



Committee for Economic Development

DEVELOPMENTAL EDUCATION:

The Value of High Quality
Preschool Investments as
Economic Tools

A Working Paper by
the Committee for Economic Development

S e p t e m b e r 2 0 0 4

inside front cover

SUMMARY

Job creation and economic development have become a centerpiece of state and local policy. Each year, billions of state and local tax dollars are committed to local development projects in the U.S., often in the form of providing inducements to high-profile companies, subsidizing entertainment infrastructure (such as arenas or stadiums), or creating “cluster” developments. Though these investments are increasingly common, their returns are risky, if at all positive, and their benefits are frequently aimed at a small segment of the local population.

Early childhood education, in contrast, appears to offer greater potential returns and substantially less risk, and should be included by state and local leaders as a component of their economic development policy toolkit. ***CED encourages local development policy-makers to view early education as a development tool and appreciate its lasting benefits.*** It is time that early education is implemented with the same energy, urgency, and funding that is currently being applied to other, less-promising, development projects.

This publication was created by the Committee for Economic Development (CED) as part of The Pew Charitable Trusts’ initiative to advance high quality prekindergarten for all of the nation’s three and four year olds through objective, policy-focused research, state public education campaigns, and national outreach. The views expressed are those of the authors and not necessarily of The Pew Charitable Trusts.

Ev Ehrlich, former CED Research Director, and Tracy Kornblatt, a former CED Research Associate, prepared the text. As a “Working Paper,” this publication is intended as an interim report which summarizes current research on the economic benefits of early education. As such, it will set the stage for the next CED policy statement on early childhood education planned for 2006.

The authors would like to make special note of the contributions of Arthur Rolnick, who not only co-authored a seminal paper on early childhood development as an economic development tool (with Rob Grunewald, accessible at <http://minneapolisfed.org/research/studies/earlychild/earlychild.pdf>), but has worked to call business leaders’ attention to these results in Minnesota and elsewhere.

PUBLIC INVESTMENT IN DEVELOPMENT

The rise of state and local investment in development

State and local economic development policies have been around since the beginnings of the Republic, but the precursors to current local development policies surfaced during the 1970s when an energy crunch, global competition, and high unemployment forced state and local governments to take action to attract economic development and jobs.¹ Since then, added employment pressures and increased mobility of labor and capital have further expanded “territorially competitive” development policies, and by 1994 states averaged twenty-four inducement programs per state.²

The scale of state and local “inducement” policies

State and local developmental policies contain vast amounts of funding for inducement and marketing packages, including:

- Grants to communities for business loans and loan guarantees;
- Provision of job training specific to business or industry request;
- Infrastructure provision;
- Tax relief; and
- Site/building provision

Annual city government spending for such economic development initiatives is usually between \$7–\$16 per capita, which is about \$2–\$4 billion each year, nationwide.

However, tax exemptions probably cost local governments much more — a study in Michigan estimated that tax relief to promote development costs about \$40 per capita annually.³

Measuring the returns to local “inducement” policies

Estimating the total social returns to development inducements is an unreliable exercise. The social returns depend on the definition of benefits, estimates of the life and details of the projects (which are often subject to change), and the point of view from which benefits are calculated (for example, from the local, state, or national perspective). Many of the benefits are difficult to quantify and benefit definitions are controversial. Despite these problems, however, there is substantial evidence that the returns to territorially competitive investments are minimal, if not negative, especially if viewed from a wider (state or national) perspective.⁴

The problems with a territorially competitive approach to investing in development have been widely documented.* The current bidding wars put companies and athletic teams

*See: Paul C. Cheshire and Ian R. Gordon, “Territorial Competition and the Logic of Collective (In)action,” *International Journal of Urban and Regional Research*, vol. 20, no. 3 (1996); Paul C. Cheshire and Ian R. Gordon, “Territorial Competition: Some Lessons for Policy,” *The Annals of Regional Science*, vol. 32, no. 3 (1998); Andrés Rodríguez-Pose and Glauco Arbix, “Strategies of Waste: Bidding Wars in the Brazilian Automobile Sector,” *International Journal of Urban and Regional Research*, vol. 25, no. 1 (2001).

in a powerful position, able to comparison shop for the best package of tax relief and inducements, often accepting benefits packages for a short-term commitment, and then able to (threaten to) relocate, accepting more inducements after the original incentives run out. The cost of inducements drives the net social benefits from “winning” corporate investment down to a minimum, if they are positive at all. Any benefit derived from the relocation of jobs is experienced at the local level. On a larger scale, the U.S., for example, derives no social benefit when jobs move from Missouri to Mississippi,[†] and any tax dollars spent to fund such a move result in a net loss of social welfare.

Not only are benefits of territorially competitive policy minimized and localized, but also they are often unrealized, as compared to predictions at the start of the investment. Though development incentives are made in anticipation of gains in the form of direct jobs, secondary jobs, and future growth in tax revenue, many of these benefits are predicted using assumptions about the time horizon and size of the investment to which the firm will commit over time, and firms often do not meet their commitments (i.e., a sports team demands a new stadium after twenty years instead of thirty, a firm employs only half the number of employees it originally promised). Sometimes firms fail to meet commitments not because of poor intent. Instead, the incentives themselves may distort the location process so much that the firm chooses a location that is not economically viable long-term. Furthermore, an unpredictable number of jobs created go to in-migrants, and, depending on the capacities of existing schools and other public infrastructure, there may be additional public costs to job creation and resultant growth.

The idea that pursuing such zero-sum gain policy is not in the nation’s best interests underlies Melvin L. Burstein and Arthur J. Rolnick’s demand that Congress outlaw territorially competitive policy.⁵ Though quantification of benefits from development inducement is unclear, it is clear that analysts question the returns to such policy, and find ample reason to believe that the returns are low, if positive. Examining three popular categories of public investment in more detail provides a better picture of the questions surrounding social benefits of development policy.

Clusters/Industrial Parks Since Michael Porter’s seminal work on clusters, many localities have turned to clusters or industrial parks as a source of self-sustaining economic development.⁶ Defining a cluster is challenging (academics admit the vagueness and breadth of the term), but the general idea is that a network of firms interacts and becomes interdependent, creating linkages and collective assets that tie firms to the cluster location, and attract similar firms requiring similar inputs, specialized services, labor, etc.⁷ Clusters have garnered much attention because they can seemingly transform a lagging region into a thriving, self-sustaining one.⁸ This prospect has caused local policymakers to attempt to create clusters, by induce-

ments and other policies. But there are few, if any, examples of policy-led clusters achieving success.⁹ The true preconditions for successful clusters seem to be more deeply-rooted characteristics of the region, such as education level of the population, access to educational and other resources, access to required inputs/outputs, and existing culture of trust/cooperation between business leaders.¹⁰ Inducements such as tax cuts and subsidies do not seem to yield the desired, self-sustaining economic development.

Often, though not necessarily, cluster developments contain firms in similar industries — such as Silicon Valley or the Route 29 Technology Corridor in Eastern Massachusetts — and high-tech science parks have garnered the most attention. In 1998, an estimated 135 science parks were located around the U.S., and most received public subsidization.¹¹

Scott Wallsten found no significant positive effect of science parks on regional development, measured in terms of jobs, number of firms, and invested venture capital.¹² Though many communities attempt to replicate the success of Stanford Research Park in Silicon Valley, Silicon Valley’s success is a rarity in the field, and it was not initiated by public (or private) design. Silicon Valley’s success appears more the result of the intense nature of competition in the region than public subsidization. The majority are parks such as the Texas Research Park in San Antonio, which broke ground in the mid-1980s, with predictions of 50,000 jobs in thirty years. As of 2004, the park has created 300 jobs. A research park that began in the 1980s in Prince George’s County, Maryland, has been deemed a failure, and the state is seeking a refund on some of the millions it poured into the infrastructure.¹³ In sum, policies designed to create science parks or clusters are unlikely to be successful or have positive returns to investment.

Professional Sports Investments Public investment in sports teams, namely building/renovating arenas and stadiums has grown rapidly over the last fifteen years. Between 1990-1998, forty-six major league stadiums/arenas were built, and between 1998–1999 an additional forty-nine facilities were under construction or in active planning.¹⁴ The cost of these facilities averaged \$21.7 billion, roughly two-thirds of which was funded publicly. Though studies funded by the teams or local chambers of commerce assert net benefits to the community from team investment, the calculations are often based on unrealistic assumptions about local value added.¹⁵ Benefits that are derived from the new stadium go largely to the team’s management and players, and, though such benefits would still be counted as social benefits (total benefits to anyone in the society), they bring up distributional concerns and promise large-scale out-of-town leakage of benefits (rather than the assumed in-town spending and multiplier effects). Additionally, any benefits are based on assumptions about how long the team stays in its new facility, how big of a public draw the team will be (which can be based somewhat on performance), the entertainment choices of consumers in the absence of new stadia, and other factors that are sub-

[†] Assuming no differences in productivity, etc.

ject to change. John Siegfried and Andrew Zimbalist conclude, "...independent work on the economic impact of stadiums and arenas has uniformly found that there is no statistically significant positive correlation between sports facility construction and economic development."¹⁶

Incentives to High-Profile Companies

Table 1 shows a sample of the inducement packages that have been offered to high-profile companies. The size of these subsidies is quite large, and, even if the location that "wins" the company or firm receives net social benefits, the likelihood of net social benefits on a larger scale (which would only occur if the incentives prevented a socially-beneficial company from locating outside the U.S., or from choosing an inefficient U.S. location) are quite small. There are an estimated 1,500 major corporate expansions or relocations in the U.S. per year and an estimated 15,000 economic development organizations courting them — which places businesses in a good position for capturing benefits.¹⁷ In fact, there is a popular view that inducements to large-scale plants reduce the welfare of local residents (a winners' curse of sorts), but Michael Greenstone and Enrico Moretti have found evidence to the contrary, explaining why local interests in subsidization schemes remains high.¹⁸

But while there may be incentives at the local level to subsidize million-dollar plants, from the larger perspective the benefits erode, as the plant likely would have located somewhere in the U.S. (or maybe even the same state), even without subsidization, and would have contributed (more) to the tax base and funded its own implementation.

There is also the risk that inducements create losses by distorting the firm's location decision, causing it to choose a strategically weak location. In such instances, firms derive benefit from subsidization, rather than economic efficiency, and are forced to relocate when the subsidy runs out.

Furthermore, inducements may stratify large-scale industries that otherwise may naturally

cluster and form a global competitive advantage. Take, for example, the automobile industry. After subsidizing a major plant to the tune of \$250 million or so, a state finds itself unable to bid for another auto plant, so the major auto manufacturers end up scattered over several states (Tennessee, Alabama, South Carolina), rather than clustered together where they may share transport hubs, input manufacturers, and technological knowledge transfers. If U.S. manufacturers lack these competitive assets, unsubsidized, naturally-clustered sites in other countries may be more efficient and competitive, by comparison.[§] On a federal level, the loss incurred by companies operating at otherwise undesirable locations is a serious concern in the long run. Undistorted, market-based location decisions are a better path to U.S. economic growth.

Table 1 gives an idea of the subsidization of large-scale projects — not all jobs created are subsidized to this degree. For example, Timothy Bartik estimates that a new job created should cost about \$7,000/year in public subsidization or tax revenue forgone.¹⁹ The problem is that these numbers do not indicate net social benefits. For example, it cannot be known if a \$7,000 subsidy per new job created is a good deal for local residents or not — the benefits and spillover benefits are highly individualized by project, difficult to quantify, and depend on the life of the company, which can be subject to drastic change.²⁰

Table 1: Local Subsidization of Sample Corporations

Company Receiving Subsidy	Location	Year	Subsidization	Comments
Micron Technology	Lehi, UT	1995	\$80 million	
Mercedes Benz	Alabama	1993	\$250-\$300 million	Estimated subsidization of \$170,000/job
Blue Water Fibre	Michigan	1994	\$80 million	With 34 employees, subsidization per job ^a \$2.4 million
Volkswagen	Pennsylvania	1978	\$70 million	Factory promised 20,000 jobs, but only employed 6,000 and closed after a decade
Northwest Airlines	Minnesota	1992	\$700 million	Northwest promised 2,000 jobs at 2 facilities, but later scaled back to 1 facility and 1,000 jobs. Subsidization per job ^a \$558,000.
Toyota	Georgetown, KY	Late 1980s	\$200 million	Subsidization per job ^a \$80,000
Boeing	Chicago, IL	2001	\$50 million	Subsidization per job ^a \$100,000
BMW	Greenville/Spartanburg, SC	1992	\$115 million	Predicted jobs created: 2,000 direct, 2,000 indirect
United Airlines	Indianapolis, IN	1992	\$320 million	United promised to invest \$500 million, but only put in \$229 million, and closed the facility in 2003. The city currently owns the facility and tools, and pays \$34 million/year to retire the bond issue and \$6 million/year to maintain the empty facility
Nissan	Tennessee	1980		Subsidization per job ^a \$11,000

Sources: Chris Farrell, "The Economic War Among the States: An Overview," *The Region*, Federal Reserve Bank of Minneapolis, June 1996; Michael Greenstone and Enrico Moretti, *Bidding for Industrial Plants: Does Winning a 'Million Dollar Plant' Increase Welfare?* Working Paper No. 9844 (Cambridge, MA: National Bureau of Economic Research, July 2003); Louis Uchitelle, "States Pay for Jobs, but It Doesn't Always Pay Off," *The New York Times*, November 10, 2003; Mitch Emmons, "AU Researchers Question State's Industry-Luring Concessions" *Auburn University News*, October 27, 1995, Available at < http://www.auburn.edu/administration/univrel/news/archive/10_95news/10_95concessions.html > Accessed on June 16, 2004.

Though the precise effects of development investments cannot be accurately quantified, we can tell that competitive bidding and subsidization minimizes the net social benefits of development investments, creates potentially harmful market distortion, and makes the investments high risk. We can further conclude that there is active interest in public investment in economic development, even if it is at a high cost and with low expected net benefits. CED recommends channeling this interest and public funding into projects that promise even greater returns — namely early childhood education.

EARLY EDUCATION AS A DEVELOPMENT TOOL

October 2000 U.S. Census data reveal that only 52 percent of all children ages three to five (not yet enrolled in kindergarten) were enrolled in “nursery school.”²¹ Additionally, enrollment was substantially less frequent in low-income households, and children of low-income families were overwhelmingly (89 percent) enrolled in public programs like Head Start, while 77 percent of children from families with incomes of \$75,000 or more attended private schools. These data support concerns regarding overall low attendance rates and inequity of services being provided to America’s children. Unlike several Western European countries, many children in the U.S. do not have access to preschool programs, and the quality of current offerings, especially for children of low-income families, is questionable. CED first raised these concerns in *Preschool for All: Investing in a Productive and Just Society*.

Low pre-kindergarten enrollment rates and unequal access to pre-kindergarten are a concern because experimental, high-quality, intensive preschool programming, when tested under accepted experimental conditions, can be shown to produce substantial net social benefits.²² Two such experiments, the High Scope/Perry Preschool project and the Carolina Abecedarian project, are estimated to have produced benefits in the range of \$2–\$8 per dollar invested.

High/Scope Perry Preschool Project The Perry program served children of low-income families in Ypsilanti, Michigan from 1962 to 1967, and participants received extraordinary preschool offerings. Most participants received two years of services, which included a 2.5 hour/day, nine-months/year classroom component, as well as a ninety-minute teacher home visit once per week. Additionally, student/teacher ratios were unusually low, and

²¹ The losses incurred by subsidizing an auto industry into fragmentation are well documented in a study of Brazil: Andrés Rodríguez-Pose and Glaucio Arbix, “Strategies of Waste: Bidding Wars in the Brazilian Automobile Sector,” *International Journal of Urban and Regional Research*, vol. 25, no. 1 (2001).

²² “Nursery school” is defined as “a group or class that is organized to provide educational experiences for children during the year or years preceding kindergarten.” This definition includes Head Start programs.

teachers were more qualified than most, being both certified public teachers and trained in child development. The experiment contained a total of 123 children. Participants and members of the experimental control group have been followed extensively, providing a comprehensive look into the broad range of costs and benefits associated with the program. As estimated by Steven Barnett, by the time participants reached 27 years of age, the results in Table 2 had been obtained. The 3 percent discount rate analysis indicates benefits of \$8.74 per dollar invested. Assuming a different discount rate, of course, changes the net benefits, but the net benefits still remain positive. At a 5 percent discount rate, benefits are estimated at \$5.58/dollar invested, and at a 7 percent discount rate, social benefits are predicted to be \$3.75/dollar invested.²³ Worthy of note is the substantial portion of benefits attributed to crime reduction. These benefits are quantified including estimates of costs both to the judicial system and estimates of losses (financial and emotional) to victims.

Carolina Abecedarian Early Intervention

The Abecedarian educational child care project, like the Perry Preschool, was a true experimental project, and included 111 students in Chapel Hill, North Carolina, beginning in 1972. Also like Perry, participants were children in low-income and often African-American families. Those allocated to the treatment group attended a year-round, full-day center, which provided free transportation

Table 2: Perry Preschool
Projected Program Social Benefits/Costs per Participant

In present value 1992 dollars

Assumed Discount Rate	3%	5%	7%
<i>Measured Effects</i>			
Child Care	738	722	702
K-12 Education	6,872	5,575	4,441
Adult Education	283	188	127
College	-868	-590	-354
Earnings	14,498	9,354	6,098
Crime	49,044	33,516	23,238
Welfare	219	157	117
Total Measured Effects	70,786	48,922	34,369
<i>Projected Effects</i>			
Earnings	15,833	6,394	3,418
Crime	21,337	11,214	6,055
Welfare	46	25	14
Total Projected Effects	37,216	18,173	9,487
Total Measured and Projected	108,002	67,095	43,856
Cost of Preschool Program	-12,356	-12,022	-11,705
NET BENEFIT	\$95,646	\$55,073	\$32,151

Source: W. Steven Barnett, *Lives in the Balance: Age-27 Benefit-Cost Analysis of the High/Scope Perry Preschool Program*, Monographs of the High/Scope Educational Research Foundation: Number Eleven (Ypsilanti, MI: The High/Scope Press, 1996).

and included staff at unusually high student/teacher ratios (3:1 for infants/toddlers; 6:1 for older children). The most recent assessment of participants was made at age twenty-one, and the cost-benefit analysis breaks down as shown in Table 3. The Abecedarian program reveals benefits of \$3.78 for each dollar invested, assuming a 3 percent discount rate, and \$2.20 and \$1.45 in benefit per dollar invested, assuming a 5 percent and 7 percent discount rate, respectively.

The net benefits in both analyses, of course, are subject to question and interpretation. Estimation and quantification of social benefits, such as less fear of crime, is an imprecise exercise. Some benefits may be overstated, and others may be excluded, including benefits to siblings and future generations.** The sample sizes of the programs were small and the environments unique. The cost-benefit analysis may not be exact, but the best evidence by professionals consistently indicates that these programs yield extraordinary benefits, and certainly have more promise of positive return to investment than professionals estimate for territorially competitive inducements.

The cost-benefit analyses of Perry and Abecedarian are a first indicator of a larger discovery about early education programs: the real benefits are not from making children smarter, but from nurturing children's noncognitive skills, giving them social, emotional, and behavioral benefits that lead to success later in life.²⁴ Early education programs have proven to temporarily raise participants' IQs, but those effects dissipate early on in elementary school, while affects on children's behavior and self-discipline are lasting.²⁵ Evidence indicates that these positive effects are more persistent when a program is preventative, intensive, and starts at a very early age.²⁶ And, according to Pedro Carneiro and

James J. Heckman, *skill begets skill* in a dynamic process, so skills gained early help students gain more skills in the next stage of development, and missing out on skills early is hard to compensate for later.²⁷ This theory is supported by Perry and Abecedarian participants: those receiving the treatment had more positive achievement scores, educational attainment, employment, and social outcomes (for example rates of crime and teen pregnancy).

Because of low participation rates and unequal access, we should be concerned that children, and society, are missing out on these key benefits of early education. With only half of children ages 3-5 involved in early education programs at all, and with many of those programs of insufficient quality to prepare children for school success,^{††} we can assume that many children are being underserved, and that investing in broader and more intense offerings would yield positive returns.

Perry or Abecedarian is not the only solution for other communities, nor would replication guarantee similar effects when applied in other environments. The results of Perry and Abecedarian cannot be generalized to larger and different program applications. Unfortunately, the evidence is limited. More research is needed to determine optimal program designs and targeting, and, in particular, there is a need to evaluate larger samples.²⁸

But we can be certain that early childhood education offers *much* more promise of positive net social benefits than many of the territorially competitive incentive packages in which state and local governments invest billions each year, despite their frequent negative returns.

We understand that, given the current inducement-based system, it would be political and economic suicide for a state not to compete for economic development with incentive packages.²⁹ We cannot expect state and local governments to instantly substitute childhood investments for their current development initiatives. But we can educate policy-makers about the role of early childhood education as an economic development tool, with better expected return, less risk, and less damaging distortion than existing inducement programs, and demand slow but steady change. The evidence makes early education an easy sell. We hope to see policy-makers funding the further research that is needed and then appropriately investing in early education as a developmental priority.

Table 3: Abecedarian Early Intervention

Projected Program Social Benefits/ Costs per Participant

In present value 2002 dollars

Assumed Discount Rate	3%	5%	7%
<i>Program Benefits</i>			
Participant Earnings	37,531	16,460	6,376
Earnings of Future Generations	5,722	1,586	479
Maternal Earnings	73,608	51,939	38,085
K-12 Education	8,836	7,375	6,205
Smoking/Health	17,781	4,166	1,008
Higher Education Costs	-8,128	-5,621	-3,920
AFDC	196	129	85
Total Benefits	135,546	76,034	48,318
Program Cost	-35,864	-34,599	-33,421
NET BENEFIT	\$99,682	\$41,435	\$14,897

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

** In the Perry Preschool analysis, however, Barnett states explicitly that the assumptions made lend themselves to underestimation rather than overestimation of benefits.

†† "W. Steven Barnett, Kenneth Robin, Jason Hustedt and Karen Schulman, *The State of Preschool: 2003 State Preschool Yearbook* (New Brunswick, NJ: National Institute for Early Education Research at Rutgers University, 2003). www.nieer.org

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