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Long-Term Economic Benefits of Investing in Early Childhood Programs:

Proven Programs Boost Economic Development and Benefit the Nation's Fiscal Health



Various studies have examined the benefit-cost ratios of publicly-funded early childhood development programs, and several have found their net benefits to be both positive and large. But what are their longer-term economic impacts – in terms of improving job growth and fiscal health – on federal and state governments? In two separate reports for the Partnership for America's Economic Success, William Dickens and Charles Baschnagel of the University of Maryland, and Timothy Bartik of the Upjohn Institute use simulation models of U.S. state and national economies to estimate the long-run effects of these early childhood program investments. The authors find that implementing proven programs for children would increase job growth and earnings, as well as boost future Gross Domestic Product (GDP) and government revenues.

Governments at the state and federal level are increasingly interested in bringing the known benefits of early childhood development and enrichment programs to their constituents. Social outcomes, such as lower rates of grade retention, special education placement, adolescent pregnancy, drug use, and crime, are well-documented and provide support for such investments. However, the long-term economic effects, such as job and GDP growth, and increased tax revenues, are harder to pin down. Using data from a program whose longer-term impacts are documented—the Abecedarian Project—Dickens and Baschnagel

“As costs begin accruing immediately, while fiscal benefits mainly come later, policy makers must be patient to reap this gain.”



estimate the capacity of such a program to pay for itself over time and to boost GDP. Adding data from the Nurse Family Partnership (NFP) program and pre-kindergarten for all children, Bartik compares increases in job growth and adult earnings from these three programs – at both the state and national level — to those of a traditional state economic development initiative, property tax abatements designed to draw businesses into the state. (See Figure 1 for details.)

Methodology: Dynamics of the Economic Effects

In the Dickens-Baschnagel analysis, early intervention leads to a long-run increased stock of human capital, and thus increased GDP and income. There is also some short-term increase in labor force participation, as child care frees parents to work more. The intervention increases participants’ educational attainment, which, in turn, leads to various secondary effects on GDP and budgets:

- Increased value of human capital, and thus increased labor force participation, income, and GDP;
- Improved health, and thus decreased mortality, which further increases GDP;
- Increased GDP leads to increased savings and investment, and thus increased value of physical capital, which further increases the productive capacity of the economy; and
- Increased tax revenues as a result of the increased GDP.

Bartik’s model also focuses on the economic impacts of early childhood programs that occur due to effects on the adult productivity of former child participants, as well as some short-term boost to parent labor force participation due to free child care. However, in addition to estimating effects at the national level, Bartik also estimates how a state’s economy will be affected by its investments in early childhood programs.

Both models describe long-term effects on the productive capacity and growth of the economy: as more human and physical capital lead to more of the same, succeeding generations continue to invest and produce at higher rates.

It is important to note that these studies do not address the likely substantial challenges posed by trying to bring model programs, such as Abecedarian, or locally-based ones, like the Chicago Child-Parent Centers, to scale, especially at the national level. As such, they also assume that the same levels of returns seen from these smaller-scale programs could be achieved when they are scaled up. While the researchers recognize that may be a difficult challenge, and that a number of other assumptions are necessary to estimate their models, in their research papers they address the impacts of scaling up these model programs in a high-quality manner. Addressing the political and logistical challenges is a separate issue. Moreover, because many of the results are so long-term, they serve, to some extent, as more of a theoretical, than a practical, boost for those advocating for such investments. That said, both papers also provide a set of outcomes not normally associated with young children’s programs.

GDP and Economic Development Impacts of Early Childhood Programs Versus Tax Abatements					
Program	75-yr GDP Increase†	State earnings generated <small>(ratio of program earnings to cost)</small>	National earnings generated <small>(ratio of program earnings to cost)</small>	Long-run (2088) national earnings generated	Jobs created (2088)†††
Abecedarian	1.1%	2.25	3.03	\$645 billion	5.3 million
NFP††	N/A	1.85	2.47	\$49 billion	.4 million
Pre-kindergarten for all††	N/A	2.78	3.79	\$365 billion	3.3 million
Tax abatement††	N/A	3.14	0.65	N/A	N/A

† GDP increase derived from Dickens-Baschnagel analysis. The other columns—state, national, and long-run national earnings generated—derived from Bartik analysis.

†† Note that Dickens and Baschnagel did not include pre-kindergarten for all or NFP in their analysis, and Bartik did not include the long-term effects of tax abatements on national earnings, as this depends on program scale.

††† Assuming full-scale, ongoing national program.



Estimates of Economic and Fiscal Effects (Dickens and Baschnagel)

If the Abecedarian Program were implemented at full scale (target is the 20% least-advantaged U.S. children), at 75 years from implementation, relative to no program it would:

- Increase the stock of physical capital 0.9%;
- Increase human capital per worker by 1.1%¹ and increase the labor supply by 0.51%;
- Increase GDP by 1.1%; and
- Increase federal revenues by \$134 billion (in 2007 dollars) and increase revenues for *all* levels of government by \$264 billion.

Estimates of Economic Development Effects (Bartik)

Bartik finds that all three early childhood programs prove to be stronger investments than state business subsidies, when viewed from a long-term and national perspective:

- 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 growth², 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

Figure 1:
Three Model Programs and Business Subsidies

Three Model Programs

The Abecedarian Program

- Randomized treatment-control study involving at-risk children born between 1972 and 1977
- Provided full-time, high-quality educational childcare from infancy through age five
- Focused on social, emotional, and cognitive development, emphasizing language
- Cost: \$17,479 annually per child in 2007 dollars, or \$80,000 per child for the five years
- Follow-up studies at ages 12, 15, and 21

Nurse-Family Partnership

- Home visits by nurses to disadvantaged first-time mothers from conception to when child is two years old
- 30 visits during the two-and-a-half year period
- Program's goals are improved prenatal care, higher quality parenting, and improved life prospects for mother
- Cost: \$10,200 per child, 9% of U.S. children 0-2 would participate

Pre-Kindergarten for All

- Half-day, school-year pre-kindergarten program, based on modified version of Chicago Child-Parent Centers
- One-year program, all four-year-olds eligible
- Cost: \$6,500 per child for the year, 70% of four-year-olds would participate
- The report assumes different levels of benefits from pre-k for children in families with different incomes

State Business Subsidies

- Modeled on property tax abatements that are commonly used by states to draw businesses/encourage economic development
- Ten-year stream of business subsidies of constant real value
- Size of business subsidy differs by program; in each case, cost of providing subsidy is set equal to cost of providing the early childhood program at issue



“Ideally, governments would undertake all projects for which net social benefits are positive. However, if a program...shown to have positive net social benefits also pays for a large fraction of its costs with revenue increases and savings, that makes the program attractive relative to other programs that might produce the same sorts of benefits but without the fiscal dividend.”

all would produce 3.3 million, and Abecedarian would produce 5.3 million³; 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.

The Bottom Line

The researchers' carefully constructed simulation models predict that national implementation of high-quality early childhood development programs will produce substantial gains in GDP and in the nation's stocks of physical and human capital. In the long term, full-scale implementation of such programs would also produce much stronger economic development impacts than would business subsidies. These economic effects, while important, reflect only some of such programs' total benefits to society. For example, other studies show effects of some early childhood programs in reducing crime, and these benefits are not fully reflected in these simulation models. A comprehensive estimate of the benefits might thus be even higher.

The Partnership for America's Economic Success

(www.PartnershipforSuccess.org) was created by a group of business leaders, economists, advocates, and a dozen funders in order to document the economic impacts to the nation of proven investments in children before birth and to age five. The Partnership is managed by and housed at The Pew Charitable Trusts.

This report is based on two separate papers. One is authored by William T. Dickens (the Thomas Schelling Visiting Professor in the University of Maryland Public Policy School and a Non-resident Senior Fellow at the Brookings Institution) and Charles Baschnagel (graduate student in Economics at the University of Maryland). The authors thank William Gale and participants in the Brookings Economics Studies Work-in-Progress seminar for helpful comments. The complete report and citations are available at www.PartnershipforSuccess.org and www.brookings.edu. The authors' 2007 companion paper, *Dynamic Estimates of the Fiscal Effects of Investing in Preschool Education*, is available from the Brookings Institution. The second paper is authored by Timothy Bartik at the Upjohn Institute. Bartik thanks Wei-Jang Huang, Claire Black, and Linda Richer for assistance with this project, and Elaine Weiss, Dick Wertheimer, and Stephen Rhody for helpful comments. The complete report and citations are available at www.PartnershipforSuccess.org and www.upjohn.org. The views expressed in this brief are those of the authors and not necessarily those of the staff, officers, or trustees of the Brookings Institution, the University of Maryland, The Upjohn Institute, or The Pew Charitable Trusts.

1 Human capital is defined as increased human capacity, over time, due to the combination of increased education and the work experience and skills that flow from that increase. Those skills increase individual worker productivity, which represents the increase in human capital.

2 Abecedarian is the exception; its full-day, year-round, high-quality child care boosts parental labor participation.

3 Because the size of the tax subsidy is modeled based on the cost of the program to which it is compared, Bartik does not calculate a general level of job creation (loss) for business subsidies.

For more information

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