Taking Preschool Education Seriously as an Economic Development Program:

Effects on Jobs and Earnings of State Residents Compared to Traditional Economic Development Programs

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March 20, 2006

This report is funded by the Committee for Economic Development by a grant from The Pew Charitable Trusts through its Advancing Quality Pre-K for All initiative.

Bottom-Line Results

Table P-1: Summary of Earnings Effects of Preschool and Traditional Economic Development Programs

	Ratio of Present Value of Earnings Effect to Present Value of Costs	
	Preschool	Traditional economic development subsidies
State perspective	2.78	3.14
National perspective	3.79	0.65

What Does It Mean to Analyze Preschool as an Economic Development Policy?

- I define "economic development" goals as the goals actually pursued by state and local economic developers and the policymakers who fund economic development.
- Their goals are primarily increased jobs and earnings for local residents.
- Therefore, the primary focus of this report is what preschool can do to increase the employment rates and earnings of state residents.
- This ignores many important benefits of preschool, for example reduced crime, reduced costs of special ed.

What are Traditional Economic Development Subsidies?

Definition: Programs that seek to attain the economic development goals of more jobs or higher earnings for local residents by cash or in-kind subsidies to businesses that are more or less customized to the individual business and more or less discretionary in nature. These subsidies are designed to affect the business's decision about how many jobs to locate in that local economy (location, expansion, contraction, closing decisions)

Examples:

- ☐ Property tax abatements
- ☐ Refundable corporate income tax credits for associated income tax revenue
- ☐ Customized job training
- ☐ Access roads
- ☐ Training/advice in starting up, improving, or expanding a business

What are Traditional Economic Development Subsidies? (continued)

Size: Total state and local resources for such economic development subsidies are about $20–$30 billion per year. (By coincidence, close to costs of universal preschool.)

Mix: Most of these subsidies are cash rather than in-kind, and property tax abatements is largest single type.

What are the Mechanisms for Traditional Economic Development to Affect Employment and Earnings of Local Residents?

Subsidy dollars produce a certain number of jobs, depending on percentage of cases in which location decision is affected. This report assumes cost per job equal to annual subsidy of $19,445, based on business location literature.

Multiplier effect of increase in subsidized jobs. This report assumes 1.8 multiplier, based on data from Michigan economic development programs.

Some proportion of jobs goes to local residents who otherwise would be unemployed or out of labor force. This report assumes 6/10 immediately, declines over 5 years to 3/10.

What are the Mechanisms for Traditional Economic Development to Affect Employment and Earnings of Local Residents? (continued)

Job growth allows occupational upgrading. This report assumes 1% growth allows earnings upgrade of 0.2%.

Local residents who get jobs or get better jobs maintain higher earnings, but move out or die over time.

Estimation of Jobs and Earnings Effects of Economic Development Subsidies

- This report simulates the jobs and earnings effects over 75 years of economic development subsidies for state residents

- The annual resources devoted to these subsidies are presumed to be the incremental cost in that state of universal preschool, to allow for later comparisons. National total: $15 billion

- Each year's effects estimated using estimates from previous slide, which generates employment and earnings effects for each age group, which then gradually decline with out-migration and death.

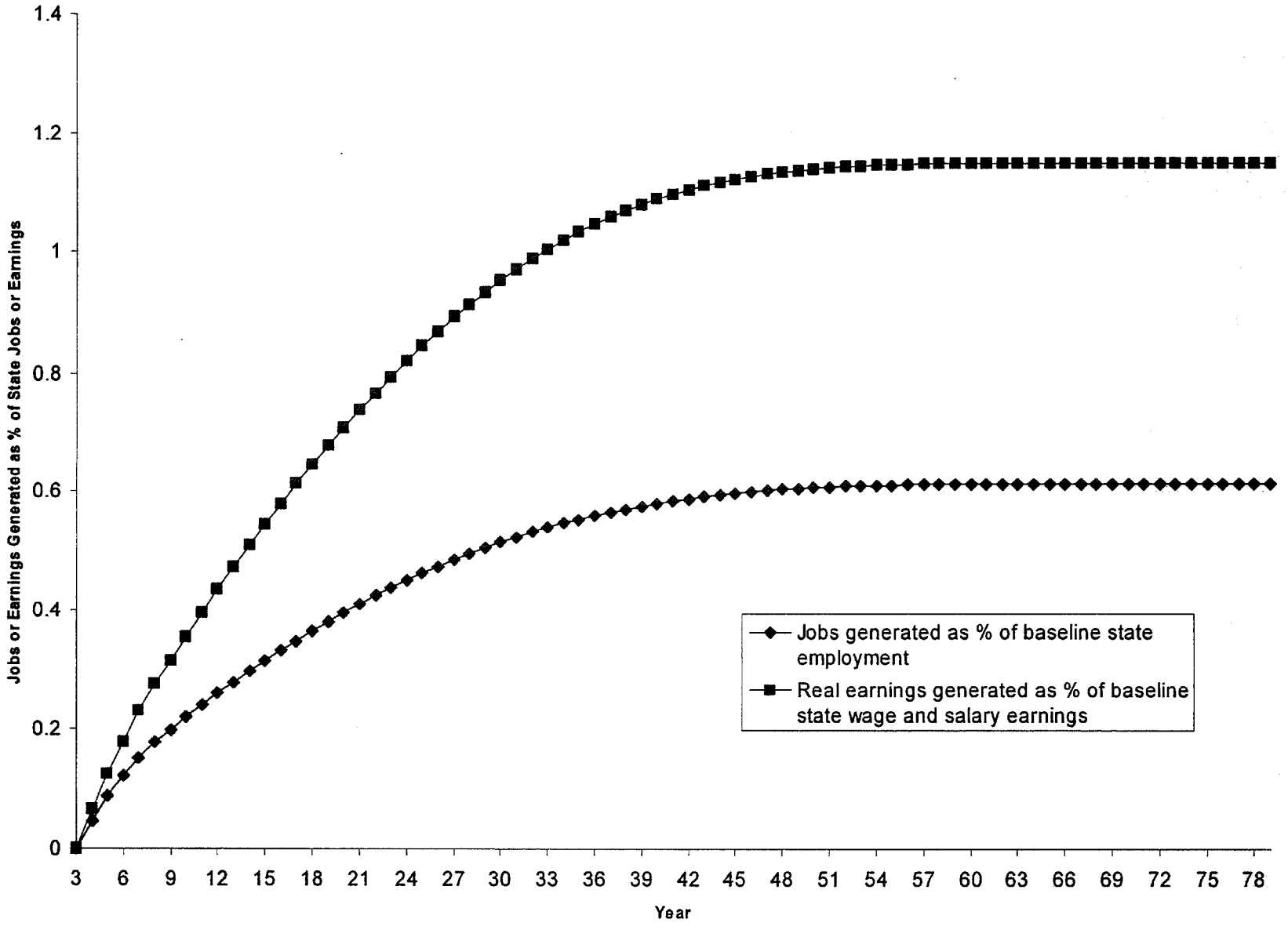
Estimation of Jobs and Earnings Effects of Economic Development Subsidies (continued)

- These estimates change with these assumptions, such as changes in cost per job, multiplier, % of jobs to state residents, out-migration and mortality.

- Bottom line: The ratio of the present value of the earnings increase for state residents, to the present value of the subsidies, is 3.14 for the typical state.

- Time-pattern: see next slide.

Figure 3. Jobs and Real Earnings Generated from Permanent Economic Development Subsidy Program Equal in Costs to Universal Preschool Program, as Percentage of Baseline State Employment and Wage and Salary Earnings



Four Ways by which Universal Preschool Affects Economic Development Goals of More Jobs and Higher Earnings for State Residents

1. **Balanced budget multiplier**. Effects of increased taxes and spending on state economy. Based on regional econometric model, increases earnings by present value (PV) of $0.04 per dollar spent.

2. **Subsidized child care for parents**. Effects of increased labor supply due to free child care. PV of $0.05 per dollar spent.

3. **Participants and peers**. Effects due to increased employment and earnings of preschool participants and their peers. More detail later, but PV of $2.65 per dollar spent.

4. **Social productivity effects**. Effects due to effects on state economy of higher % of college grads. PV of $0.04 per dollar spent.

Total: PV of $2.78 per dollar spent, of which $2.65 due to factor (3).

How Preschool Affects Participants and Peers in the Labor Market

- **Participants**. By making preschool participants in long-run more employable and more productive, which will translate into higher employment rates and higher wage rates. This increased productivity may take place through increased educational attainment, or increased productivity for any given level of educational attainment.

- **Peers**. In addition, the increased quality of school cohorts will increase academic achievement of entire cohort through peer effects, which will also increase employment and wages.

Characteristics of Assumed Universal Preschool Program

- Design based on program characteristics assumed in Karoly and Bigelow (2005)
- 70% of all 4-year-olds served by program
- One-year program
- 3-hour per day program for 175 days per year
- 20-to-2 child to staff ratio, with one teacher plus assistant with less qualifications
- Gross cost per 4-year-old is $5,856 (2004$)

Characteristics of Assumed Universal Preschool Program (continued)

- Net cost is $4,234, after considering savings on children who would have enrolled in current public preschool programs
- Benefits based on evaluation of benefits from Chicago Child Parent Center program
- However, assume benefits per average participant are only 23% of benefits that high-risk children in CPC get compared to no preschool, because benefits are lower for lower risk children, and many of high risk would be in preschool without universal preschool
- Karoly and Bigelow derived net costs and benefit ratio from California data, but different assumptions change benefits and costs in same direction, and I consider alternative assumptions

What are Mechanisms by Which Universal Preschool Affects Earnings of Participants and Peers?

- New investment in preschool yields certain number of participants, based on net cost per participant
- Net benefits compared to benefits of preschool vs. no preschool for high risk group: 23%
- Effects of preschool via educational attainment: Use CPC data extrapolated to higher ages using Perry Preschool data, and data from Current Population Survey on wages/employment of each age and educational group
- Multiplier effect >1 due to extra effects on employment, based on Perry Preschool evidence

What are Mechanisms by Which Universal Preschool Affects Earnings of Participants and Peers? (continued)

- Multiplier <1 to account for preschool participants who move out of state
- Multiplier <1 to account for preschool participants who die
- Multiplier of 1.54 to account for effects on peers in K-12 (multiplier based on Hanushek and Hoxby)
- Multiplier <1 to account for displacement effects of shocks to labor supply (assume 2/3rds based on Bartik, 2001)
- These calculations carried out for 75 years as each cohort is followed for each year

Table 11. Employment Rate Effects of the Perry Preschool Program: Predicted Effects Based on the Program's Effects on Educational Attainment, Versus Actual Employment Rate Effects

Age		Predicted employment rate based on educational attainment	Actual observed employment rate	Actual difference minus predicted difference	Unpredicted difference as percent of predicted control group employment rate	Extrapolation of unpredicted employment difference as percent of control group for CPC program
19	Program group	51.7	50			
	Control group	49.0	32			
	Difference	2.7	18	15.3	31.2	15.6
27	Program group	72.5	69			
	Control group	70.1	56			
	Difference	2.4	13	10.6	15.2	7.7 (half of average of 15.2 and 15.8)
40	Program group	77.8	76			
	Control group	75.8	62			
	Difference	2.0	14	12.0	15.8	

Out-migration Rates From States More Modest Than Commonly Understood

- Most college graduates less mobile across states than the average academic or national policymaker
- Even with high-quality preschool, the average educational attainment of preschool participants is not great, particularly for college graduation
- States vary in out-migration, but proportion staying in birth state is usually surprisingly high, except for smaller rural states
- Out-migration is much higher for cities than for states

Table 12. Percentage Living in Same State, Different Educational Attainment Groups, Based on Data from the Panel Survey on Income Dynamics and Census PUMS data

	PSID: % living in same state as at age 4				PUMS: % living in same state as state of birth					
Age	Education < 12 years	Education 12–15 years	Education > 16 years	Weighted average based on distribution of education in preschool program group at each age	High school dropouts	High school degree but no higher degree	Associates degree or higher	Weighted average based on distribution of education in preschool program group at each age	Ratio of PSID weighted average to PUMS weighted average	PUMS figure adjusted to PSID concept of percentage in state as lived in at age 4, with adjustment using average observed ratio
16	85.8	87.3	84.0	85.8	78.7	74.5	69.6	78.7	109.0	85.1
17	87.7	87.7	82.8	87.7	79.1	78.1	70.7	79.1	110.9	85.5
18	85.2	85.2	82.9	85.2	78.4	71.2	73.0	78.4	108.6	84.8
19	84.8	85.9	87.1	85.3	78.4	70.6	70.7	74.5	114.6	80.5
20	81.9	83.9	88.4	82.9	77.8	70.9	71.2	74.4	111.5	80.4
21	79.2	82.9	89.6	81.5	76.9	70.0	70.0	72.6	112.3	78.5
22	79.0	80.4	81.4	79.9	77.0	70.0	65.3	72.6	110.0	78.5
23	85.5	79.2	71.3	81.5	76.0	70.7	63.0	72.6	112.2	78.5
24	86.3	77.3	65.2	80.5	76.2	70.8	61.2	72.6	110.8	78.5
25	88.7	77.0	61.0	81.1	74.8	69.6	59.2	71.3	113.6	77.1
26	84.2	75.5	58.6	78.3	75.4	69.3	58.4	71.3	109.8	77.0
27	82.1	75.0	57.5	77.1	74.3	69.2	57.7	70.8	109.0	76.5
28	82.6	73.5	58.0	76.3	73.3	68.7	57.1	70.0	109.0	75.7
29	84.6	74.6	60.6	77.7	73.9	68.3	56.1	69.9	111.1	75.6
30	74.3	71.8	59.2	72.2	72.4	67.7	55.6	68.9	104.8	74.4
31	80.4	72.0	61.4	74.5	72.0	67.6	55.4	68.6	108.6	74.1
32	82.8	70.9	59.1	74.4	72.2	67.8	55.0	68.7	108.3	74.3
33	87.3	76.0	60.5	79.0	72.7	67.5	55.1	68.6	115.1	74.2
34	62.1	70.8	57.2	67.1	72.0	67.6	54.9	68.3	98.2	73.8
35	86.7	73.0	57.7	76.6	71.6	66.6	54.6	67.6	113.5	73.0
36	46.1	69.9	54.2	61.1	71.9	66.2	53.6	67.2	90.8	72.7
37	83.9	70.2	52.4	73.4	70.7	66.1	53.3	66.7	110.0	72.1
38	42.6	62.6	54.9	55.6	71.4	66.4	53.6	67.1	82.9	72.5
39	75.3	73.8	57.5	73.0	70.7	66.3	53.3	66.7	109.6	72.1
40					70.7	66.2	53.1	66.5		71.9
41					70.3	66.2	52.6	66.4		71.7
42					70.5	65.9	52.9	66.3		71.6
43					70.6	66.0	52.4	66.3		71.7
44					71.1	65.8	52.0	66.4		71.7
45					69.6	65.2	51.9	65.5		70.8
46					70.2	64.7	52.2	65.4		70.7
47					69.9	64.8	51.8	65.4		70.6
48					69.9	64.4	51.7	65.1		70.4
49					69.1	64.0	51.6	64.6		69.8
50					69.1	63.4	51.7	64.2		69.4
51					68.9	63.5	50.9	64.2		69.4
52					69.0	62.6	49.7	63.5		68.7

Table 20. Percentage of Persons Living in Birth State

State of birth	% living in state of birth	State of birth	% living in state of birth	State of birth	% living in state of birth
Alabama	68.2	Kentucky	65.8	North Dakota	44.8
Alaska	53.5	Louisiana	71.6	Ohio	70.9
Arizona	69.9	Maine	66.3	Oklahoma	60.3
Arkansas	58.8	Maryland	68.5	Oregon	66.0
California	76.9	Massachusetts	66.2	Pennsylvania	69.1
Colorado	62.0	Michigan	73.7	Rhode Island	60.4
Connecticut	65.0	Minnesota	71.1	South Carolina	69.8
Delaware	62.3	Mississippi	60.3	South Dakota	49.6
District of Columbia	16.8	Missouri	66.0	Tennessee	70.2
Florida	73.6	Montana	53.3	Texas	79.8
Georgia	73.4	Nebraska	56.0	Utah	70.7
Hawaii	63.0	Nevada	62.9	Vermont	59.1
Idaho	55.4	New Hampshire	61.1	Virginia	67.3
Illinois	65.7	New Jersey	64.5	Washington	70.4
Indiana	69.1	New Mexico	59.9	West Virginia	52.2
Iowa	59.0	New York	63.2	Wisconsin	73.3
Kansas	55.9	North Carolina	74.8	Wyoming	42.8
		U.S. Average	68.4		

Figure 9. Jobs Generated for State Residents by Permanent Universal Preschool Program, Compared to Jobs Generated by Economic Development Subsidy Program of Same Cost

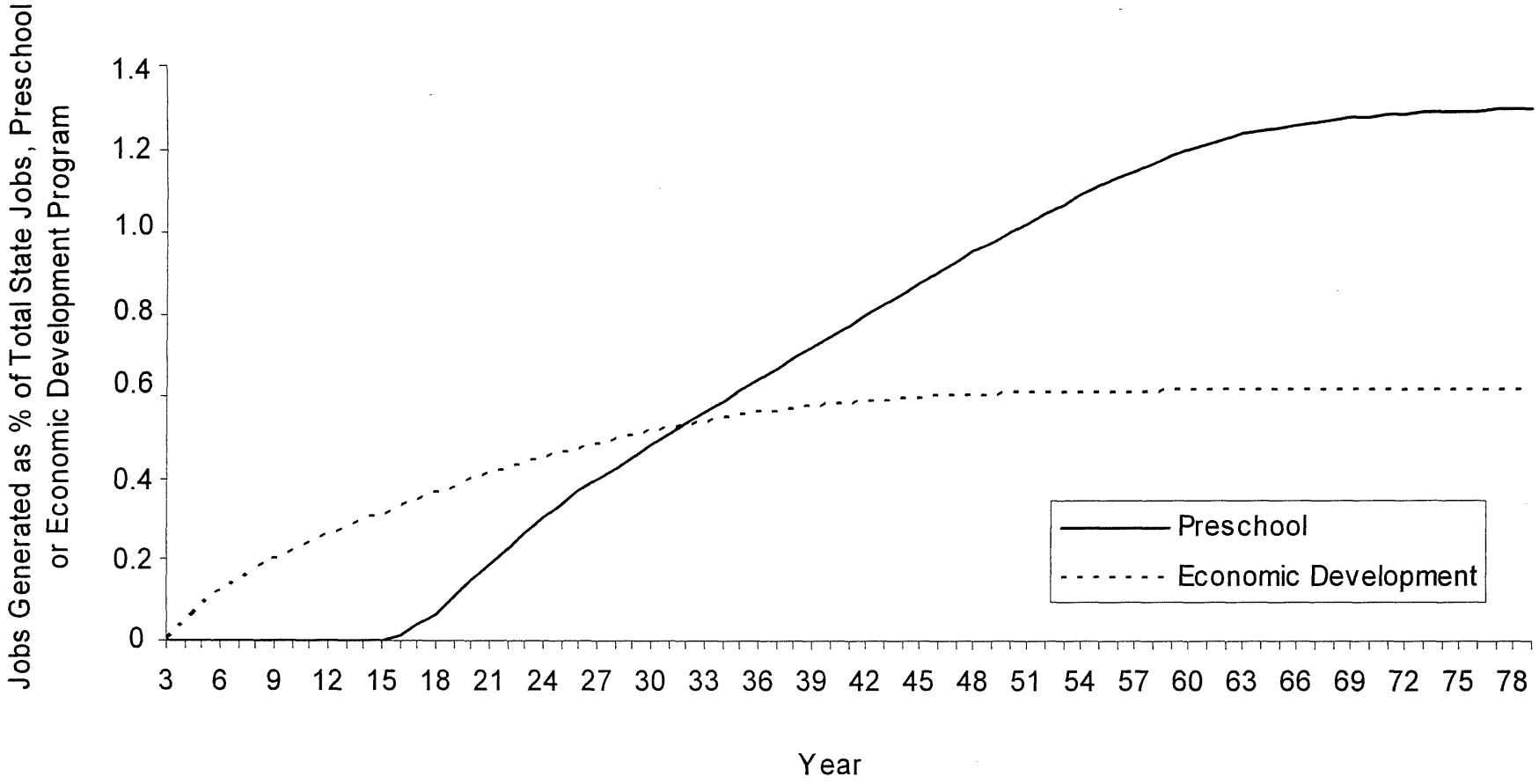
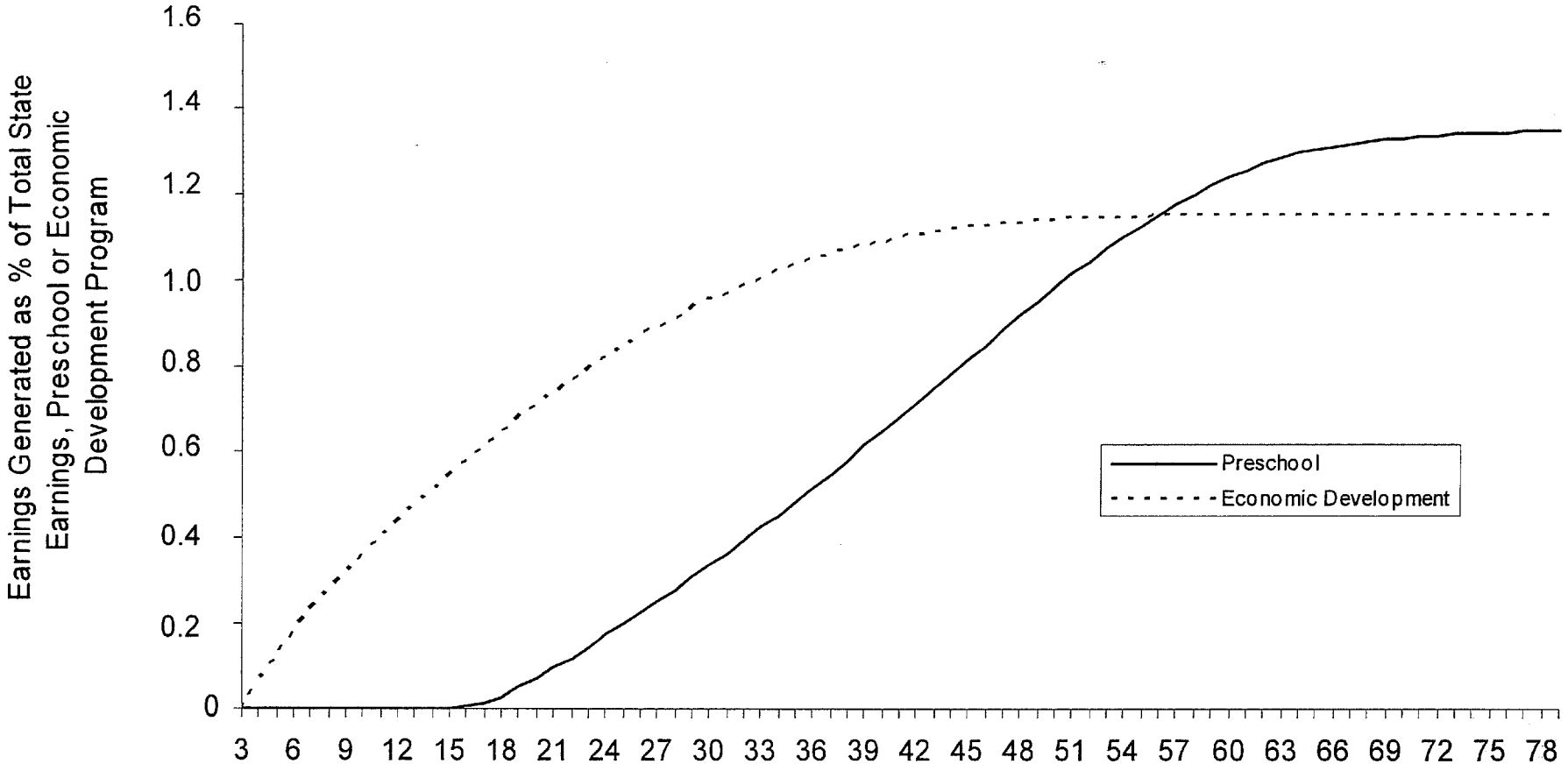


Figure 10. Real Earnings Generated for State Residents by Permanent Universal Preschool Program, Compared to Real Earnings Generated by Economic Development Subsidy Program of Same Cost



Alternative Estimates of PV of Preschool Earnings Effects per Dollar Spent

- Baseline: 2.78
- Varying ratio of participant effects from 16 to 41% of CPC effect, as in Karoly and Bigelow (p. 107): 1.97–4.85
- More expensive CPC design (2 years, 17-to-2 ratio): 1.07
- Perry Preschool design (2 years, 12.5-to-2 ratio): 1.21
- Eliminate public preschool for families greater than $50K income: $9.76
- Sliding scale fees: $2.77 ($4.55 ratio to government costs)
- No displacement (through complementary economic development program): 4.14

National Estimates

- Preschool: Reestimated with zero out-migration: PV of 3.79; up from 2.78
- This greater effect from national perspective than from state perspective could justify federal subsidy of 36%
  (= (3.79 – 2.78) / 2.78)
- Economic development subsidies: Effectiveness of business subsidies in creating jobs nationally is much less than effectiveness in relocating jobs. About 4 in 5 of jobs created in state by subsidies represent lost jobs for other states, 1 in 5 represent new national jobs. After adjusting for this, from national perspective, PV of earnings effects of economic development subsidies is 0.65 per dollar spent for typical state, down from 3.14 from state perspective
- National effects of state economic development subsidies are much more positive for high unemployment states, much more negative for low unemployment states

Long-Run Effects of Universal Preschool at the National Level

- 2.5 million jobs (1.8%)
- $95 billion in additional earnings (1.9%)
- $226 billion in GDP (1.9%)
- $56 billion in federal, state, and local tax revenue (versus $15 billion in annual costs, but takes a long time to reach this long-run effect)
- Why isn't preschool percentage greater? Participation is 70% of cohort, benefits per participant are 23% of benefits from CPC study of high-risk children, and earnings for each high-risk participant are generally about 15% greater than control group

Conclusion

- Preschool and traditional economic development subsidies both have similar effectiveness in promoting state economic development, increasing PV of real earnings by about $3 per dollar invested.

- Preschool and traditional economic development subsidies should be seen as complementary, as preschool does more in long-run, but subsidies do more over 5–10 year time horizon

- Preschool's economic development effects are mainly due to its effects on participants, not its effects in creating employment for preschool workers or parents

Conclusion (continued)

- Key issue in economic development return to preschool is what quality/cost level of preschool is truly needed to be effective
- Targeting towards high-risk children raises effectiveness but has costs
- Preschool investment has positive spillover effects on other states, justifies federal subsidy of around 40%