

Optimal Investments in Special Education Teacher Preparation

Jim Dewey

Paul Sindelar

University of Florida

Michael Rosenberg

Johns Hopkins University

Introduction

- How do we evaluate the net return from investing in preparation routes?
- How do we choose optimal routes?
- What data are needed to actually make these evaluations?
- Until such data is available, does this analysis offer any reasonable policy suggestions?
- The effectiveness of preparation routes is very sensitive to the persistence of graduates in high needs areas.

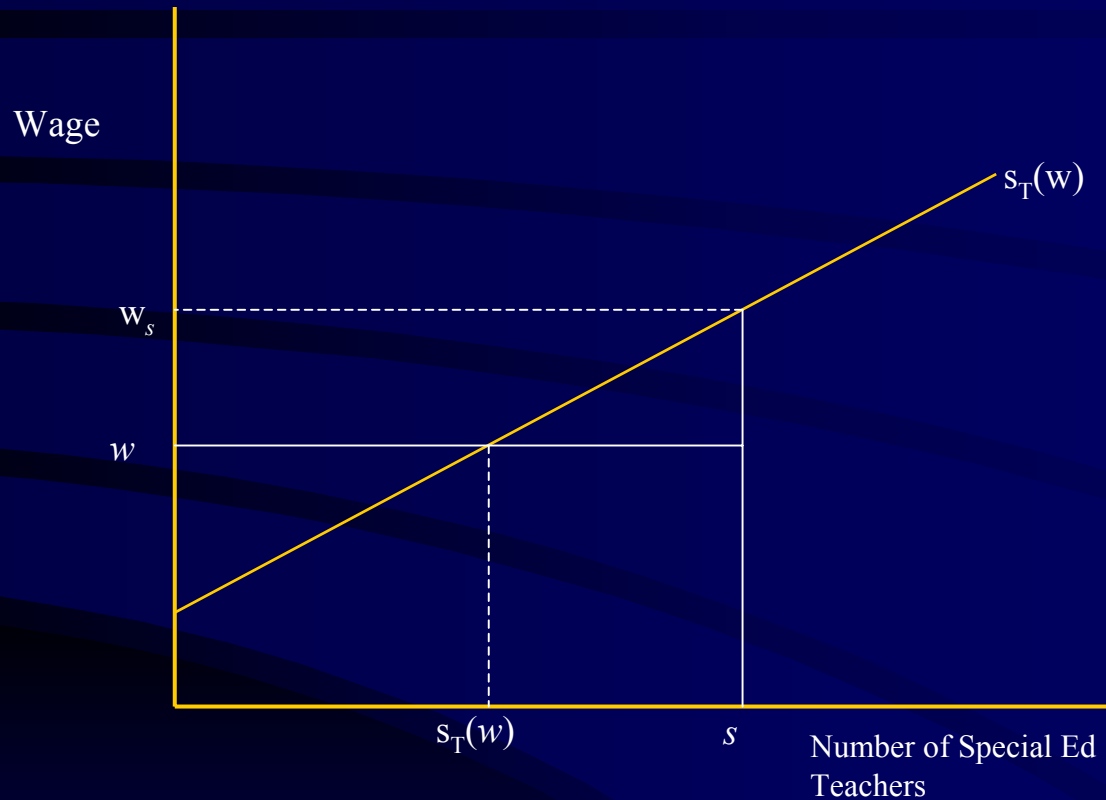
Shortage in High Needs Areas

		Certification by Subject and SES		
		Standard	Temporary, Provisional, or Probationary	Emergency or Uncertified
Special Education Teachers	Low SES	78.82%	9.37%	11.81%
	High SES	88.41%	6.69%	4.90%
	Overall	84.99%	7.80%	7.20%
Other Teachers	Low SES	84.52%	6.99%	8.49%
	High SES	88.41%	7.27%	4.33%
	Overall	86.95%	6.90%	6.15%

What Causes the “Shortage”?

- “Disamenities” of teaching in high needs areas mean it takes a higher wage to procure any number of teachers.
- School districts operate under a rigid wage structure.
- Would allowing higher salaries in high needs schools reduce the “shortage”?

Figure 1: Apparent Shortage in High Needs Areas



Boosting Numbers of Highly Qualified Teachers in High Needs Areas

- If the wage premium to teach in high needs areas is large, voters will not approve large enough budget to fill all positions with highly qualified teachers (Hanushek, Kain, and Rivkin, 1999)
- Instead, must boost supply at given wage

Can Traditional Training Boost Supply Enough?

- Traditional training has a relatively low average cost (Darling-Hammond, 2000)
- Likely most would attend college anyway
- But, incremental cost likely large
- To attract more applicants, must boost subsidy
- But, enrollment is inelastic, so large increase in subsidy needed
- And, likely must subsidize all students, making this cost prohibitive

How Alternative Preparation May Boost Supply at Lower Costs

- Tapping into pools that would not go back for training otherwise
- Subsidizing only well targeted groups of candidates
- Offer on the job training as a way of subsidizing opportunity costs at little or no net cost to taxpayers or students (if displace uncertified teachers)
- Targeting candidates likely to stick in high needs areas for a lower wage premium

Evaluating Preparation Programs: Definition

- b – Potential benefit per year from replacing an uncertified teacher in a high needs area.
- Benefit – Class size constant, extra amount voters would spend to replace an uncertified teacher, or,
- Benefit – Amount family would be willing to pay for additional learning, given lifetime earnings to pay from, or,
- Benefit – Discounted extra lifetime earnings.

Evaluating Programs - Calculations

$$V = b \sum_{t=0}^{L-1} \delta^t f_t p_t$$

$$\text{NBPD} = \frac{V - c}{c}$$

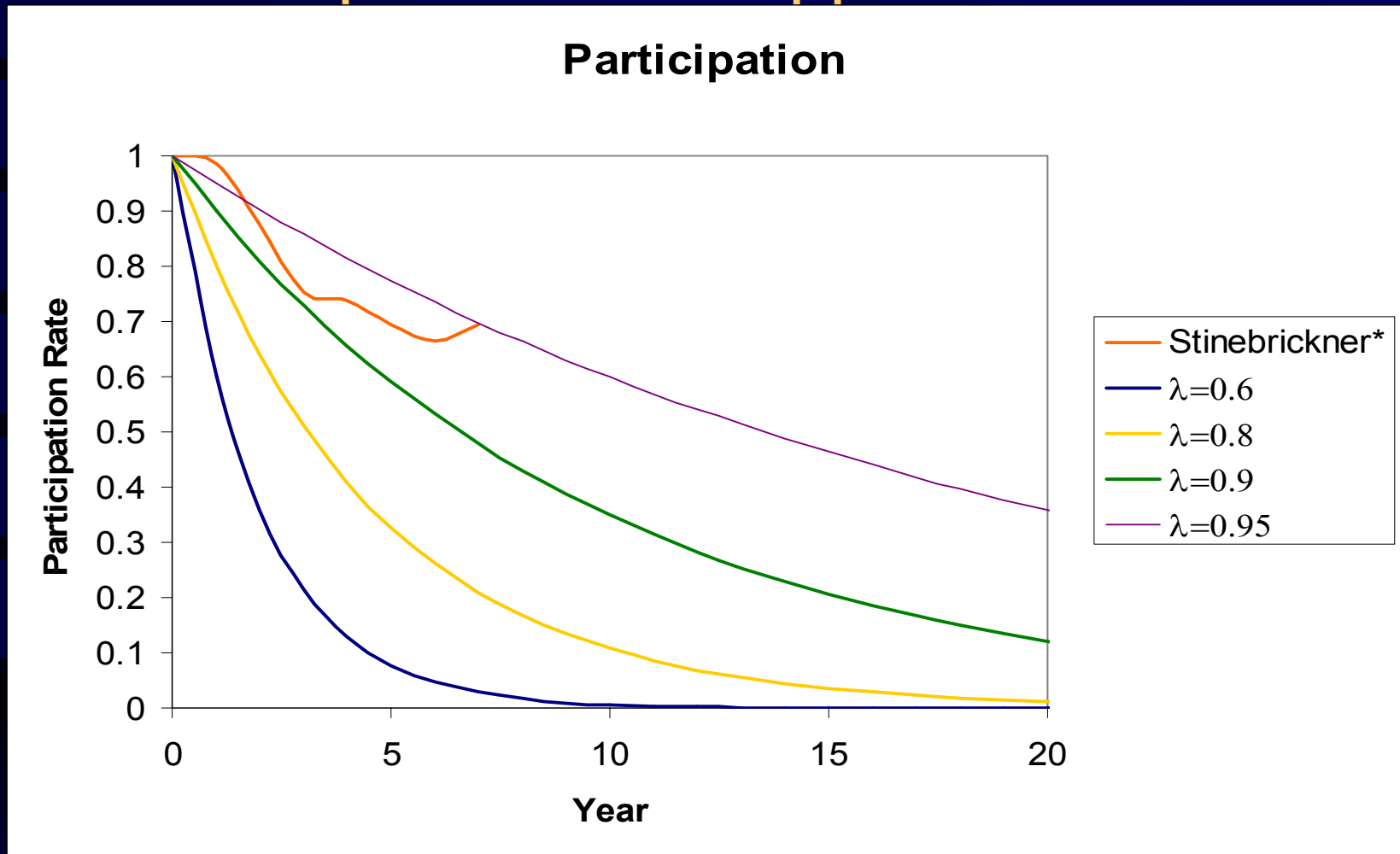
Evaluating Programs - Data Needs

- Consistent Cost data
- Precise career path, in high needs area, over lifetime, by program type
- Can rank programs producing similar quality without precise knowledge of b
- What can we learn without precise cost and attrition data?

Analytical Assumptions

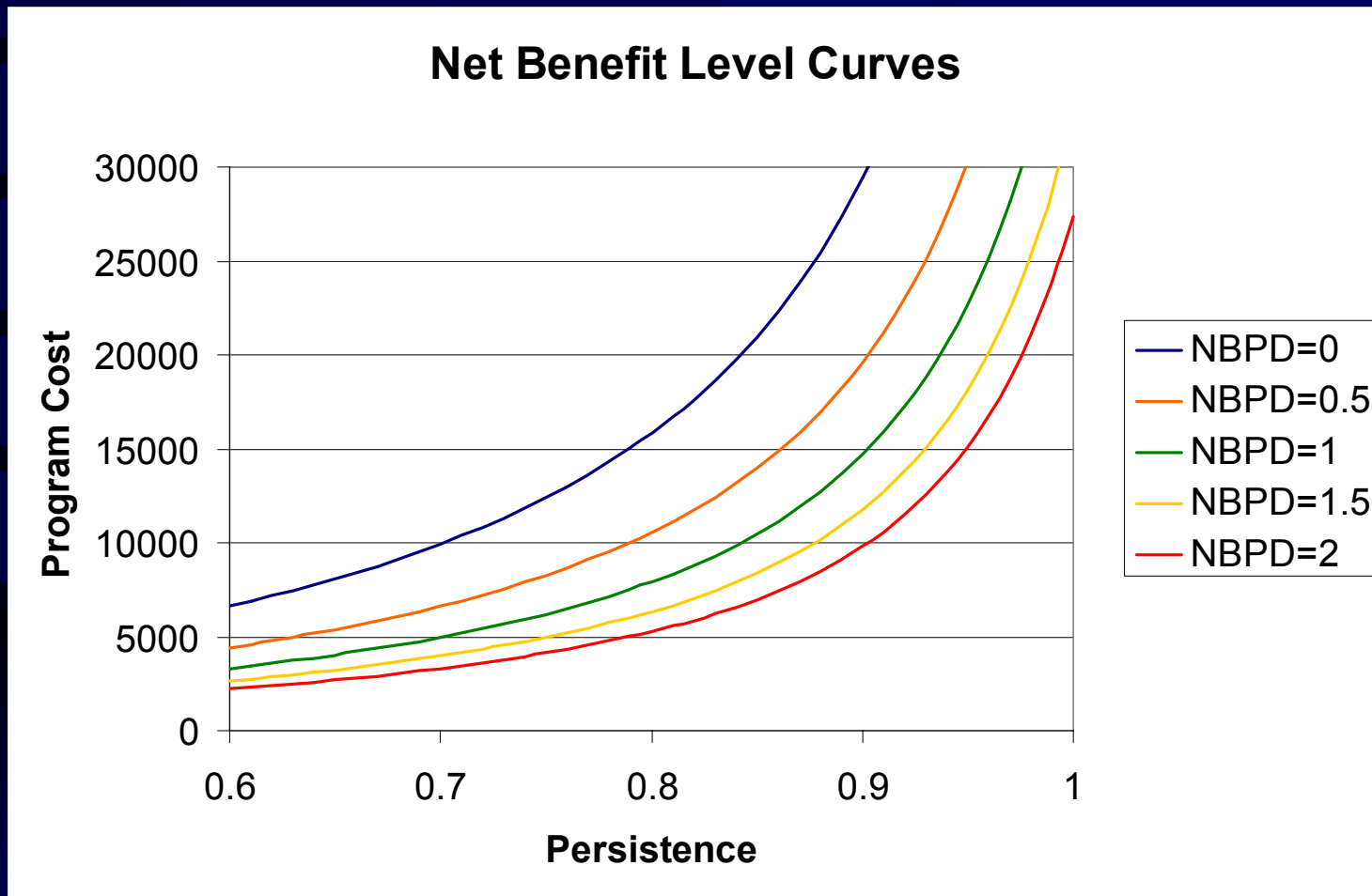
- First year teachers are no more productive than those they replace, and productivity gains beyond that reflected in salary schedule occur by the beginning of the second year, so $p_0=0$ and $p_t=1$ if $t>0$.
- Participation in year t is a constant fraction of participation in year $t-1$.
- λ - Ratio of participation this period to participation last period.
- $b-w=\$5,000$
- $\delta=.95$

Participation Path Approximations



* Adapted from Todd R. Stinebrickner. 2001. "A Dynamic Model of Teacher Labor Supply." *Journal of Labor Economics*. 19(1): 196-230

Sensitivity to Program Cost and Persistence



Comments

- NBPD is very sensitive to persistence at high costs and very sensitive to cost at low persistence.
- Precise evaluation requires precise knowledge of career path
- Lacking good data on this type of persistence by program type, what can we learn about persistence by program type from other sources?

Insights From Labor and Information Economics

- More school, occupation, and location specific human capital means higher persistence (Jovanovic, 1979)
- Better match yields higher persistence (Jovanovic, 1979)
- Investing more time and effort signals more persistence (Salop & Salop, 1976, Becker, 1975)
- For many occupations, lifetime earnings profile punishes career shifting
- Career shifting may signal low quality, low persistence, or both (Chang & Wang, 1995)
- If the career changer is shifting for a “good” reason, it may signal they think they are a good match
- So age, reason for shift, and willingness to invest own resources may signal persistence and quality

Example: Fast Track Mid Career Changer vs. Step Up

- Both are career changers
- Absent other information, mid career changers represent a risky applicant pool
- Step up does not take earnings hit from switch
- Step up brings more school, occupation, and location specific human capital
- Step up candidate invests more time and effort, signals more persistence
- Match characteristics are better known to workers and employers in step up programs
- If any program can justify a large program cost, it is likely step up programs for current district personnel in high needs districts

Examples of Policies to Increase Persistence

- Offer subsidies only to residents of county or city where high needs schools are located (charge others full program cost)
- Make the subsidy contingent on teaching in high needs school beyond reaching peak productivity
- Recruit only those switching careers for specific reasons, e.g. step up, ex-military

Conclusion

- Precise evaluation of programs requires precise participation path in high needs area over career and specific cost data
- NBPD is very sensitive to career path, so programs should be designed to enhance persistence
- Programs with high persistence may be worth large investments
- Collecting and analyzing this type of data on persistence (including program and teacher characteristics) represents a good investment