental delay	5.61%
Total cost for all disabilities	100%

Northern Virginia is a large, demographically complex region, with many nationalities and in some areas very high percentages of low-income, at-risk children. The cost per disability data for the five regions that make up Northern Virginia (Alexandria City and Arlington, Fairfax, Loudoun, and Prince William counties) can be usefully combined with national data on the number of children assessed as having each kind of disability. The result, shown above, provides a preliminary indication of how much in aggregate various disabilities cost and an indication of the cost structure for other complex urban areas.

In the Chicago Child-Parent and the Granite School District studies, which will be discussed in greater detail below, the disabilities that can be ameliorated by prekindergarten were identified. These disabilities are in bold type in the table above. Neither the Chicago Child-Parent nor the Granite School District studies claim that pre-k can cure these disabilities. Pre-k can help children with these disabilities function

in regular education without special-ed, and reduce the cost for children who are still in some form of special-ed.

The four disabilities covered by CPC in the late 1980s and early 1990s, the time its sample children were in school, were: specific learning disability, emotional or behavioral disturbance, speech and language impairment, and mental retardation. These disabilities comprise 76 percent of total spending.

The category “developmentally delayed” was not an IDEA disability category at the time of the CPC study but was included in the GSD study.⁶⁹ Developmental delay is a disability that prekindergarten can ameliorate, in the judgment of the GSD authors, and almost certainly would have been included in the CPC study. Including “developmentally delayed” brings the percent of special-ed costs that can be addressed by special education to over 80 percent.

Exhibit 3.6

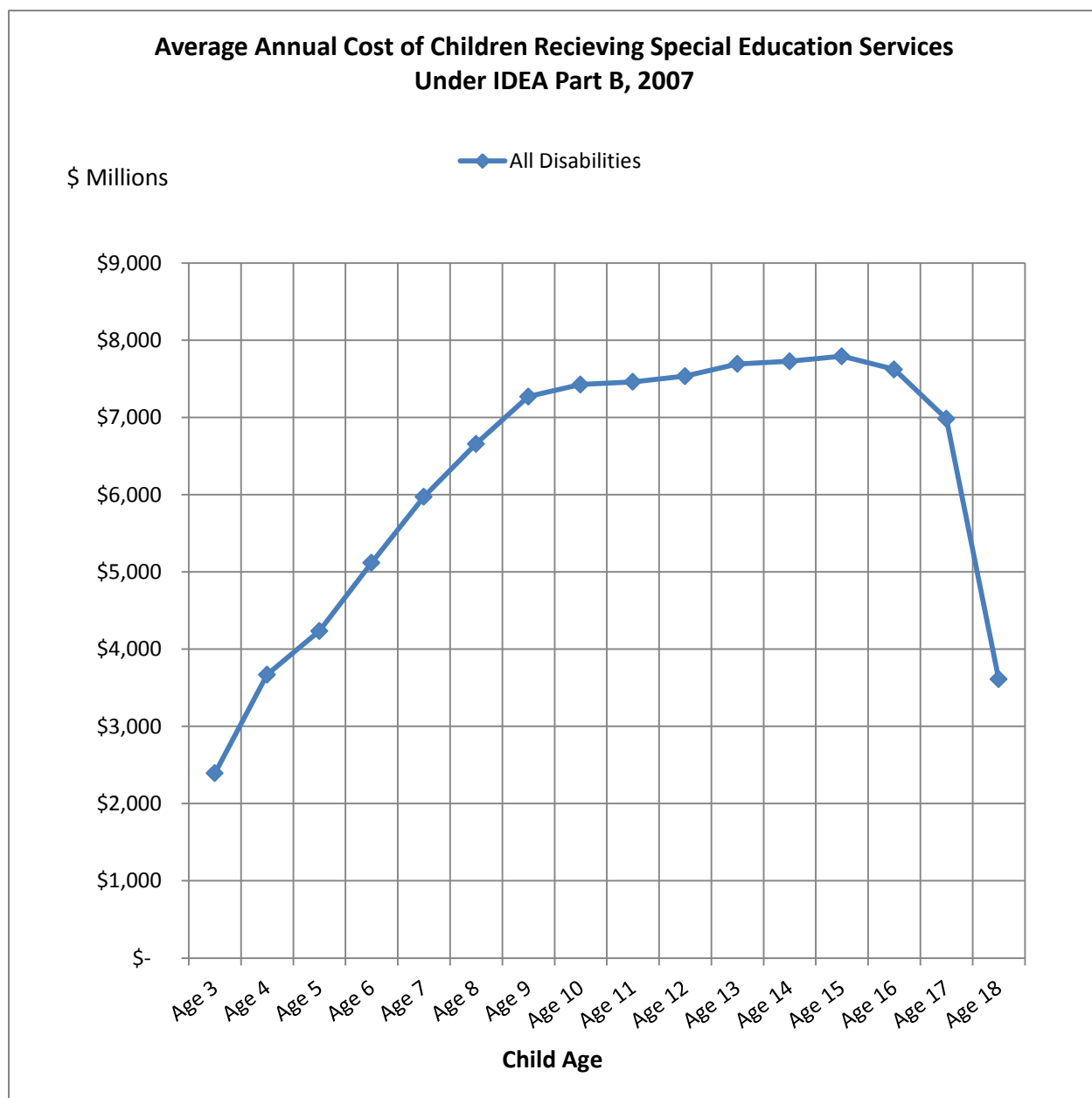
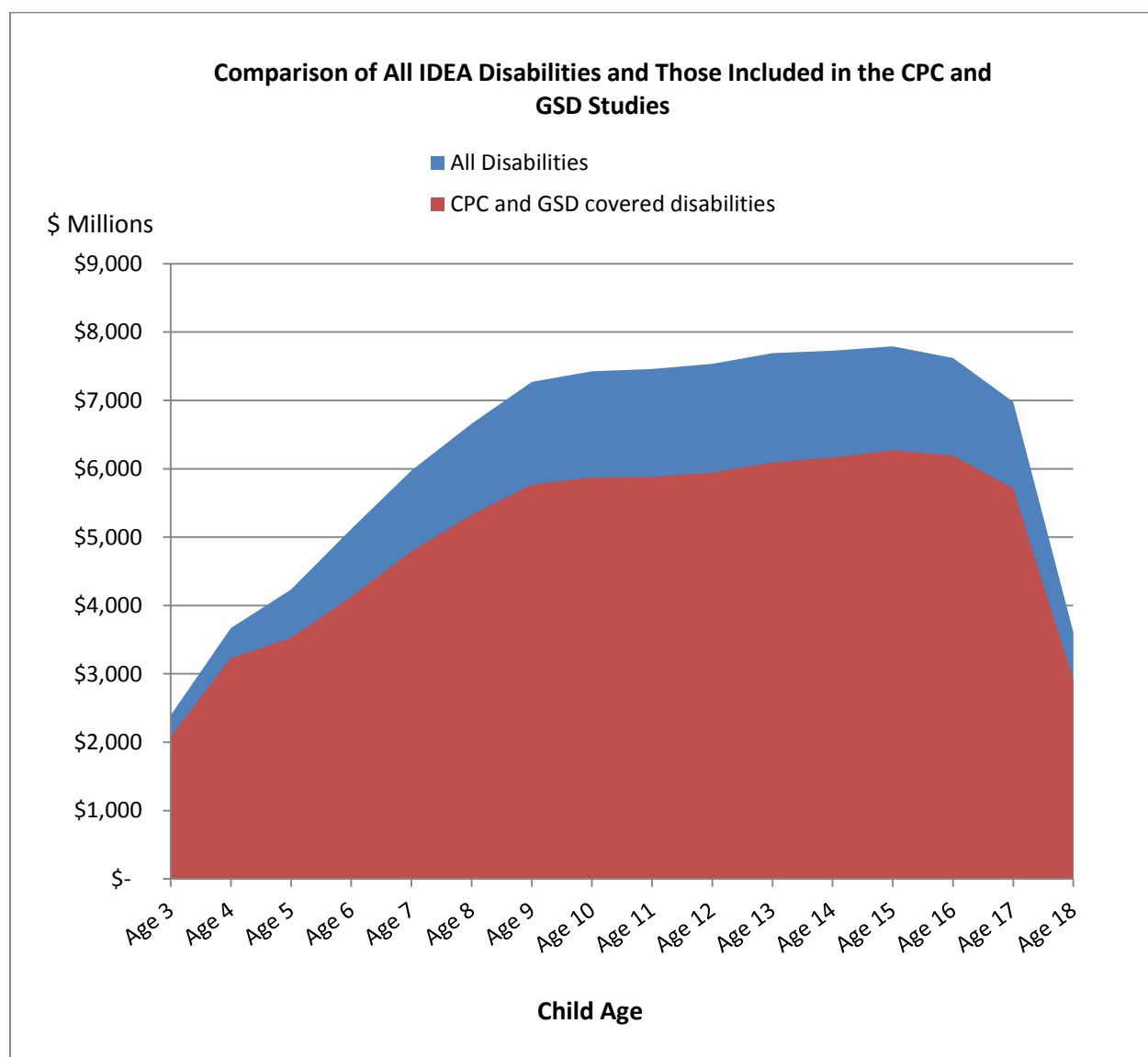


Exhibit 3.7



IDEA Scope and Processes

States are required by IDEA to identify, locate, and evaluate all children with disabilities within their jurisdiction who may need special education and related services. To do this, states conduct "Child Find" searches via medical, community, educational, church and other institution professionals in the state. Parents can also ask the "Child Find" system to evaluate their child.⁷⁰

Evaluation and Eligibility

All areas related to a child's suspected disability are evaluated. The evaluation is used to determine the child's eligibility for special education. A group of qualified professionals and the parents come together as an Eligibility team, and together determine if the child meets the qualifications under IDEA as a child with a disability.⁷¹

Individualized Education Program (IEP)⁷²

Special education services for a child are specified in the child's IEP. Within 30 calendar days after a child is determined eligible for special education services, the IEP team must meet to write an IEP for the child. Parents are an integral part of the IEP team and are regarded as contributing members of the team.

Special Education Services

The public school provider of special education services carries out the child's IEP as written, including accommodations, modifications, and supports that must be provided to the child.

Progress Measurement and Reporting

As a child's progress toward annual goals is measured, parents must be informed as often as children without disabilities.

IEP Review

The child's IEP is reviewed by the IEP team annually, and revised as needed. Parents can make suggestions for changes and can agree or disagree with all aspects of the IEP. If necessary, additional testing and an independent evaluation can be provided for at public expense.

Reevaluation

Children are reevaluated at least every three years to determine if the child continues to be a "child with a disability," as defined by IDEA, to determine if the child continues to require specially designed instruction.

Section B: Effect of Quality Prekindergarten on Public School Special Education Costs

Five decades of research have found that quality prekindergarten significantly reduces public school special education assignments. A similar span of research shows that nurse home visitation, parent mentoring, from pregnancy through age-three, and programs to prevent child abuse and neglect, also have significant effects on special education service needs. Separating the effects of these different programs may have been readily feasible in decades past. In contemporary settings, however, especially complex urban ones, separation will be difficult.

Three Main Methods for Effect Estimation

Researchers have developed what we can call "primary" estimates of early childhood program effects in three general ways – randomized control trials, case control trials, and statistical projection trials. In each of these approaches a sample of children is identified and statistics about the characteristic of the children in the sample and about the effects of the program are obtained.

Randomized Control Trial In RCTs, subjects are randomly selected from a population of people, and then from within the sample they are randomly selected to receive one or other of the alternative treatments under study. The "treatment" group receives the treatment. The other, the "control" group, does not. After the trial, all the subjects are monitored in the same way, and the result characteristics of the treated and untreated subjects are compared and analyzed. RCTs are the statistical "gold standard". They are used extensively in early stage medical and pharmaceutical research, and is the standard the Coalition for Evidence-Based Policy emphasizes.

Case Control Trial In CCTs subjects are identified who have very similar characteristics but fall naturally in the treatment "case" group or the non-treatment "control" group. After the trial, the results characteristics of the two groups are compared and analyzed. CCTs are used in medical research when true experiments with random assignment are impractical or unethical. CCTs are also known as "quasi-experimental cohort studies".

Statistical Projection Trial In SPTs, factors such as income, health, and demographic characteristics, which reliably predict a result are identified. These factors are then used to

predict the likely result outcomes for a “treatment” group of subjects. After the trial, the predicted results and actual results of the treatment are compared and analyzed.

Use of Program Effect Estimates

The results of these three kinds of studies have been extensively used in secondary studies to provide estimates of the costs and benefits of the program to children and to local, state and federal governments. The Chicago Child-Parent Center case control trial results, for example, have been used to estimate the costs and benefits of preschool in other states such as California or Arkansas. In these secondary studies, characteristics of the original sample such as child and family social and economic conditions are compared with those of the secondary sample of children. Using the comparison results, the primary estimates are adjusted to fit the secondary sample.

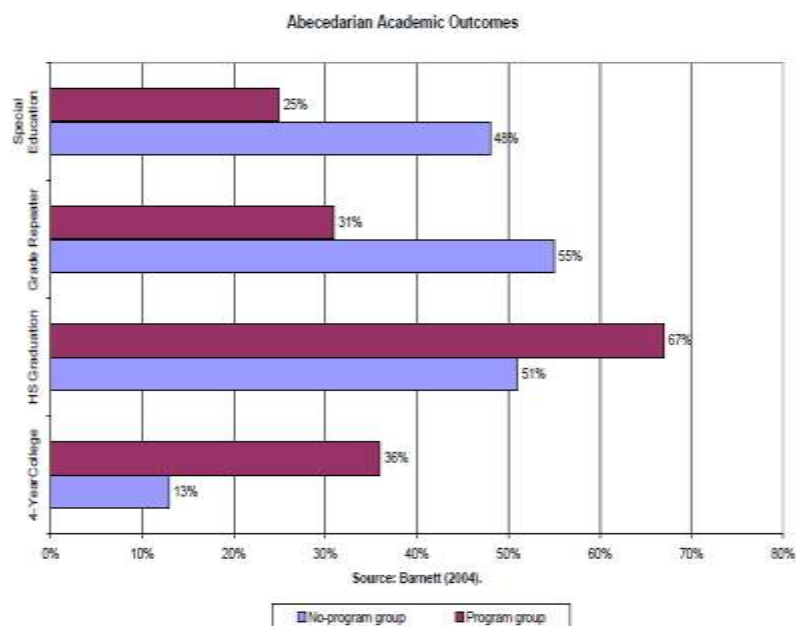
Because these secondary studies constitute most of what is understood about contemporary program, especially prekindergarten, effects, it is extremely important to appreciate the degrees of separation from the original research setting and the amounts of slippage that may be involved. Researchers are aware of the statistical slippage, and to assure credibility and not overstate positive effects, they adopt numerous assumptions that have the effect of making their findings as “conservative” as possible. A risk in layering conservative assumption on top of conservative assumption is mistakenly concluding that net benefits do not exist when they actually do. The answer to this problem is to conduct new research and determine with contemporary data and analysis the existence or non-existence of net benefits.

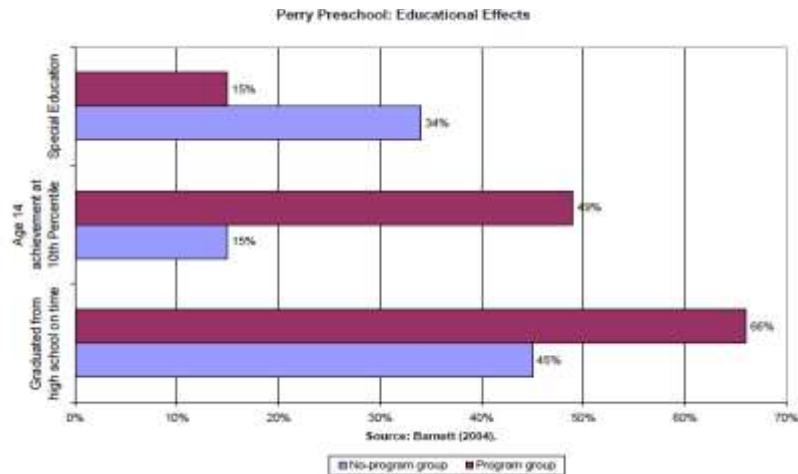
Randomized Control Trial (Classic studies)

In early education research, the two most famous RCTs are the Perry Preschool and Abecedarian Early Childhood program studies. As noted earlier, they are the only two that meet the evidence standards of the Coalition on Evidence-Based Policy. In both studies, quality prekindergarten reduced special education assignments by about 50 percent.⁷³

While the results are powerful because they come from randomized control trials and because the outcomes are statistically significant despite relatively small sample sizes, they cannot serve as foundations for SIB contracts because they were done almost half a century ago when the laws affecting special education costs and the prevalence of other early childhood programs were very different from today.

Exhibit 3.8





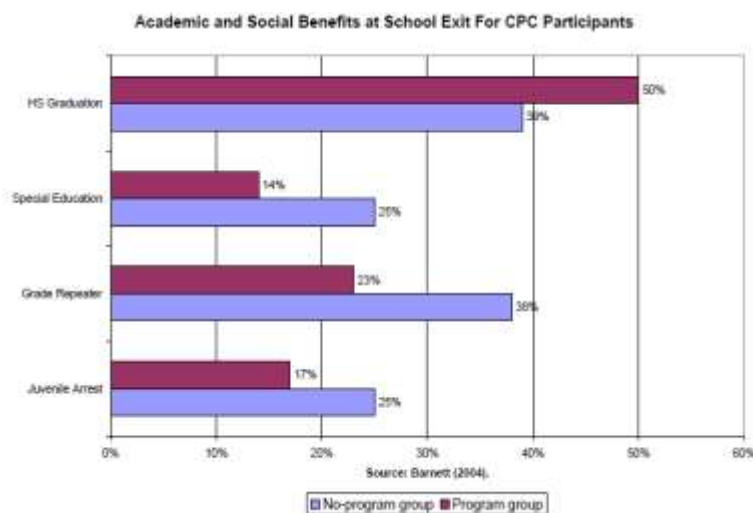
Case Control Trial (Chicago and Louisiana)

Chicago Child-Parent Centers

Of the early learning research comparing the outcomes of program “case” and comparison “control” groups, the most important are those of the Chicago Child-Parent Centers (CPCs). CPC research provides extensive cost-benefit analyses of an established, large-scale Title I early childhood intervention for preschool children and their families and finds significant long-term net benefits. The studies use longitudinal data on the life-course development of 1,539 children born in 1980 from low-income families. The age 21 follow-up was published in 2002.⁷⁴ The CPC program provided high-quality early learning and “wrap-around” services including home visiting, family support, health screening, reduced class size and nutrition services for children age 3 to 9.⁷⁵

Title I refers to the first part of the Elementary and Secondary Education Act, first enacted in 1965 as President Johnson’s “War on Poverty”. Title I distributes money to schools and school districts with a high percentage of students from low-income families. To qualify for funding at least 40% of a school’s students must be from families who are “low income” under the United States Census definition. In the 2006-2007 school year, Title I provided assistance to over 17 million students from kindergarten through twelfth grade. 81% of the funds were given to students in kindergarten through eighth grade. 16% of the funds went to students in high school. 3% went to children in preschool.⁷⁶

Exhibit 3.8⁷⁷



The “case” and “control” groups in the CPC study match each other in age, eligibility for intervention, and family socioeconomic status. In the preschool evaluations, the sample consists of 989 children who completed preschool and kindergarten in twenty Child-Parent Centers and 550 low-income children who did not attend the program in preschool but did participate in a full-day kindergarten program in five randomly selected schools and in several schools affiliated with the Child-Parent Centers, and of these comparison children, 23% attended Head Start.

The effect of the preschool program was estimated by comparing the performance of the preschool group against the comparison group. Specifically, the CPC study:

...assessed the impact of CPC program participation beginning at age 3 on later well-being above and beyond participation in the “treatment as usual” for low-income children in Chicago in the mid-1980s. The usual services included an enriched all-day kindergarten and, for the most part, no center-based preschool. The effect of the preschool program was estimated by comparing the performance of the preschool group against the comparison group. The effect of the school-age program was assessed by comparing children participating in the school-age program with those not participating in the school-age program regardless of their preschool participation. The effect of the extended intervention was assessed by comparing children with 4 to 6 years of participation beginning in preschool and children with 1 to 3 years of participation at any time.⁷⁸

Estimates of Special-ed Assignment Rate and Number of Years in Special-ed

The 2002 study found that CPC preschool attendance was associated with a drop in special education assignment from 24.6% for the control group to 14.4% for the case treatment group, and a drop in number of years through age 18 of special education from 1.43 to .73. In other words, the amount of time non-CPC children were projected to spend in special education from kindergarten through 12th grade averaged a little over 17 months (1.43 years) and CPC children, a little over nine months (.73 years).

The CPC study’s innovative provision of number-of-years estimates has not been replicated by any of the more recent studies. This need not be a crippling failure if national or state level cost estimates use actual distributions of the numbers of children in special-ed by year and by disability. Actual distributions such as those in Exhibits 3.3 through 3.7 achieve a similar result by a different means. None of the studies did, however, and as a consequence would need to be revised to reflect actual distributions before they could meet first-level SIB program evidence thresholds.

Impact Comparison of Pre-K Cost and Special-ed Cost

The average annual per student cost of two-year CPC preschool was reported to be \$6,692.

The cost of special education was the weighted average annual cost per pupil reported by the Chicago Public Schools in 1994 for four categories: specific learning disability, emotional or behavioral disturbance, speech and language impairment, and mental retardation. These expenditures are above and beyond the cost of regular education and were calculated to have a present value of \$5,971 per child. And as noted earlier, these expenses probably account for more than 70% of total special education costs.

The special-ed cost savings from CPC, that is, the difference between what special education costs would have been in the 1985-1997 period without CPC preschool and what they actually were, was reported to be \$4,180 per child. This difference was obtained by multiplying the weighted average annual cost per pupil (\$5,971) by the projected amounts of time in special-ed of non-CPC graduates and CPC graduates (1.43 and .73) and subtracting one from the other.⁷⁹ The critical comparison is between CPC preschool cost, \$6,692, and the resulting present value special-ed savings, \$4,180. Clearly the cost of CPC preschool in 1983 and 1984 is not associated with enough present-value special education savings in 1985 to 1997 to justify SIB financing.

Several considerations weigh against this conclusion.

First consideration, Arthur Reynolds in a phone discussion and email exchanges explained that great care needs to be taken when using the 1.43 result for non-preschool children. Reynolds provides two reasons, (1) "The cpc cost is for 1.5 years. It is a half day program. The costs of special ed have increased much more than cpc prek. This strengthens the argument for a sizable reduction in special ed." And (2), the 1.43 number is the mean of one group of children when it ideally should be the mean of two groups – non-preschool children who were assigned to special-ed and a very large number of non-preschool children who should have been assigned but were not and were instead held back a grade or received no special-ed services at all.⁸⁰ Because this second group is not reflected in the 1.43 average, the average does not represent the entire population of non-preschool children.

Would it make a difference to the present-value comparison if the average were higher, say, 2.5 years, rather than 1.43 years? Yes it does. If the time in special-ed for non-preschool children were 2.5 years, the comparison would be between spending \$6,692 for CPC preschool and present value special-ed savings of \$10,569, rather than only \$4,180. This comparison would justify investing in CPC pre-k.

Second consideration, the present value comparison is between the CPC children who received a wide range of "wrap-around" services in addition to pre-k, and the comparison group of children, 23% of whom attended Head Start, the federal government pre-k program. It is appropriate to ask what the present value comparison would be if the costs of the "wrap-around" services and the effects of Head Start services were netted out. The comparison would be more apples-to-apples if CPC pre-k alone were compared to no-pre-k.

Third, in the world of special education a lot has happened to special-ed costs structures in the three decades between now and when the CPC children were entering elementary school. As we can see from the national distribution of children in special education by year, it is very unlikely that either the 1.43 or the .73 estimate of years in special-ed could be accurate now. If they were, it would mean that many tens of thousands of children enter and leave special-ed in every year of elementary and secondary school. The data and anecdotal commentary indicate the opposite. Numerical and anecdotal evidence indicates that the most children enter special-ed in the first three years of elementary school and continue to receive special-ed services for six or more years.

The question now is would the conclusions be different today. Does CPC preschool reduce Chicago area special education costs? Are the projected cost savings still only about two-thirds of CPC preschool cost? Are non-preschool children still staying in special-ed just 1.43 years?

As Reynolds suggested, the research on special-ed treatment costs indicates costs have risen significantly from the levels that prevailed in the late 1980s and early 1990s when the CPC children were in elementary and high school.⁸¹ Moreover, costs vary greatly from one region to another even within one state. In an analysis for the State of Illinois published in 2010, Thomas Parrish concluded, "...the mean special education expenditure per special education student across all districts in the State is reported as \$10,840, with a standard deviation of \$4,543."⁸² Costs in the Chicago district are 53% higher than in the rest of the state, and the city of Chicago's costs are 133% higher – about \$14,480.⁸³

Special-ed costs are up. But are we comparing apples and oranges? Given the complexity of local, state and federal funding sources and numerous changes in state and federal funding laws, is the \$14,480 number today comparable to the \$6,692 in the CPC study? With the limited information available, an answer does not appear possible. But no doubt preschool costs have risen also, and the time spent in special-ed by children with and without prekindergarten experiences may have gone up or down. Information on these questions needs to be in hand before social impact finance conclusions can be reached. The Child-Parent Center 20-year follow-up study is simply not sufficient to reach firm conclusions about the usefulness of social impact funding for quality prekindergarten to reduce special education costs.

CPC Results Used Widely in Secondary Studies

The CPC study of children born in 1980 is a source of a generally held view that prekindergarten does not generate enough special-ed cost reductions to underpin a successful social impact finance program. The CPC results have been widely used to estimate the costs and benefits of prekindergarten in states across the country in secondary studies. Of these perhaps the two most important are the 2004 Washington State Institute for Public Policy's *Benefits and Costs of Prevention and Early Intervention Programs for Youth*⁸⁴ prepared under the direction of Steven Aos, and the 2005 RAND study "The Economics of Investing in Universal Preschool Education in California" by Lynn A. Karoly and James H. Bigelow.⁸⁵ Similar studies followed, for example, for Pennsylvania⁸⁶ and Wisconsin in 2005⁸⁷ and for Arkansas⁸⁸ and Texas⁸⁹ in 2006. All adopt a conservative "real world" approach. In the statistical appendix to the Washington State study, Aos et al describe the difference between "model" and "real world" programs this way:

*Model ECE vs. real world ECE programs. As mentioned, some of the existing evaluations of ECE programs have been of pilot or "model" programs. That is, these model ECE programs offer an intensive preschool experience and employ a relatively expensive set of resources. Other program evaluations, on the other hand, are of "real world" programs such as Head Start. These programs have a less intense curriculum and generally cost less than the model programs. An example of a model program is the Perry Preschool Program, which was a focused demonstration program in the 1960s that, in 2003 dollars, would cost \$15,270 per student for a two-year experience. An example of a real world program is the Chicago Title I Child-Parent Centers that costs an estimated \$7,355 for a one-and-a-half year experience, in 2003 dollars.*⁹⁰

Because they use CPC's results on pre-k's effect on special-ed placement, the Washington State, California, Wisconsin, Arkansas and Texas secondary studies reach similar conclusions about pre-k's impact on special-ed costs. Despite substantial changes in special-ed since the mid-1980s, when the CPC children were in prekindergarten, the secondary studies done in the mid-2000s significantly shaped contemporary thinking on the feasibility of social impact finance.

Louisiana LA-4

The LA 4 case-comparison study suggests a different conclusion. The LA 4 prekindergarten program was enacted by the Louisiana legislature in 2001. The program was designed to serve four-year-old children not currently enrolled in publicly funded prekindergarten classes. LA 4 was launched in January 2002, following a successful 2001 pilot program, as part of a statewide strategy to close the achievement gap between children from less economically advantaged families and their peers from more advantaged families. LA 4 built upon the findings of previous well-known studies and initiated a systematic scale-up effort to bring high-quality early childhood education and related services to Louisiana's four-year-olds.⁹¹

In 2006 an evaluation of the LA 4 program was done covering the 2001-2 through 2005-6 school years by Center for Child Development at the University of Louisiana at Lafayette. In the evaluation, a "case" represents a participant in LA 4, and a "control" represents a child with similar characteristics who was not a participant in LA 4. In all, the case sample numbered 23,475 children in five successive annual cohorts. The "control" sample numbered over 100,000 children who did not attend any prekindergarten program.

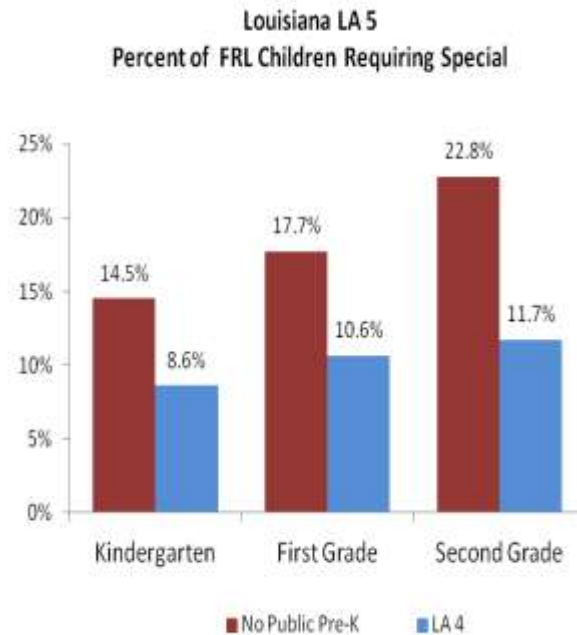
The LA 4 evaluation reported in summary:

...at the beginning of the school year, the average early language, literacy and math skills of pre-k children in the state fell within the lowest 20 percent of the national peer group. By year's end, these children caught up to the national average. Based on data collected from 2002 to 2006, when compared to peers who did not participate in the program, children who attended LA 4:

- *were as much as 36 percent less likely to be held back in kindergarten; and*

- *were as much as 49 percent less likely to be placed in special education through second grade*⁹²

Exhibit 3.9



The LA 4 study found significantly stronger effects pre-k on special-ed than the CPC study. However, before the LA 4 study could be used to evaluate the comparative-cost effectiveness of an actual SIB program, LA 4 findings would need to be adjusted to at least reflect actual year by year data on the number of children in special-ed. Ideally, it would be adjusted to reflect actual disability data also. This should be possible at state school district levels, if school districts provide accurate data to state authorities.

Statistical Projection Trials

Statistical projection involves gathering data on the school-readiness of a sample of children, using it to project the number of children in the sample who will be assigned to special-ed, and comparing the result to actual historical assignment rates of the population from which the sample was drawn. The challenge in using statistical projections is the risk that researchers, despite every precaution, will be led by unconscious choices in how data is selected and processed to produce a result that is “favorable”. This challenge has been researched exhaustively.⁹³ Nevertheless, if a study is done with thorough professionalism, it can provide important insights into possible cause and effect relationships.

Neither of the two studies reviewed below present pre-k special-ed effects that reflect actual state or district number-of-children in special-ed by year or by disability distributions. They are of particular interest because they are so contemporary and because they both raise the possibility of being able to pay for special-ed services out of public school special-ed cost savings. Neither of them, however, can be used in their present form as foundations for SIB organizations for the reasons noted above and for one additional reason. Neither of them takes into consideration outward migration of families with young children who receive SIB funded pre-k educations. If a SIB arrangement provides a child a quality pre-k

education and the child leaves the SIB service area, the special-ed savings the child would generate are lost to the SIB organization. A statistically sound SIB study needs to include out-migration effects.

Pre-K Counts, Pennsylvania

The largest early education statistical projection trial is the 2006 Pennsylvania Pre-K Counts (PKC) study. It spanned a three year period from 2005-2008 and involved 21 school districts and 10,002 children. The PKC study found that Pre-K Counts is associated with a decline in the rate of special-ed assignment from the 21 school's historical average of 18 percent, to 2.4 percent. The evaluation raised the possibility that Pre-K Counts might result in net government cost savings but went no further.

Pre-K Counts is a public-private partnership among philanthropies and state government departments managed through the Pennsylvania Office of Child Development and Early Learning. The goal of Pre-K Counts (PKC) was to stimulate the development of an early care and education network which would expand quality options; infuse education into child care routines; set standards for quality, professional development, and early learning; and serve as a catalyst to create and unify a "system" for prevention and care for all young children.⁹⁴

The Pre-K Counts (PKC) program evaluation sought to determine whether the following results, among others, were achieved:

- ✓ Acquisition of essential early school success competencies in the PA Early Learning Standards (PAELS)
- ✓ Attainment of educationally important "functional" benchmarks of measurable progress (e.g., reductions in grade retention and special education placements; movement from delay to non-delay classifications; increases in social skills with reductions in challenging social behaviors; >80% attain PAELS; exceeding national normative and reference indicators)⁹⁵

The evaluation found that 80% of PKC children met critical early school success competencies in the Pennsylvania Early Learning Standards (OCDEL, PAELS, 2005) at transition to kindergarten.

The evaluation also found that the gains of PKC children exceeded the kindergarten transition skills of same-aged peers on the BSSI-3 national norms in spoken language, reading, math, classroom behavior, and daily living skills. The projected PKC special education placement rate was 2.4%, significantly lower than the 18% historical spec-ed placement rate of the 21 PKC participating Pennsylvania school districts.⁹⁶

Regarding pre-k effects on special education specifically, the report says:

One of the most powerful and persuasive "functional indicators" that PKC works is the comparison among the percentages of high-risk children in impoverished school districts who are historically placed in special education at kindergarten/first grade versus the percentage of PKC children who meet special education criteria. For those 21 school district-community partnerships who participated in PKC, the historical special education placement rate is 18.6% (i.e., based on PDE database analysis), specifically, nearly 1/5 of preschool children are placed in special education early in their school lives due to below average and problematic early learning skills and social behavior deficits. The strong result for PKC is that participation in PKC is associated with only a 2.4% special education placement rate.⁹⁷

The report points out that this rate reduction is consistent with a 5-year longitudinal study done in 2002 of the Heinz Pennsylvania Early Childhood Initiatives (ECI).

From ECI child outcome data compiled in Allegheny County, and Lancaster, York, and Erie, the SPECS team analyzed the historical school district grade retention and special education placement rates. Similar to PKC, the historical rates were approximately 24% for grade retention (grade retention data were unavailable from PDE databases for PKC) and 21% for special education placement. Yet, for children participating in ECI programs,

less than 3% and 1% of ECI children, respectively, had poor outcomes at school entry. These comparative data from a decade earlier support the current PKC results.⁹⁸

To measure pre-k quality and child progress the evaluation team used the following:

- Keystone Stars Star Level, aligned with the Early Childhood Environment Rating Scale-Revised (ECERS-R, Harms, Clifford, & Cryer, 1998)
- Classroom Assessment Scoring System (CLASS; Pianta, La Paro; & Hamre, 2008) — Modified
- Pre-Kindergarten Program Partnership Rubric (SPECS Research Team, 2009)
- SPECS Mentoring Monitor (Bagnato & Macy, 2007)⁹⁹

To measure school readiness and likely special-ed assignment, the team used:

- Basic School Skills Inventory (BSSI-3) (Hammill, Leigh, Pearson, & Maddox, 1998)

BSSI-3 is used to locate children who are at high risk for school failure, who need more in-depth assessment, and who should be referred for additional study. The inventory consists of 137 items and is based on teachers' judgments of desirable school performance. Using a 4-point Likert-type scale that ranges from does not perform to performance indicates mastery, the BSSI-3 provides a teacher rating scale of early abilities in the six areas listed below. Standard scores, percentiles, age and grade equivalents are reported for each scale. Reliability coefficients are in the .90s for each scale. The BSSI3 provides a quick teacher rating scale of early abilities in six areas:

1. Daily Living Skills—basic knowledge and skills typically required for participation in day-to-day activities in school
2. Spoken Language—ability to communicate orally
3. Reading—knowledge of print in the form of letters, words, sentences, and paragraphs
4. Writing—abilities and skills directly involved in writing letters, words, sentences, and paragraphs
5. Mathematics—knowledge of numerical concepts and arithmetic operations involved in beginning mathematics
6. Classroom Behavior—attentiveness, cooperation, attitude, socialization, and work habits
7. Standard scores, percentiles, and age and grade equivalents are reported for each scale. Reliability coefficients are in the .90s for each scale.¹⁰⁰

BSSI-3 is said to be an "authentic" measure of school-readiness. According to the report:

...the best way to assess children is through naturalistic observations of children on an on-going basis. Evidence of children's developmental abilities comes from ongoing structured observations of naturally occurring behavior in natural, everyday settings and routines (home, preschool, community) by teachers and other caregivers (parents, psychologists, aides, and other team members). Structured observation schedules and ratings formats, as well as other teachable moments and informal interactions with the child, enable educators to capture real-life examples of each child's problem-solving, language, literacy, math, motor, social, and self-skills. Measures which sample real-life behavior in real-life settings are called authentic assessment measures. These types of measures can examine the whole child in their natural learning environment.¹⁰¹

Overall, the Pre-K Counts evaluation found:

- At the beginning of PKC, 12% of children from all ethnic groups were classified as at-risk.
- At the end of PKC, only 6% of children were still at-risk.
- At the beginning of PKC, 21% of children from all ethnic groups were classified as developmentally delayed and qualifying for early intervention services from the county.
- At the end of PKC, only 8% of children were still delayed.
- 19% more children are performing in the typical range at the end of PKC.
- Greater than 2 of every 3 children with developmental delays attained a low average to average level of performance after participating in PKC.

- Children with developmental delays and serious problems in social and self-control behaviors at entry showed significant gains ($p < .001$) in acquiring expected skills for kindergarten at exit.¹⁰²

Regarding kindergarten readiness, the evaluation found:

- 6971 children showed at least average age-expected early learning competencies in all skill domains at transition and entry into kindergarten, and exceeded expected competencies in spoken language, math, writing, and classroom behavior.
- Overall, 80% of PKC children met critical early school success competencies in the Pennsylvania Early Learning Standards (OCDEL, PAELS, 2005) at transition to kindergarten.
- The gains of PKC children exceeded the kindergarten transition skills of same-aged peers on the BSSI-3 national norms in spoken language, reading, math, classroom behavior, and daily living skills.
- The projected PKC special education placement rate is only 2.4%, which is dramatically lower than the 18% historical special education placement rate of receiving school districts (Pennsylvania Department of Education, Special Education Bureau, 2008).¹⁰³

As we noted earlier with respect to the LA 4 study, the PKC study estimates alone cannot be used for SIB cost impact assessments without augmenting them with number-of-years in special-ed, and ideally with disability data also. The sample SIB program presented in Chapter 3 uses Department of Education data on the number of children in special-ed, as shown in Exhibit 3.3, to adjust the PKC study findings. Comparable national year-by-year data on disabilities is not available. Such data is available at the state level, and in future research on the seven counties of Northern Virginia, state disability data will be added to the mix to evaluate SIB financing effectiveness.

Granite School District, Salt Lake City, Utah

The most recent statistical projection study focused specifically on the effects of prekindergarten on special education. This study, done by the Voices for Utah Children (VUC) and Salt Lake City's Granite School District (GSD) Preschool Services, is a longitudinal study of the outcomes associated with three cohorts of 3 and 4 year-old children in 11 schools most impacted by poverty and who attended the GSD Title I prekindergarten program beginning in the 2006-7 school year. In these school districts, 74% of students were eligible for Free and Reduced Lunch (FRL) in the 2007-8 school year. The total number of children in these cohorts was 737.¹⁰⁴ The study found that that GSD prekindergarten is associated with a reduction in the projected rate of special-ed assignment from 34 percent to about 1 percent.

The Granite School District encompasses 257 square miles in Salt Lake County, Utah, and operates 62 elementary schools, 16 junior high schools, 9 high schools, as well as other special schools and programs. Granite is the second largest district in Utah. Granite is also one of Utah's largest employers, with more than 7,500 full and part-time employees.¹⁰⁵ The Granite School District has about 70,000 students, of which over 40% are non-white, about 5,400 students per grade level, and of these 10.9 percent are in special education – about 550 children.¹⁰⁶

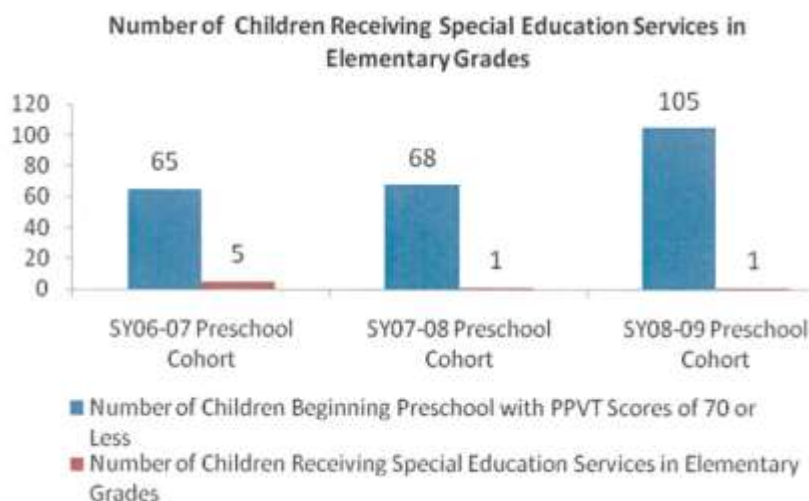
The GSD study tracked the children in the three cohorts who were deemed most likely to need special-ed services in the first four years of elementary school. The likelihood of special-ed assignment was based on Peabody Picture Vocabulary Test (PPVT) results. The PPVT evaluates language and vocabulary skills. A PPVT score of 100 is average and a score of 70 is two standard deviations below the mean. Scores 1.5 to 2 standard deviations below the mean are commonly associated with language delays and would qualify a child for special-ed services.¹⁰⁷ The GSD study was feasible because all the children in the study had been systematically given PPV Tests when they were four years old as part of other research.

Over the three years, of the 737 children in the sample 238 (34%) had PPVT scores less than 70 and an average score of 52, fully 3 standard deviations below the mean. However, when in elementary school, only 7 (1%) needed special-ed services through 3rd grade for the SY06-07 preschool cohort, through 2nd grade for the SY07-08 preschool cohort, and through 1st grade for the SY08-09 preschool cohort. In other words, 34% of the sample was projected to be assigned to special education (without any intervention

prior to school entry) when the children were assessed for eligibility in elementary school. However, when actually assessed, only 7 children were found to need special-ed services.¹⁰⁸

The GSD study is important because it is the first to actually determine that quality prekindergarten has special-ed cost reduction effects large enough finance the prekindergarten services needed to generate the reductions.

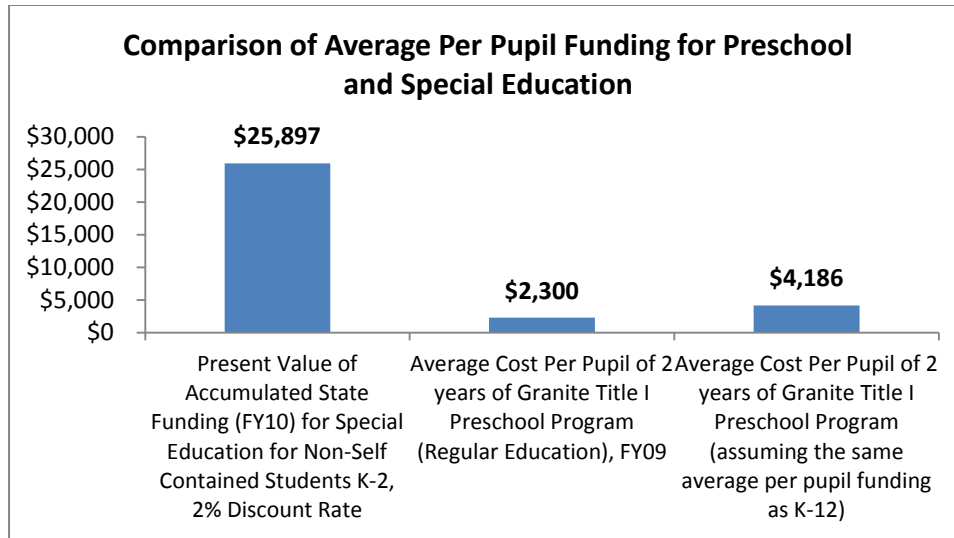
Exhibit 3.10¹⁰⁹



According to the GSD study, the Granite School District provides preschool services in their Title I schools for a cost of \$800 per year for a 3 year old (1/2 day classes, 2 days a week) and \$1,500 per year for a 4 year old (1/2 day classes, 4 days a week). Note that these amounts are what the school district provides in addition to what the federal government provides pursuant to Title I of the Elementary and Secondary Education Act. The amounts do not include Title I funds, grants, or parent co-pays, nor do they include special education services provided to these children in preschool or any state funds -- Utah currently does not fund preschool. Accordingly for two years, the cost of preschool per child that can be made part of a state and/or school district SIB contract is \$2,300.¹¹⁰

Also, according to the study, the state appropriates an annual amount of \$2,577 (in 2010) for non-severely disabled children for special education per child. The study assumes children tend to remain in special education through high school – 13 years – a total expense of \$33,501, which when discounted at 2% gives a present value cost of special education per child of \$25,897.¹¹¹ Note that this amount does not include the cost of severe disabilities which cannot be ameliorated by preschool. Children with severe physical and mental disabilities were specifically not included in the sample.

Exhibit 3.11



The report's authors use the cost benefit relationship -- paying \$2,300 for two year preschool to obtain a present value benefit of \$25,897 -- to propose a "sustainable financing model", in which the cost savings achieved through reduced special education use is reinvested back into the preschool program to serve more at-risk children. If implemented, the model would shift resources from remediation to prevention and scale-up high quality preschool programs for at-risk children.

According to the report, the results so far of the 238 children in the sample who most likely would have been assigned to special education in elementary school, show that the Granite School District has already achieved over \$1 million in cost savings in the three years of the study (\$1.4 million over 4 years).¹¹² Had the "sustainable financing model" been implemented in 2006 and the cost savings recycled back annually into preschool, an additional 696 children could have been served.

Setting up a "sustainable financing model" requires a lump-sum of initial capital to pay for the first round of prekindergarten for a cohort of at-risk children. The authors of the GSD study have begun discussions with Utah state legislators about appropriating government funds to capture the gains from spending on pre-k to reduce special-ed costs. Instead of government appropriations, it may be possible to use a combination of philanthropic and private capital in an operational PKSE SIB program along the lines described in Chapter 3.

Quality will be critical to PKSE success. Quality prekindergarten evaluation is a well-researched topic -- see for example *Assessing Readiness*.¹¹³ Many states have child care and early education quality rating and improvement systems (QRIS). However, as of May 2011, Utah did not appear to have one.¹¹⁴

Many questions can be raised about the GSD study, especially when its findings are compared with those of the CPC and PKC studies. Of these, probably the most important is, how well does the Peabody Picture Vocabulary Test predict special-ed assignment? Actual special-ed assignment is based on assessment of a wide range of observations ranging from motor skills to emotional maturity. How does it compare to the BSSI-3 test used in PKC study and other special-ed assessment tools?

Moreover, before the GSD results could be used as a foundation for SIB issuance, they would need to be adjusted by using actual number-of-years in special-ed data and disability data. And, if there is any meaningful outward migration of children from the GSD area, this too would need to be included in any analysis of SIB effectiveness.

Chapter 3

A Social Impact Bond Example: PKSE (Peek-See) Bonds to Pay for Pre-K to Reduce Special-Ed Costs

This chapter presents a simplified example of an early learning social impact bond arrangement intended to overcome inefficiencies in market allocations of capital to youth human capital development. It draws on observations and findings in chapters 1 and 2 about social impact bonds (SIBs) and the effectiveness of quality early learning in reducing school special education costs. This chapter has three parts: (A) a quick review of social impact bonds. (B) An example of early learning PKSE (“peek see”) bond mechanics. And (C) closing thoughts on PKSE program private, social and philanthropic returns.

The example presented here will not include grade retention or English language learning (ELL) service costs, though like special education costs, research shows quality early learning can significantly reduce these costs also. Most of what this chapter says about financing quality early learning with special education cost savings can also be said about grade retention and ELL. Including them in a PKSE program would increase its economic returns. It would increase the number of school-ready children and strengthen regional economic growth and per capita income.

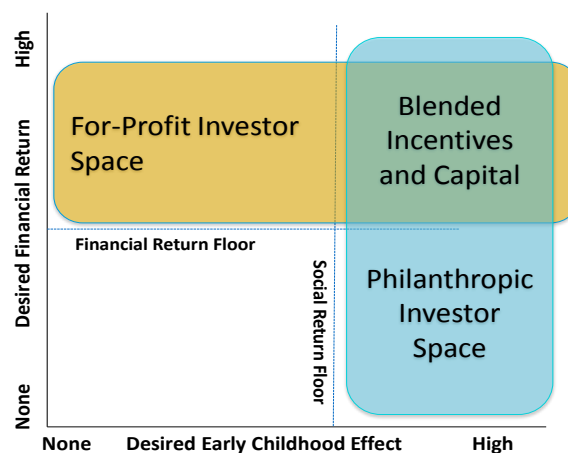
The example reflects a “crawl, walk, run” approach to improving school readiness. It begins small, only 100 students in each financing round. If successful, the local business leaders who establish it can increase the number of children served in future financing rounds.

The example is a “scholarship” program like that developed by the Minnesota Early Learning Foundation (MELF).¹¹⁵ It uses parent mentors, and maximizes parent choice and supply-side incentives for early learning providers to increase quality and be quality-rated. And like the MELF program, to keep operating costs low, it relies heavily on city, county and school service capabilities already in place.

The example includes a mix of local and national philanthropy and for-profit investing. Local business-leader philanthropists establish the program. Non-local philanthropists provide project-related investment (PRI) contributions to bridge negative cash flows and take first-loss positions, and for-profit investors buy PKSE bonds and fund the provision of pre-k services. This mix reflects overlaps in the incentives of for-profit and non-profit investors.

Exhibit 4.1

Segments of Social Impact Investors



To give the example concreteness, it draws on the findings of the 2009 Pennsylvania Pre-K Counts evaluation discussed in Chapter 2, and is loosely based on the Bethlehem Area School District in eastern Pennsylvania, the third largest school district in the Pre-K Counts (PKC) study.

The Pre-K Counts study is a statistical projection analysis, and while it was done with thorough professionalism, in the PKSE bond example the reduction in special-ed assignment is assumed to be from 18% to 7.5%, rather than to 2.4%. This is done for several reasons. First, the purpose of this chapter is to present a simplified PKSE bond example and not become embroiled in a debate over the accuracy of the PKC study's projection. Second, this report does not examine how much confidence should be attached to parameter estimates. It does not, for example, attempt to calculate the standard errors of the parameters. To accommodate this lack, the report assumes that standard errors are quite large and makes conservative assumptions about program benefits. For example, it triples the projected Pre-K Counts special-ed assignment rate in order to have reasonably high confidence that the assignment reduction benefit is as great, or greater, than that used in the example.

Absence of standard error estimates or analysis

Very few investors allocate capital without at least asking how returns varied in the past. If the average of past returns is high and variation is low, they have higher confidence in the investment. "Standard error" is a measure of past variation and is an important measure of investment risk in portfolios. If the standard error is high, investors perceive more risk and have less confidence they will earn the average return. An important aspect of calculating standard error is the number of observations. The more observations there are, the lower the standard error is. If the return on investment and its standard error are calculated from hundreds of observations – hundreds of individual stocks, for example, and hundreds of stock portfolios -- investors have more confidence that they understand the investment and will earn the average of past returns.

As complex as risk-return measures are in finance, they pale in comparison to those in early childhood research. In finance average returns consist of simple percentages, and average returns and standard errors are calculated from hundreds, and in some instances thousands, of observations on assets and from portfolios of those assets, over many decades. Average returns in early childhood research consist of often hard-to-define health, behavior and education effects. And these "returns" and their standard errors are calculated from relatively small numbers of children in individual studies. It is, in fact, the size of the standard errors that leads experts such as Jim Heckman at the University of Chicago point out that when the effects of certain early childhood programs on child outcomes are statistically significant, despite small sample sizes, it means the underlying forces at work in the programs are very powerful.

At another level of uncertainty, the findings of studies are the observations in an investment decision and can have at least two effects on standard error estimates. First, if there are very few studies as is the case in early childhood research, standard errors will be higher. Second, if the "true" workings of a program are unknown, statistical models of the program may yield widely divergent findings. In such instances, the high variance of the findings raises standard error estimates. Steve Durlauf at the University of Wisconsin and others provide a specific example in *Deterrence and the Death Penalty*.¹¹⁶ In studies of the deterrent effect of capital punishment, some studies find large deterrent effects, and others find a "negative" deterrent effect, that is, additional executions lead to more murders. The studies individually find little uncertainty in deterrence effect estimates and thus have low standard errors. But taken a whole, because of the wide range of deterrence estimates across all studies, the literature has a high standard error and is uninformative.

As a financial asset, PKSE uncertainty is multi-dimensional. There are operations uncertainties including benchmark study accuracy, contract terms and enforcement, bond-issuing organization integrity, and cost savings collection. There are financial uncertainties including market liquidity, uniformity, and comparative terms and performance histories. PKSE bonds share many characteristics of mortgages, and like mortgages, before early-learning SIBs could be used to finance preschool on a significant scale, a lot of experience with them would need to be acquired-- that is, there would need to be a lot of observations from which to calculate average returns and standard errors. The number of PKSE arrangements, benchmark studies, and volume of outstanding bonds would need to be statistically large enough to reduce standard error estimates enough to establish investor confidence on a national and perhaps global basis.

To be manageable, this report cannot explore standard error measurement. This is a task for future research. In this report, program effect returns are accepted as provided, and uncertainties about the returns are dealt with by using high social discount rates, by making conservative assumptions about special-ed assignment rates and the degree to which quality preschool can ameliorate learning disabilities, and by excluding key returns such as grade retention and English language learning cost reductions.

Expanding Pre-K Counts in the Bethlehem Region

Of the roughly 15,000 eligible three and four year-old children in Lehigh and Northampton counties in 2005-2008, only 527, or 3.3%, were in Pre-K Counts preschool.¹¹⁷ Judging from district data and the PKC study, Pre-K Counts could be expanded many times over with strong school-readiness benefits and without incurring effect reductions due to reaching saturation points. Furthermore, increasing early learning investment would strengthen per capita income growth and the Lehigh and Northampton county economy. In fact, as Tim Bartik documents in *Investing in Kids: Early Childhood Programs and Local Economic Development*, there is almost nothing Lehigh and Northampton officials and business leaders could do that would have more positive effects on their regional economy.¹¹⁸

Would a Bethlehem area PKSE program be a way to address school budget problems? Should business and philanthropic leaders establish what might be called, a "Bethlehem School Readiness Capital Partnership", and fund increased Pre-K Counts preschool with PKSE bonds? Perhaps yes, but it is a close call actually given the hurdles that must be cleared for market acceptance. For this reason, the example begins small.

The example program is very simplified. Whatever is done actually would involve more complexity and require considerable regional business and philanthropic commitment extending over at least ten years. Another early-learning special-ed impact study would need to be done to accurately benchmark expected cost reductions and calibrate contracts, and the second study should be expanded to include grade retention and ELL costs. The study, however, would be just an early step in meeting the conditions needed for market acceptance of Bethlehem PKSE bonds.

2009 Pre-K Counts Evaluation (PKC) Study

The authors of the 2004 Washington State Institute for Public Policy report *Benefits and Costs of Prevention and Early Intervention Programs for Youth*¹¹⁹ stress that policy should focus on "real world programs":

*An example of a model program is the Perry Preschool Program, which was a focused demonstration program in the 1960s that, in 2003 dollars, would cost \$15,270 per student for a two-year experience. An example of a real world program is the Chicago Title I Child-Parent Centers that costs an estimated \$7,355 for a one-and-a-half year experience, in 2003 dollars*¹²⁰.

Pre-K Counts is certainly a "real world program". The PKC evaluation study spanned a three year period from 2005-2008 and involved 21 school districts and 10,002 children. The study projected that Pre-K Counts likely reduces the rate of special-ed assignment from the 21 school's historical average of 18 percent, to 2.4 percent.¹²¹ The evaluation raised the possibility that Pre-K Counts might generate special-ed cost savings for the county and state government but did not pursue the matter. Note again that in the calculations that follow, the assignment rate for Pre-K Counts students is assumed to be, 7.5%, three times higher than the projected rate.

Bethlehem Area School District (BASD)

Whether spending on pre-k in the Bethlehem area can reduce Bethlehem school district special-ed costs enough to pay for the initial pre-k services depends on the cost of special-ed and pre-k per child. For this chapter's limited purpose, simple estimates based on information available on the internet will suffice.

Special-ed cost per student is estimated to be \$9,713. This amount includes just the special-ed costs that can be ameliorated by quality preschool. Here is how the estimate is obtained. The Bethlehem Area

School District (BASD) in 2010-11 had a total of 14,881 students, of which 2,396 students, or 16.1%, were in special education.¹²² BASD's total 2010-11 budget was \$197,685,263, of which 73% (\$85,350,275) was allocated to regular education and 27% (\$52,468,525) to special education.¹²³ The per student cost of regular education for all students was \$9,758, and the per special-ed student cost of special education was \$21,899.

Because special-ed students are also in regular-ed, the convention is to subtract the cost of regular-ed from special-ed to get the cost of special-ed only. The result is a simple estimate of per student BASD special-ed cost per year -- \$12,141. Chapter 2 explains that between 70% and 80% of the costs of special-ed disabilities can be treated by prekindergarten. The remaining 20 to 30% cannot. In the example calculations the special-ed cost estimate downward by 30%.

The cost per student for Pre-K Counts preschool is accurately known. It is exactly what the state government pays providers. The cost for full-day pre-k is \$7,850.¹²⁴

A. Social Impact Bond Review

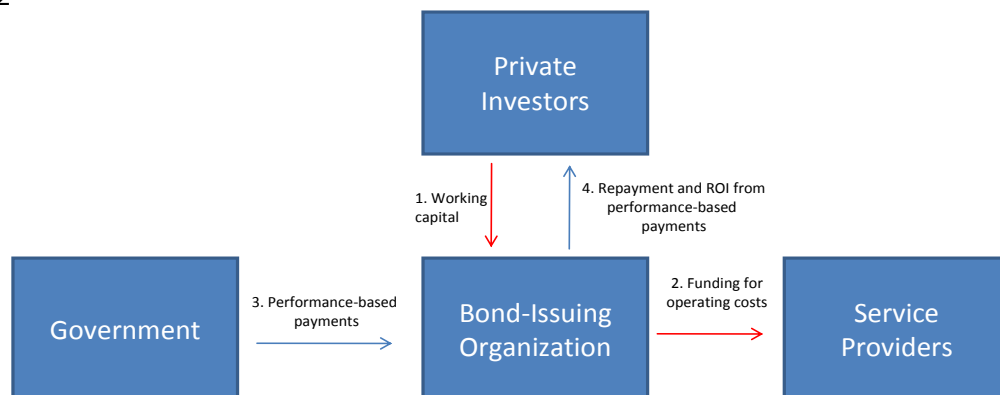
Recall from Chapter 1 that a standard social impact bond (SIB) program is characterized by:

1. Payment of return on invested capital to investors
2. Repayment of invested capital
3. Government cost savings or revenue increases cover the full cost of the projects or services financed by the SIB

A standard program requires an agreement that establishes the SIB-issuing organization itself and separate enforceable contracts between all of the major participating parties.

- ✓ the bond-issuing organization and the government
- ✓ the bond-issuing organization and private investors,
- ✓ the bond-issuing organization and service providers

Exhibit 4.2



SIB programs must address seven obstacles to the parties being willing or able to participate in a standard SIB arrangement.

1. Unclear returns on the SIB investment project or intervention
2. Long delays between the SIB intervention investment and the return
3. Inability to link government cost reductions or revenue gains solely to the SIB investment intervention
4. Multiple government jurisdictions with irreconcilable differences and child migration among jurisdictions
5. Resistance to paying SIB investors from public cost savings or revenue gains
6. Limited capacity to administer and evaluate SIB program performance
7. Incentive inconsistencies among the parties to the SIB financing

From the SIB investor standpoint, to be attractive SIB programs must to have:

- ✓ Strong state and local business, philanthropic and government support
- ✓ Rigorous statistical demonstrations of projected benefits
- ✓ Sound legal foundations for SIB issuing organizations
- ✓ Clear enforceable contracts among SIB participating entities
- ✓ Bonds or other SIB assets with terms familiar to investors
- ✓ Good working relationships with the investment underwriting, institutional and foundation investor sectors

To this list of contract participants and challenges, in the case of PKSE SIBs, parents are critically important. The public support of parents and contracts with the parents whose children receive PKSE scholarships are needed.

Central Challenges

Recall in chapters 1 and 2, the working group concluded that the central challenges to SIB implementation are (1) obtaining sound statistical research that firmly establishes an economic linkage between an intervention and an early childhood benefit, (2) devising a contract between the SIB issuer and the government entity, which captures the benefit monetarily and which both parties are willing to sign, and (3) monetizing the returns within a timeframe acceptable to investors.

Fifty years of research has shown strong near and long-term economic benefits from interventions ranging from prenatal nutrition, to lead abatement and prekindergarten. This research has underpinned establishment of scores of early childhood health, nutrition, safety and early learning state and federal laws and programs – all dedicated to capturing the broad range of documented near and long-term benefits of investing in young children’s health and education and in strengthening their families. On the basis of this research tens of billions of dollars of state and federal resources now flow every year into early childhood programs. Government can do this. In fact, this is the role of government.

The challenge for SIB organizers is not finding high-return interventions to invest in. The challenge is getting a government agency to sign an agreement that commits the agency to give back a portion of the intervention gains. The question will always be, how much, in dollars calculated to the penny, must the agency give back? How can the agency be sure it is not giving back more than it should and uneconomically and unfairly reducing what is available for other programs? How can it be sure the savings are due solely to the intervention financed by the SIB?

B. A PKSE Bond Example Using Pennsylvania Pre-K Counts and Bethlehem Area School District Parameters

PKSE Organization

In this example, to demonstrate strong business and philanthropic support for the PKSE program to potential investors, local philanthropy has full responsibility for setting up and covering all the operating expenses of the SIB issuing organization. To give investors the strongest sense that their funds will invest in children and not bureaucracy, all PKSE bond proceeds are allocated to fund pre-k scholarships for at-risk children. And to accommodate diverse kinds of pre-k providers and incentivize them to achieve higher quality, parents are permitted to use the PKSE scholarships to pay for pre-k services from any provider so long as they can show their quality is as good, or better, than the PKC’s pre-k program for three and four year-olds based on the Keystone STARS system.¹²⁵

The contracts essential for SIB success are between the PKSE issuing organization and the parents who receive the scholarships on behalf of their children, the providers of pre-k services including the school district, and the school district to capture special-ed savings. When parents accept a scholarship on behalf of their children, they sign an agreement to participate actively in their child’s pre-k success. Before a provider can accept a scholarship check, they must affirm the quality of their program. And

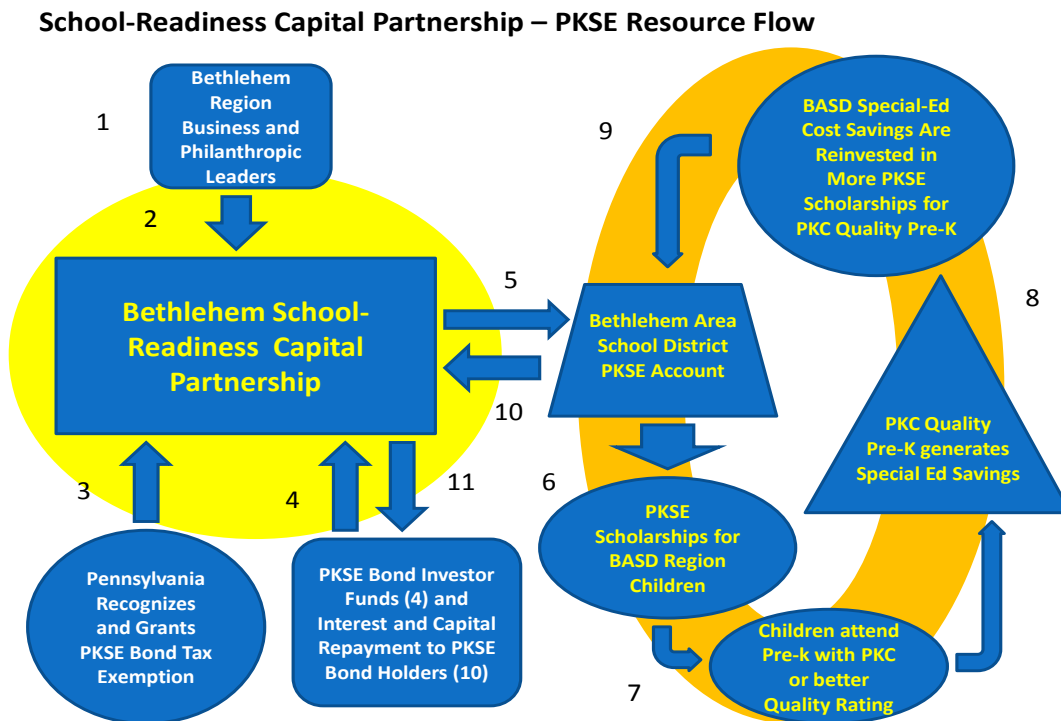
underlying all this is a master agreement between the PKSE issuing organization and the school district, which agrees that it will rebate the special-ed savings surplus back to the PKSE organization.

All the basic elements for assembling a PKSE program exist in Pre-k Counts. PKC consists of established, operating public-private partnerships among philanthropies and state government departments, overseen by the Pennsylvania Office of Child Development and Early Learning. PKC's goal is entirely consistent with PKSE funding – "...to stimulate the development of an early care and education network, which would expand quality options; infuse education into child care routines; set standards for quality, professional development, and early learning; and serve as a catalyst to create and unify a 'system' for prevention and care for all young children."¹²⁶

PKC partnerships are organized regionally around specific school districts. The Bethlehem Area School District is a PKC partnership and was the third largest in PKC study. If Bethlehem area business leaders and philanthropies decided to use a PKSE program to increase BASD school readiness, the organization would have the following cost coverage responsibilities and might look something like the diagram below:

- Philanthropy Paying set-up, operations, mentoring and monitoring costs
- Investors Funding pre-k scholarships
- Government Statutory recognition, incentive funding, and PKSE bond tax exemption
- School District Rebating annual special-ed cost savings to the PKSE issuer
- PKSE issuer Paying interest and principle due on PKSE bonds out of special-ed savings

Exhibit 4.3



Following the flow of the diagram --

1. Bethlehem Regional Business and Philanthropic Leaders Business leaders and philanthropists in the Bethlehem area agree to establish a capital partnership to pay for setting up and paying the operating expenses of a PKSE social impact bond issuing organization to increase regional school-readiness, reduce school operating costs, and strengthen the region's future workforce. Partnerships

to establish PKSE bond programs can take any one of a number of forms, including a 501c3 created for this purpose, a donor advised fund in a community foundation or under the auspices of the United Way

2. Bethlehem School Readiness Capital Partnership (Capital Partnership) The Bethlehem Capital Partnership is the SIB issuing organization. It issues PKSE bonds to fund scholarships to pay for quality pre-k for cohorts of 3 and 4 year-old at-risk children in the Bethlehem Area School District. It oversees all aspects of PKSE operations, scholar selection, pre-k provision, special-ed assignment and savings calculations, and compliance with Capital Partnership contracts, and it contracts with a third party to evaluate program performance. It receives funds from the business and philanthropic partnership, and from PKSE bond investors and pays interest and principle payments on the bonds when due. It operates through contracts with preschool service providers and the regional school districts.
3. State of Pennsylvania Recognizing the impact of PKSE financing and wanting to encourage Pre-K Counts expansion, state law specifically recognizes PKSE bonds and permits Pennsylvania PKSE issuers under certain circumstances to issue tax-exempt bonds if they choose. Also, under certain circumstances, Pennsylvania may contribute funds to the Capital Partnership to enhance success -- for example, in the form of a limited match of investor funds, a small bonus percentage of special-ed costs savings, or contributions to provide mentoring for parents of children who receive PKSE scholarships.
4. Bethlehem PKSE Bond Investors Private investors, asset management funds, foundations, companies, and others purchase Bethlehem Capital Partnership PKSE bonds.
5. PKSE Funds Distributed to the BASD PKSE Account The Bethlehem Area School District receives PKSE bond funds from the Capital Partnership. A school district can receive the funds itself or through a 501c3 established for this purpose.
6. PKSE Scholarships for At-Risk BASD Children Parents sign an agreement with the Capital Partnership in order to receive PKSE scholarship funds that says they will positively and actively participation in their child's education. The regional school districts provide pre-k scholarships to at-risk children for their parents to use to pay for prekindergarten early education services.
7. Children Attend Pre-k Scholarships can be used to attend a regional school prekindergarten program or a church, non-profit, or for-profit prekindergarten, so long as the services are rated Keystone Star 3 or 4 as required by the Pre-K Counts program.
8. Bethlehem Area School District Special Education Cost Savings When PKSE graduates move into public school, special education assignments decline and special-ed spending falls. As the graduates move grade by grade through elementary school, middle school and high school, special-ed cost savings accumulate.
9. Allocation of Special-Ed Cost Savings Projected cost savings are calculated each year as provided for in the PKSE contract between Capital Partnership and the school district. The imputed cost savings are credited each year to the Bethlehem Area School District's PKSE account
10. Cost savings distributed to Capital Partnership The Capital Partnership receives the imputed special-ed cost savings each year.
11. PKSE Bond Interest and Principle Payments The Capital Partnership makes interest and payments and repays PKSE bonds as they come due.

PKSE Program Education and Financial Performance

Putting operational muscle on the organizational skeleton requires making assumptions about a wide range of features beyond just the special-ed assignment rates for pre-k and non-pre-k children. These additional assumptions include adjustments to accurately reflect migration of children out of the region,

child entry and exit from special-ed over time, limits on the special-ed costs that than can be ameliorated by pre-k, and state government participation such as a match for one-half the cost of Pre-K Counts preschool for four year-olds along the lines of Virginia's Preschool Initiative.¹²⁷

Exhibit 4.4

A PKSE Bond Program to Expand Pre-k Counts by 100 Children Annually

A. Program Parameters

1. Special-ed assignment without Pre-K Counts preschool	18%	(Equal to Pre-K Counts)
2. Special-ed assignment with Pre-K Counts preschool	7.5%	(3 times Pre-K Counts)
3. Number of years in special-ed	Based on national distribution*	
4. Cost of prekindergarten per child per year	\$7,850	(Equal to Pre-K Counts)
5. Cost of special-ed per child per year	\$12,141	(Based on BASD data)
6. Percent of special-ed disabilities ameliorated by pre-k	70%	
7. Special-ed cost adjusted by amelioration rate	\$8,499	(30% less than BASD data)
8. Program set-up and operating costs	See below	
9. Earnings on accumulating special-ed cost savings	See below	
10. Discount rate used to calculate present values	5%	
11. Migration out of the school district per year	2%**	

B. Scholarships

1. PKSE Program Round: Scholarships for 50 three year-old and 50 four year-old children

C. Operations

1. Program set-up and operating costs:	\$500,000	Paid by philanthropy (3 years)
2. PKSE student mentoring per child per year:	\$ 1000	Paid by philanthropy (3 years)
3. PKSE graduate monitoring per child per year:	\$ 100	Paid by philanthropy (ongoing)

D. Finance

1. Special-ed cost savings: School cost savings from difference between special-ed costs with and without PKSE
2. Special-ed cost savings gain rate.....3% Gains earned from investing special-ed cost savings not used to pay PKSE bond interest or principle repayments
3. Regional business leader philanthropists: Pay for set-up and operating costs and are not repaid
4. PKSE bonds: Simple, straight bonds with 10-year maturity
5. PKSE bond annual interest rate.....3% Paid from special-ed cost savings gains
6. PKSE bonds pay-off at maturity in 10 years: Paid from accumulated special-ed savings gains
7. PRI philanthropists: Purchase PRI bonds to cover negative cash flow during PKSE bond repayment, once program effectiveness is demonstrated and are repaid over 20 years from special-ed net savings gains from future PKSE financing rounds
8. PRI bonds: Straight bonds with 20-year maturity
9. PRI bond annual interest rate.....3% Paid from special-ed cost savings gains
10. Length of PKSE Program Financing Round
 - a. 2 years of Pre-k for three year-old children and 1 year for four year-olds
 - b. 13 years of Kindergarten through 12th grade public school education
 - c. Special-ed cost savings begin to accumulate in Kindergarten and continue to accumulate through 12th grade in line with national special-ed entry and exit data.
 - d. 12th grade is the 15th and final year of a PKSE program. This is the year in which the three year-old PKSE scholarship recipients graduate from high school.

* The distribution of students in special-ed described in U.S. Department of Education, Office of Special Education Programs, Data Analysis System (DANS), OMB #1820-0043: "Children with Disabilities Receiving Special Education Under Part B of the Individuals with Disabilities Education Act," 2007. Data updated as of July 15, 2008.

** No information was available of young child family outmigration from the BASD. 2% is an initial estimate of outmigration the seven county Northern Virginia area and is included in the SIB example because it needs to be included in any analysis of SIB effectiveness.

PKSE Program Operations

If – a group of Bethlehem area business and philanthropic leaders organize a capital partnership, attract foundation support, oversee a new benchmark study, obtain government and school support, obtain Pre-K Counts early learning provider agreement to increase capacity to accept 100 additional students per year, totaling 1000 students over 10 years, get contracts signed, achieve market acceptance of their PKSE bonds, and began operations...if they do all this, the projected results of their efforts year-by-year would look like the exhibits below.

PKSE Program Sustainability

The exhibits below initially show one round of PKSE financing. They show an increase in Pre-K Counts services for 100 three and four year-old children. In a second round, services for another 100 children would be provided. In a third round services for 100 more would be provided, and so on. This chapter's PKSE program example runs for ten years.

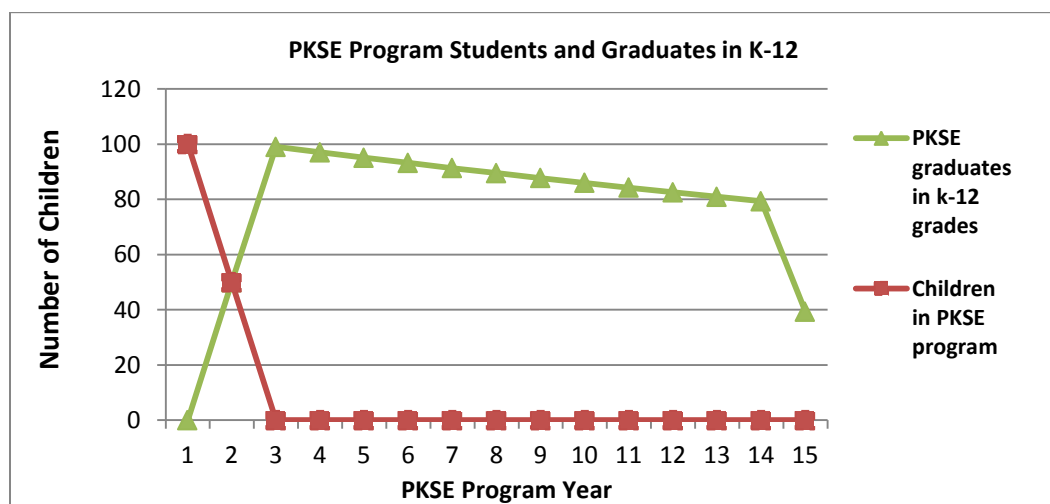
The most important measure of program success is the amount of "funds for future financing rounds". Each financing round needs to generate a positive amount of money for re-investment in "scholarships" in the next round. This way, the amount of PKSE bond sales needed to fund the "scholarships" steadily declines and eventually the program is financed entirely by special-ed savings and is sustainable. If a PKSE program can be projected to become sustainable in 3 or 4 years, it is a success. If it takes longer than that, the outer limit of private investor horizons will be exceeded and selling the PKSE bonds will become difficult.

PKSE Scholars in K-12

In the first year, 100 three and four year-old PKSE scholars enroll in new Pre-K Counts preschool spaces. In the second year, the four year-olds enter kindergarten and the three year-olds move up to the second year of preschool. By the third year, all the first round PKSE scholars are now PKSE graduates in the K-12 system. One percent of them are assumed to migrate out of the region each year. This is why the line below showing PKSE graduates in K-12 tilts downward before dropping off to zero when the original three year-olds graduate in the 15th year of the program. Though not always readily evident in the exhibits, outward migration is contained in all the calculations and exhibits.

When the first group of four year-olds move into kindergarten and three year-olds move into the second year of the PKSE program, 50 spaces open up for a new group of three year-olds to enter. The entry of this new group begins the second round of PKSE financing. The costs and gains of the second round are not shown in the exhibits below. The results of the second and subsequent rounds are shown in the ten-year exhibits below when long-term sustainability is discussed.

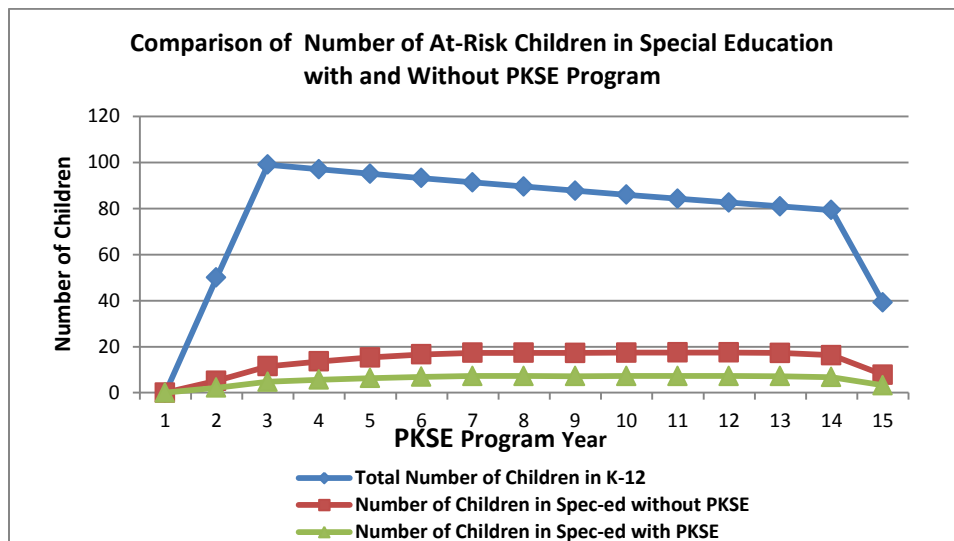
Exhibit 4.5



Number of Children in Special-Ed With and Without PKSE Program

One measure of the success of a PKSE program is a reduction in the number of children assigned to special-ed. Of the 100 at-risk children in the PKSE program, the number assigned to special-ed is not the black-square line, reflecting the PKC study's 18% projection. Instead, it is the barely visible green-triangle line at the bottom corresponding the PKSE 7.5% assumption. The curved shape of the black-square and blue-diamond lines reflects the pattern of national data on when children enter and exit special-ed. As discussed in Chapter 2, entries usually occur in the first four years of elementary school, and exits in high school, frequently as a result of dropping out of school. This pattern is contained in all calculations and exhibits.

Exhibit 4.6

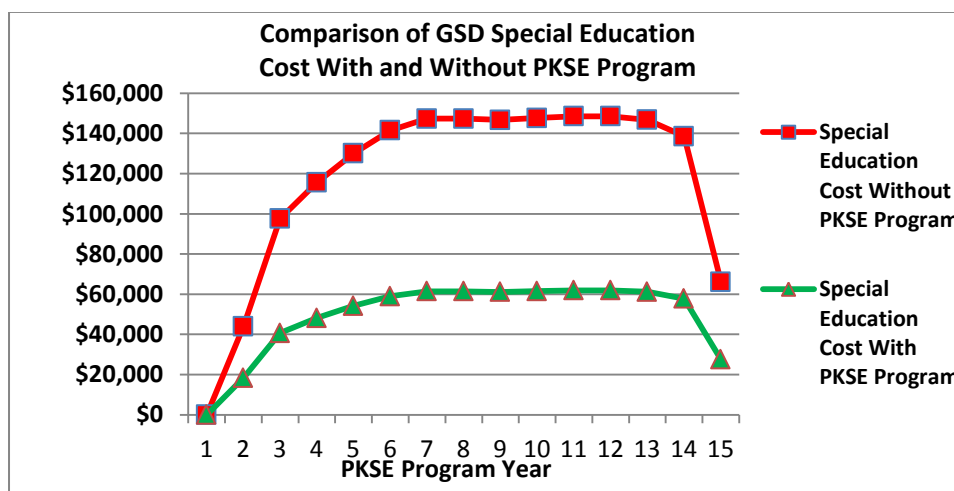


(Based on adjusted PKC study projections)

Special-Ed Cost With and Without PKSE Program

Another important measure of PKSE program success is the reduction in special-ed cost for PKSE scholars. The red-square line shows special-ed cost for children without the benefit of Pre-K Counts quality preschool. The green-triangle line is special-ed cost for PKSE scholars.

Exhibit 4.7



(Based on adjusted PKC study projections)

Sources of Funds

The financing costs of a PKSE program round are greatest in the first year when scholarship funds are needed for 50 three year-olds and 50 four year olds. In the second year, scholarship funds are needed only for the 50 children who were three year olds in the first year. Thereafter, as PKSE graduates move through elementary, middle and high school, they generate special education savings.

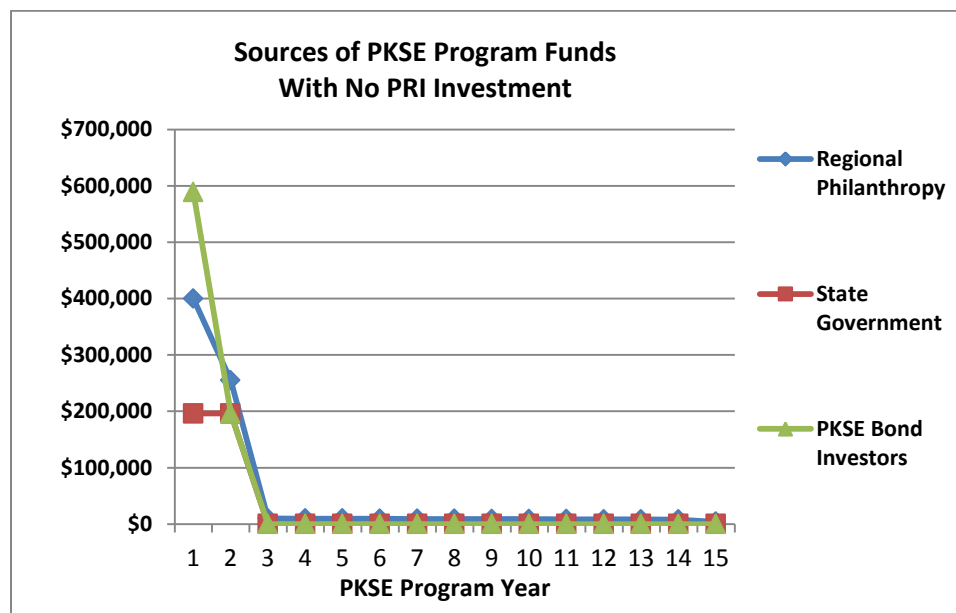
In this example, regional business-leader philanthropists pay the set-up and operating costs including mentoring and monitoring. Investor PKSE bond buyers pay the scholarship costs, and there is a state government match for the cost of pre-k for four year-olds.

For regional philanthropists, initial set-up, operating and parent mentoring costs are incurred in the first two years. Thereafter, monitoring costs are relatively low.

For the state, after the match of one-half the cost of pre-k for four year-olds in the first two years, there is no direct cost.

For PKSE bond investors, \$1.4 million in 10-year bonds need to be placed in the first year, and \$975 thousand in the second year to provide funds for "scholarships" to pay for Pre-K Counts quality preschool.

Exhibit 4.8



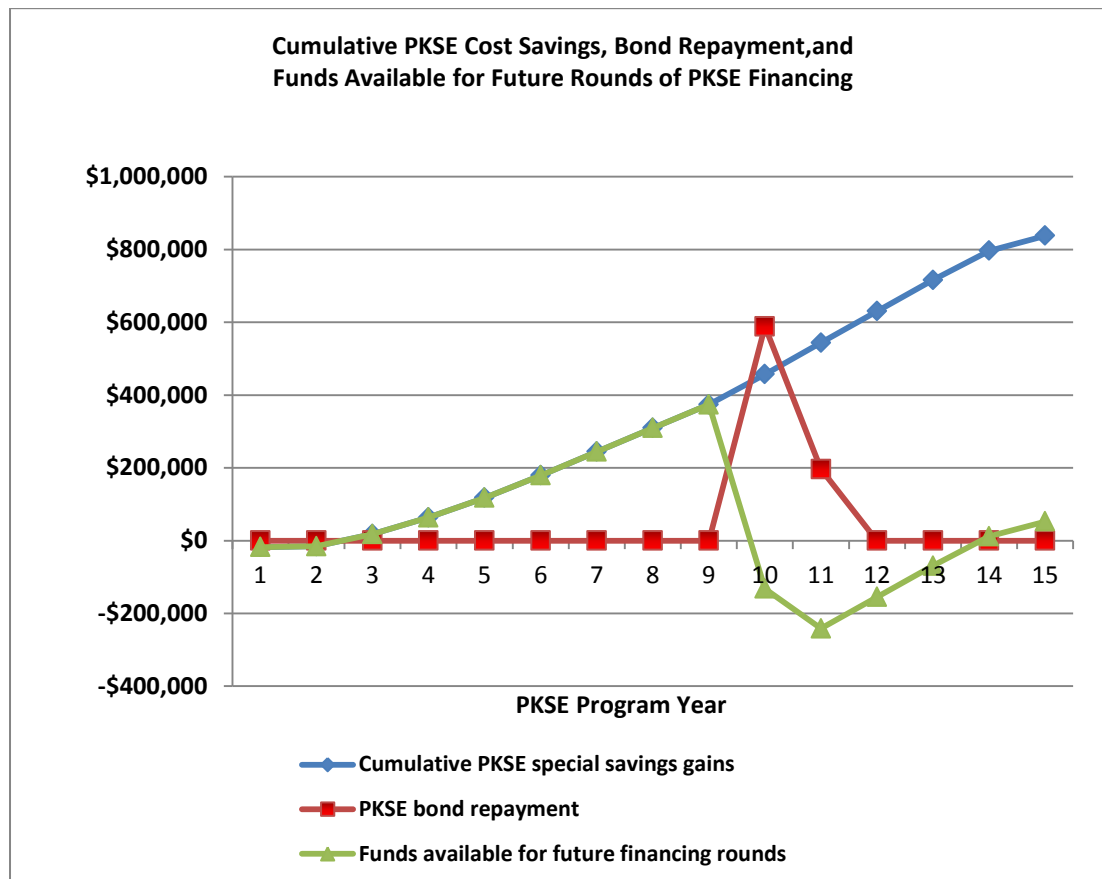
(Based on adjusted PKC study projections)

Negative Cash Flow and Sustainability

As noted earlier, the most important measure of a PKSE program's success is the amount of "funds available for future financing rounds". This is amount of money one round of PKSE financing generates for re-investment in the next round of financing. A major problem with the PKSE example given the operating assumptions is immediately evident.

In the exhibit below, the blue-diamond line shows the accumulation of special-ed savings gains (cost savings plus gains from investment of the accumulated balance). The green-triangle line shows the crucially important amount of "funds available for future financing rounds". The problem is clear. In the tenth year when the PKSE bonds need to be repaid, there is not enough accumulated special education savings to repay the principle due. The program goes cash flow negative, and a way has to be found to finance the gap.

Exhibit 4.9



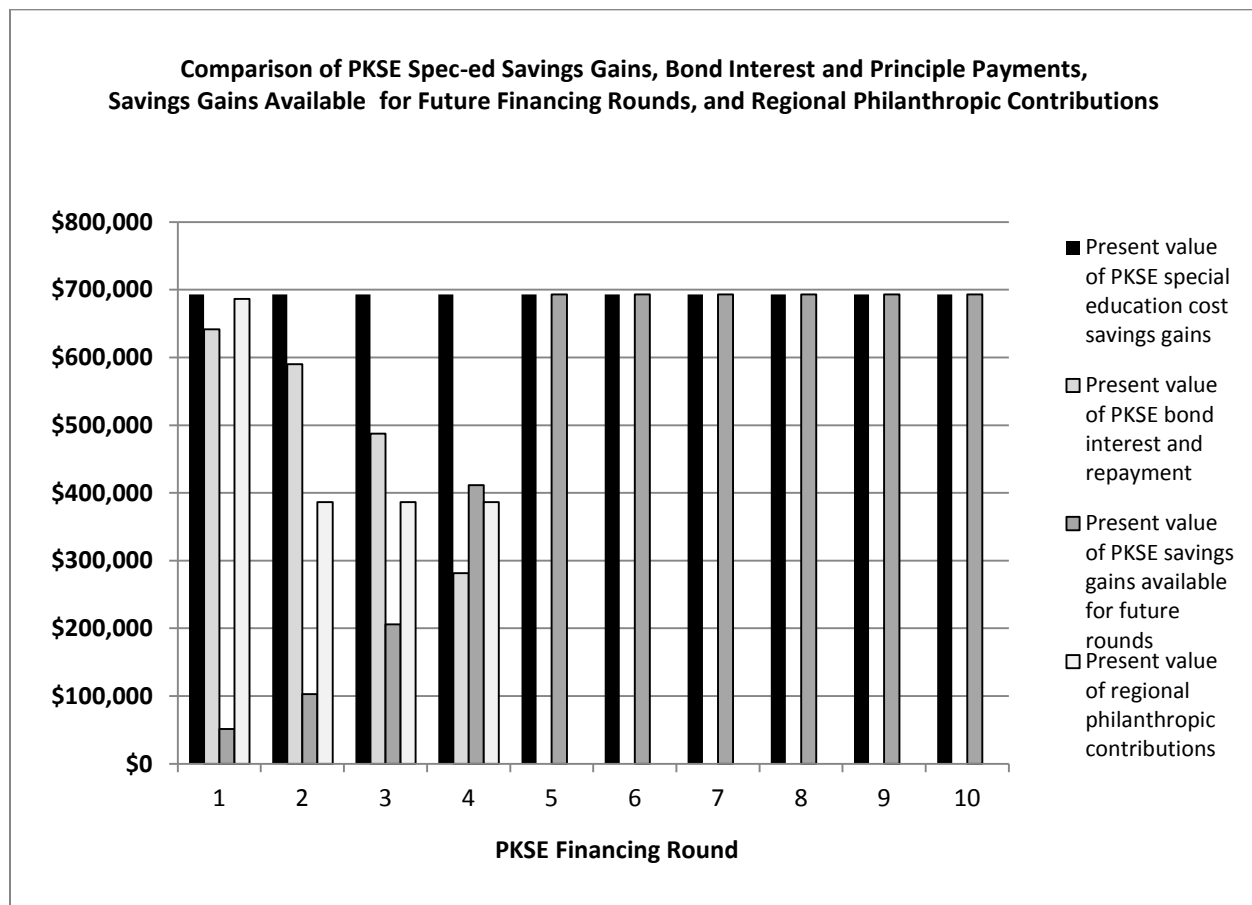
(Based on adjusted PKC study projections)

If a way could be found to fund the repayment of PKSE bonds, longer-term sustainability looks reasonably good, though it is achieved beyond the investment comfort zones of most investors. As shown in the exhibit below, sustainability is achieved in five or six years or rounds of financing.

This exhibit uses present value calculations to compare the amounts of various PKSE benefits and costs. The first black vertical bar is present value of all-in cost savings from lower special education costs. The medium gray second bar is the present value of all-in PKSE bond borrowing costs. The dark gray third bar is the difference between the first two bars. It shows the present value of the funds available for the next PKSE financing round. The light gray fourth bar is the present value of what local business leaders and charities contribute to establish and operate the PKSE organization.

The exhibit shows a small positive first-round amount of funds available for investment in the second round. This reduces the amount of PKSE bonds that have to be sold to fund the scholarships for another 100 children. Because the amount of PKSE borrowing is less, the amount of funds available for next-round investment is larger. Each round the amount of funds available for reinvestment grows and the amount of needed PKSE bond borrowing declines. In the fifth round, PKSE bond borrowing is negligible, and in the sixth and successive rounds the entire program is paid for by special-ed savings and the small amount of earnings from investing the savings as they accumulate.

Exhibit 4.10



(Based on adjusted PKC study projections)

Program- Related Investment (PRI) Contributions

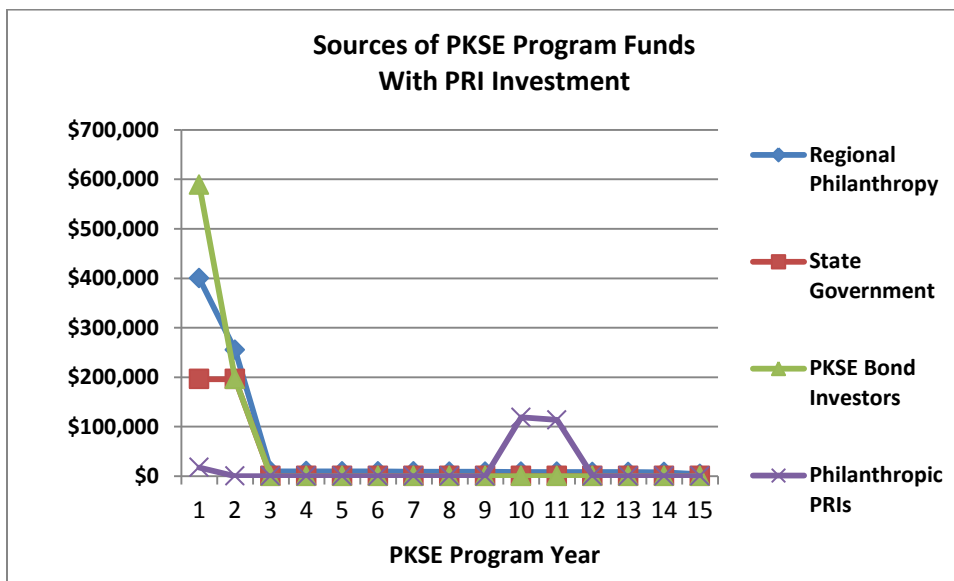
One way to finance the gap is program-related investments (PRIs). PRIs are loans and equity investments, authorized under tax laws, which foundations can provide at favorable rates to support activities that have direct charitable purposes.¹²⁸ GrantCraft.org explains that PRIs “expand the resources from foundations - and, in the right circumstances, can be even more effective than grants.”

¹²⁹ The Gates Foundation and others are actively looking for PRI opportunities:

Through tools like low-interest loans, guaranties, and equity investments, the foundation will apply some of its resources to support companies, investment funds, financial institutions and other revenue-generating enterprises that further the foundation’s charitable purpose. Program-related investments (PRIs) can be important tools for the foundation to stimulate private-sector driven innovation, to encourage market-driven efficiencies, and to attract external capital to the foundation’s priority initiatives.¹³⁰

In the exhibit below, PRIs are added to the PKSE sources of funds in amounts that exactly offset negative cash flows.

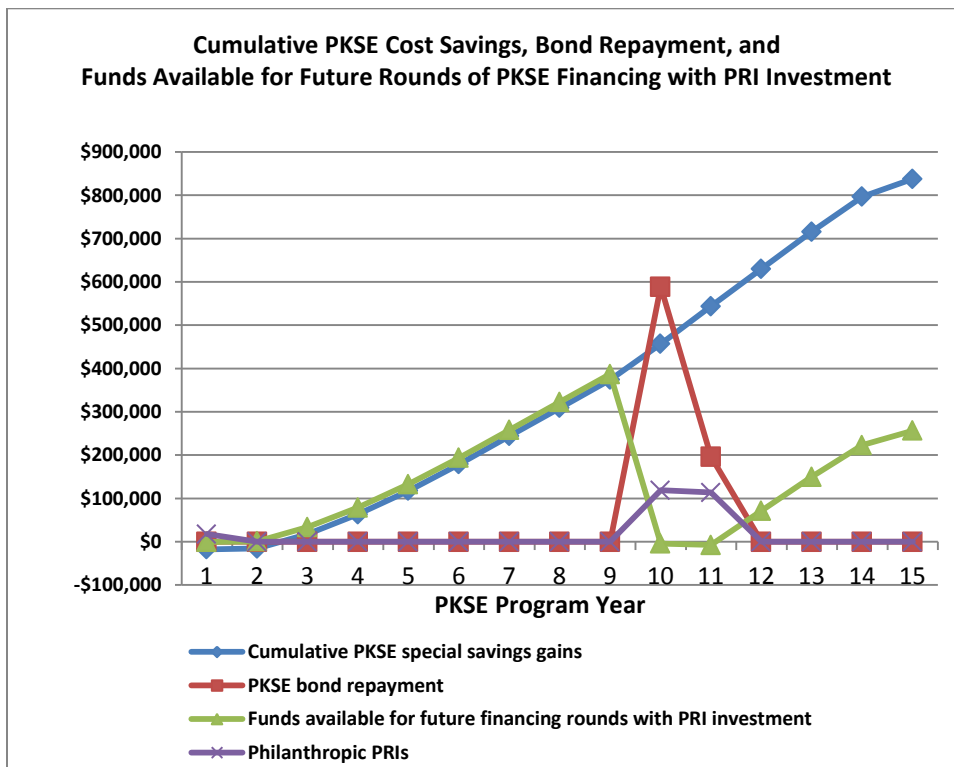
Exhibit 4.11



(Based on adjusted PKC study projections)

The operating effect on first round performance of adding PRIs is clear. There are no instances of negative cash flows and the funds available for next-round investment is over \$200 thousand.

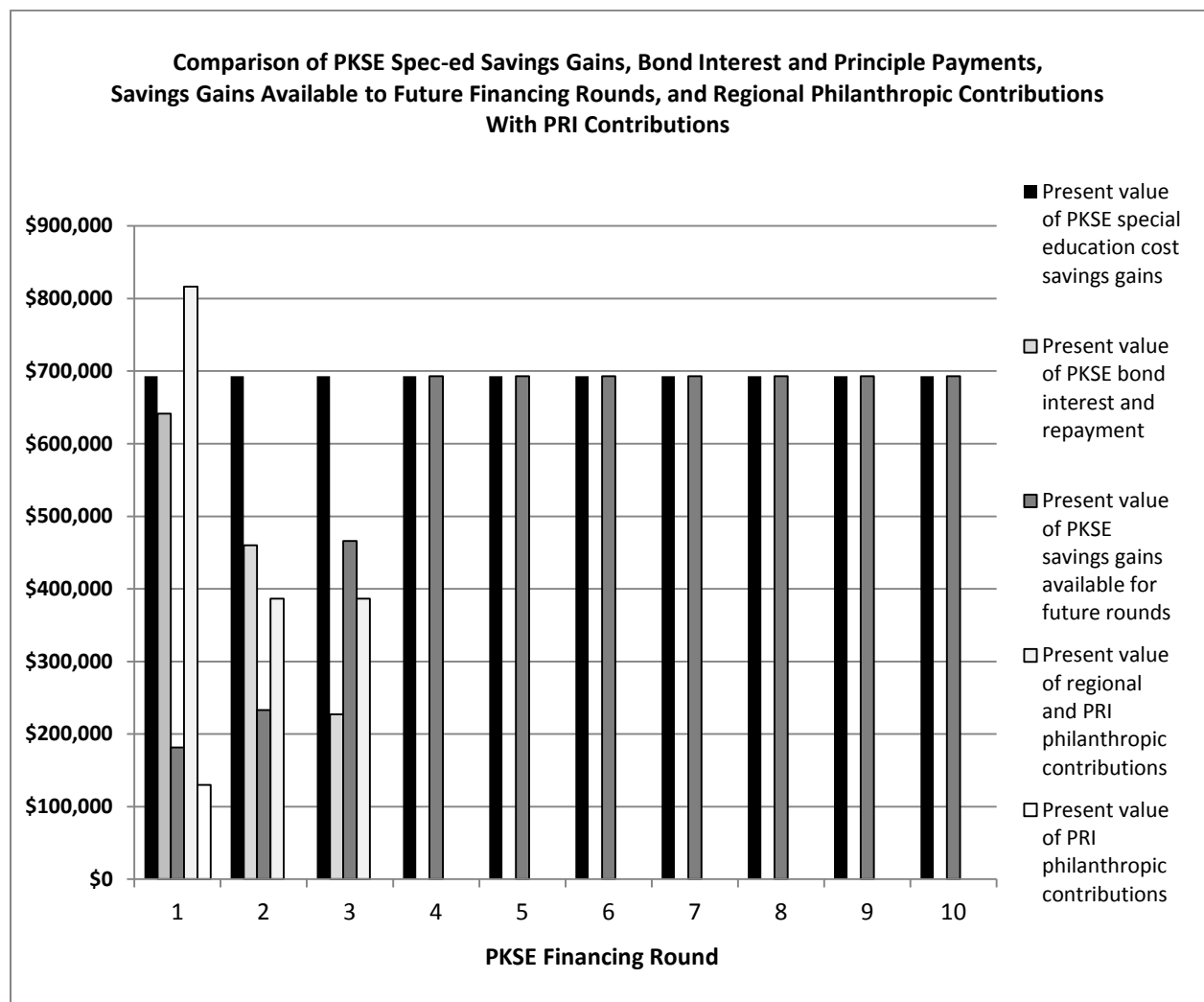
Exhibit 4.12



(Based on adjusted PKC study projections)

Adding PRIs enables sustainability to be achieved in three rounds of financings. This is well within the investment horizons of most investors. Moreover, a PKSE partnership that has PRI backing from significant regional or national foundations will find it much easier to market their PKSE bonds. Once sustainability is achieved, the PRIs can be amortized. Recall that each round of financing provides quality preschool services for children who will be in the k-12 for the next 15 years. Children in the tenth PKSE financing round will not graduate from high school for another 15 years. Amortizing the PRIs over 20 years is very feasible.

Exhibit 4.13



(Based on adjusted PKC study projections)

Program Sensitivity to Parameter Changes

PKSEs are sensitive to parameter values such as the special-ed assignment rate for PKSE graduates. As the exhibit below shows, the critical “funds available for future financing rounds” in this Bethlehem Area School District example goes negative if the special-ed assignment rate for PKSE graduates is just 1 percent higher than the assumed 7.5% rate.

Exhibit 4.14

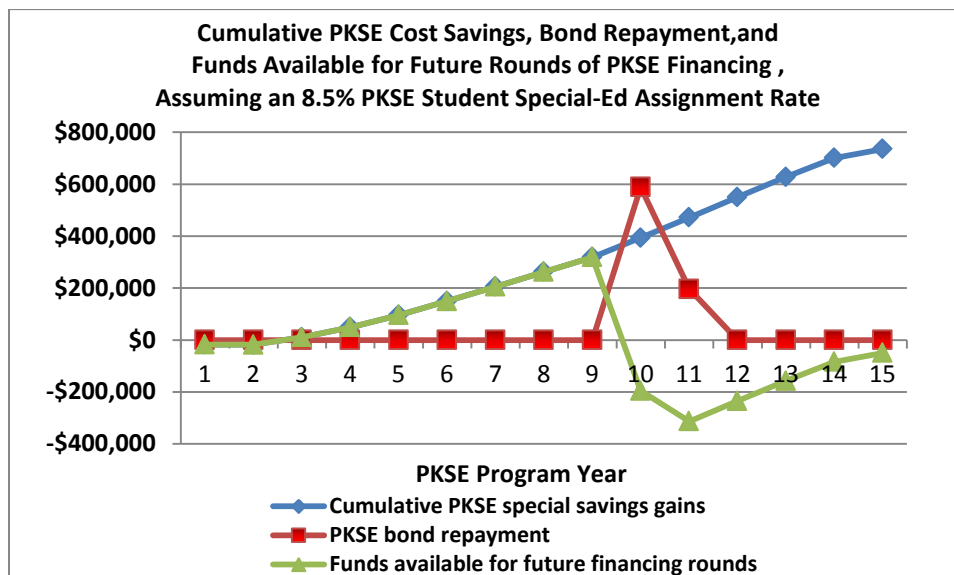
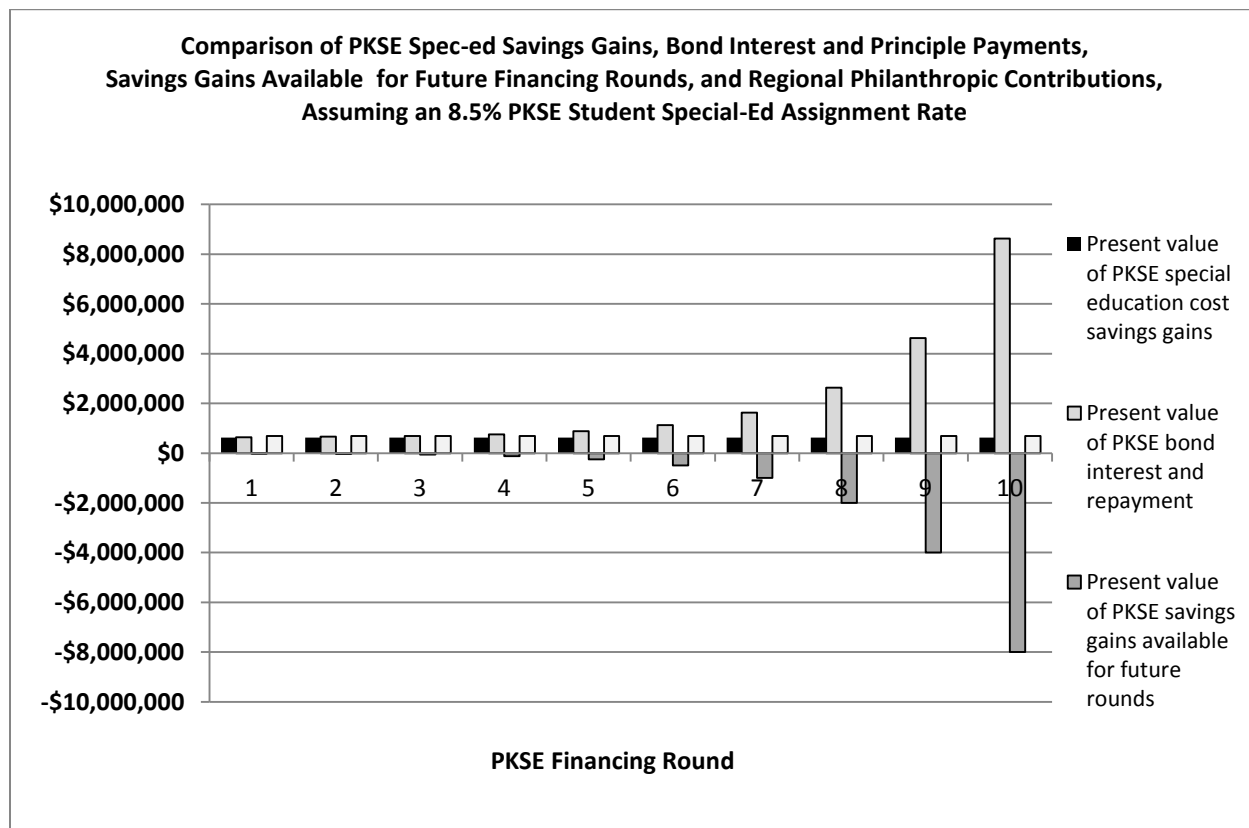


Exhibit 4.15



What do the operating results look like if the PKC study's projected 2.4 percent rate is used? They are impressive. The program generates ample funds for future financing rounds and needs no PRI financing because there is no instance of negative cash flow, that is, the PKSE bonds can be fully repaid out of special-ed savings gains.

Exhibit 4.16

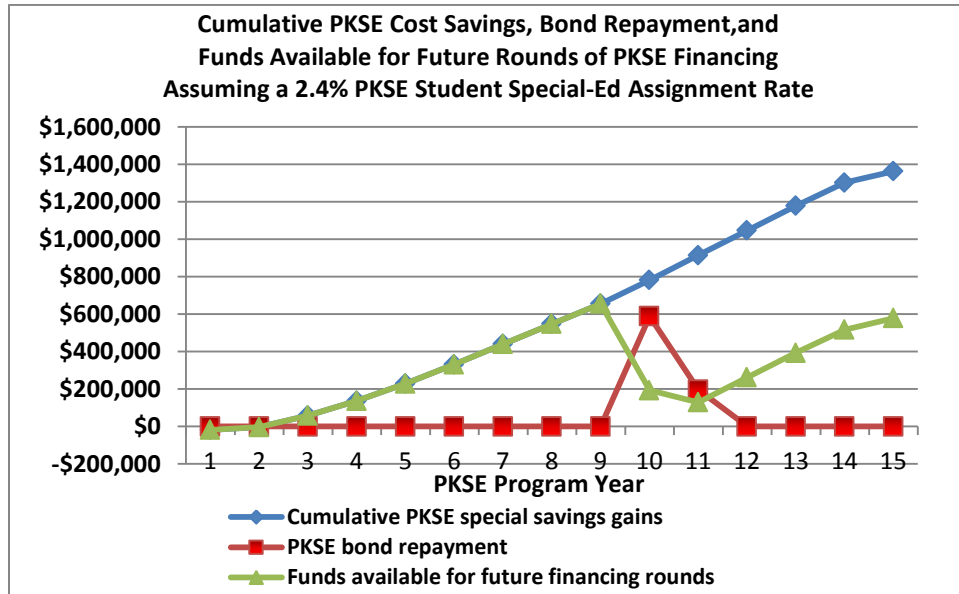
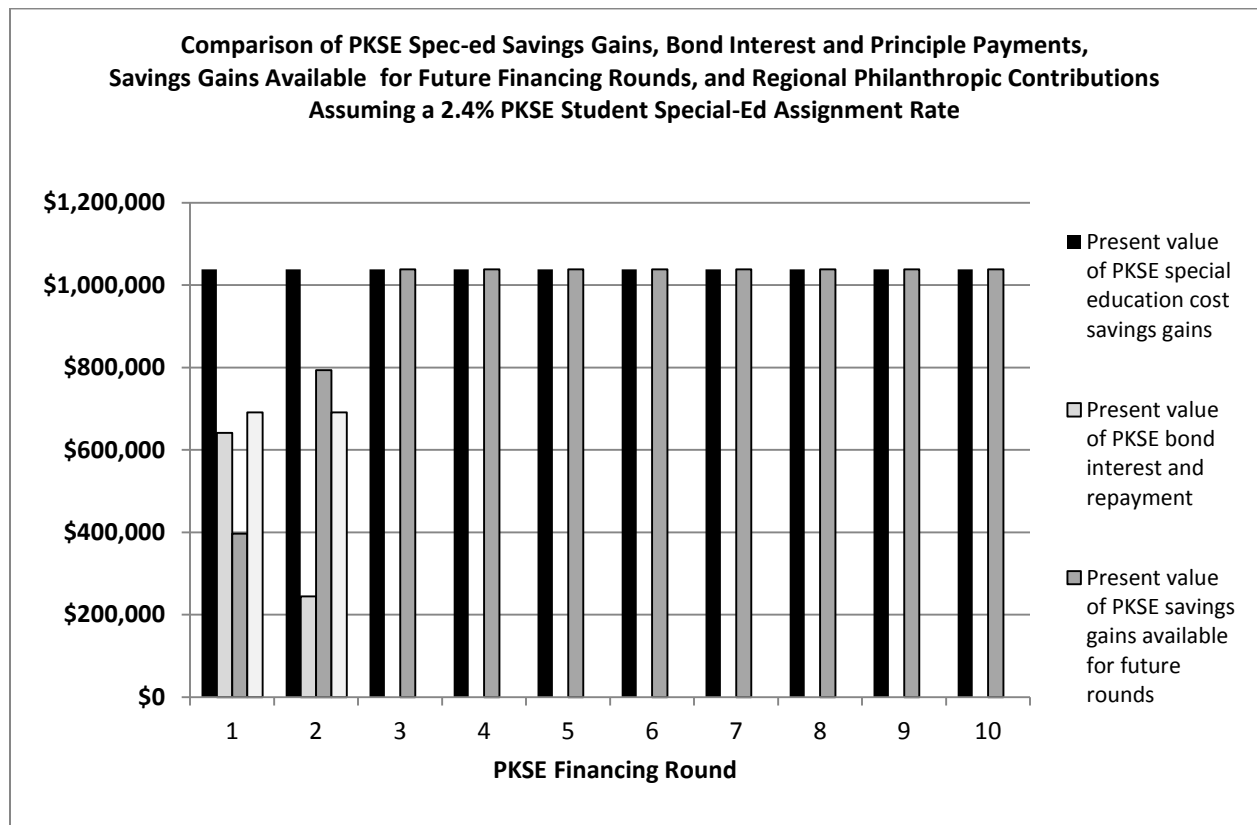


Exhibit 4.17



C. Comments on Returns on For-Profit and Philanthropic Investments

The returns on PKSE investments take several forms. The return on PKSE bonds paid to investors is financial -- it is simply the interest payment. The fact that the interest is being paid at all means market inefficiencies in allocating capital to high-return youth human capital investments are being overcome, and the economic gains from that allocation are being monetized.

The return on philanthropic capital is more complex. There are at least three bottom lines.

The first is economic -- the improvement in school readiness and all its implications for the life success of PKSE scholars -- higher third-grade reading and math scores, higher graduation rates, lower involvement in crime, fewer teen pregnancies, less drug use, higher rates of employment and future earnings, improved parent productivity, and stronger regional economic and per capita income growth. These are the benefits documented by Steve Aos, Steve Barnett, Tim Bartik, Lynn Karoly, James Heckman, Arthur Reynolds, and many, many others. These benefits cumulate at the local and regional levels and strengthen national aggregate growth and job creation. To paraphrase Jim Heckman, "Benefits beget benefits."

A second bottom line is financial -- the reduction in special education costs. Investor purchases of PKSE bonds is just the way business leaders and philanthropists get outside for-profit capital to pay for what is needed to increase local and regional school readiness and cut special-ed costs. There are no bonds to purchase unless there are institutions, preferably local ones, to issue the bonds. The present value of regional business-leader philanthropic contributions to establish a small version of one these institutions is \$412 thousand. The financial return on that philanthropic investment is the amount of special-ed cost savings. In the first round this is \$1.9 million. Success in this is measured by the ratio of special-ed savings to local philanthropic investment. In this case, the present value of the first round return is 464%. There are returns from successive rounds also. Including them increases first-round returns several times over.

The third is societal and brings us to where this paper began. The process of building PKSE organizations knits together local and national business leaders and philanthropic institutions into networks of people locally and nationally who understand the importance of youth human capital development, have built effective investment frameworks that can attract capital from many sources, and have the capacity to act at the levels of local, state and federal policymaking. PKSEs and arrangements like them can overcome some of the market obstacles to effective youth human capital investment, but only state and federal policymaking can address the major obstacles. One of the returns to philanthropic investment returns from establishing institutions like PKSEs is the creation of coalitions of hundreds of business leaders in every state that have the knowledge of what works and doesn't work in early child development and education. These are the people who can and ultimately will affect state and federal policy.

Endnotes

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- ⁴ America's Promise Alliance, <http://www.AmericasPromise.org/>
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- Program-related investments are those in which:
1. The primary purpose is to accomplish one or more of the foundation's exempt purposes,
 2. Production of income or appreciation of property is not a significant purpose, and
 3. Influencing legislation or taking part in political campaigns on behalf of candidates is not a purpose.
- In determining whether a significant purpose of an investment is the production of income or the appreciation of property, it is relevant whether investors who engage in investments only for profit would be likely to make the investment on the same terms as the private foundation.
- If an investment incidentally produces significant income or capital appreciation, this is not, in the absence of other factors, conclusive evidence that a significant purpose is the production of income or the appreciation of property.
- To be program-related, the investments must significantly further the foundation's exempt activities. They must be investments that would not have been made except for their relationship to the exempt purposes. The

investments include those made in [functionally related activities](#) that are carried on within a larger combination of similar activities related to the exempt purposes.

The following are some typical examples of program-related investments:

1. Low-interest or interest-free loans to needy students,
2. High-risk investments in nonprofit low-income housing projects,
3. Low-interest loans to small businesses owned by members of economically disadvantaged groups, where commercial funds at reasonable interest rates are not readily available,
4. Investments in businesses in deteriorated urban areas under a plan to improve the economy of the area by providing employment or training for unemployed residents, and
5. Investments in nonprofit organizations combating community deterioration.

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