From Preschool to Prosperity

Bartik, Timothy J.

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Chapter 3

How Do the Adult Earnings Benefits of High-Quality Early Childhood Education Compare to Costs?

As reviewed in Chapter 2, rigorous research shows that early childhood education can on average increase adult earnings for disadvantaged children by 3 to 26 percent. But are these earnings benefits greater than program costs?

FUTURE EARNINGS VERSUS PRESENT COSTS

To bring these ideas into focus, Figure 3.1 summarizes adult earnings benefits for three high-quality programs. The future adult earnings benefits reported for all three programs are for child participants from low-income families. A high-quality full-day pre-K program, similar to Tulsa’s program, could increase average future adult earnings of such children by 10 percent.25 A high-quality full-time, full-year child care and pre-K program from birth to age five, similar to the Abecedarian/Educare programs, could increase the average future adult earnings of low-income children by 26 percent. A high-quality home-visiting program to support parenting for children from low-income families, similar to the Nurse Family Partnership program, could increase the average future adult earnings of participant children by 3 percent.26

But costs must be considered. An Abecedarian/Educare program costs over $18,000 per year per child, or over $90,000 for the five years.27 One year of high-quality full-day pre-K at age four costs around $10,000.28 The Nurse Family Partnership costs $4,500 per
child per year, or over $11,000 for the two-and-a-half years from the prenatal period until the child is age two.29

To compare benefits with costs, both must be expressed in today’s dollars. The program costs are incurred today or in the next few years. The earnings benefits for former child participants are realized 15 to 60 years in the future. We first correct for inflation and express future earnings in terms of today’s purchasing power. But even after that inflation correction, we must make a further correction, because a dollar today could be saved and invested and earn interest. Therefore, a dollar today will be worth much more than a dollar 50 years from now, because of interest compounding over time. Economists do these adjustments by discounting future dollars down in value, using an appropriate interest rate, so that future dollars are equivalent to today’s dollars. This is referred to as calculating the “present value” of these future dollars. For example, even if there is no inflation, if
How Do Benefits Compare to Costs?  

we discount future dollars at 3 percent per year, one dollar received 50 years from now will have a “present value,” in today’s dollars, of only 23 cents.

Comparing the present value of earnings benefits to costs for these three programs, full-day pre-K at age four for low-income children has the highest ratio of adult earnings benefits to costs, at over 5-to-1. The program increases the present value of future earnings per child by an average of slightly over $50,000, at a cost of around $10,000. Five years of Abecedarian/Educare has earnings benefits of over $130,000 per child. But the program’s costs are so high that the ratio of earnings benefits to costs is only 1.5-to-1. The Nurse Family Partnership is cheaper, but also has lower benefits for the child’s future, resulting in a ratio of earnings benefits to costs of around 1.5-to-1. Table 3.1 summarizes these calculations.30

These ratios of earnings benefits to costs, ranging from 1.5-to-1 up to more than 5-to-1, are typical of high-quality early childhood programs. This implies that to achieve very large percentage earnings effects on future earnings, the programs must make significant investments per child. For example, for a child age four from a disadvantaged family, the present value of that child’s future career earnings exceeds $500,000. A high-percentage increase in such a large number is a large benefit number in dollars, which will require large dollar costs if benefit-cost ratios do not typically exceed 6-to-1.

Table 3.1  Per-Child Earnings Benefits versus Costs of Three Early Childhood Programs

<table>
<thead>
<tr>
<th></th>
<th>Full-day pre-K at age four</th>
<th>Educare</th>
<th>NFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings benefits</td>
<td>$53,000</td>
<td>$134,000</td>
<td>$16,000</td>
</tr>
<tr>
<td>Program costs</td>
<td>$10,000</td>
<td>$87,000</td>
<td>$11,000</td>
</tr>
<tr>
<td>Ratio of benefits to costs</td>
<td>5.3</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

NOTE: Benefits and costs are rounded to nearest thousand, in present-value 2012 dollars. Present value is calculated at age four for pre-K, at birth for Educare/NFP. All benefits and costs are average effects per child participant. SOURCE: Author’s calculations based on research, as described in text and endnotes.
These calculations also imply that an early childhood program may pass a benefit-cost test even if its percentage effects on future earnings are modest. Even 2 percent of a half-million dollars in future earnings is a large benefit.

**PARENTAL EARNINGS**

In addition to earnings benefits for former child participants, some early childhood programs significantly boost the earnings of parents. Child care programs allow parents to work or go to school, which boosts earnings both in the short run and the long run. Some parenting programs, such as the Nurse Family Partnership, help change the life course of parents—for example, through encouraging job training, which may boost earnings.

For the Abecedarian program, parental earnings benefits have a present value of over 150 percent of the large earnings benefits for children. For the Nurse Family Partnership, parental earnings benefits have a present value that is equal to the present value of earnings benefits for children (Bartik 2011). For these two programs, including parental earnings roughly doubles the benefit-cost ratios in Table 3.1.

In contrast, just providing pre-K full-time during the school year at age four does not provide much of a direct earnings boost for parents.31 Pre-K needs to cover more hours, a greater part of the year, and more years to significantly boost parental earnings prospects.

**ARE THESE EFFECTS LARGE?**

Early childhood education programs can increase adult earnings of child participants by 26 percent (Educare), 10 percent (full-day pre-K), or 3 percent (Nurse Family Partnership). A skeptic might admit that 26 percent is large, or even 10 percent, but is 3 percent really a large effect? The answer is “yes,” for several reasons. First, most of us would welcome a 3 percent lifetime gain in our standard of living. Second, this percentage earnings effect is averaged over all program participants. Behind this average is a diversity of earnings
gains for different individuals. Many have little or no gain from the program; others have much larger earnings gains.

How do we tell whether these large earnings gains for some former child participants are worth investing in the program? By comparing benefits with costs. These programs have a good economic payoff in that benefits significantly exceed costs. Early childhood programs do not solve all problems for all program participants. But early childhood programs do enough good for a sufficient number of child participants that they make economic sense. Added to these benefits for former child participants are social benefits for others, as discussed in Chapter 6.

CLOSING COMMENTS

These calculations of earnings-benefits-to-costs ratios assume that the research in Chapter 2 is valid. This research has been criticized, as is discussed in the next chapter.
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