The Economic Rationale for Investing in Children: A Focus on Child Care

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***The Economic Rationale For Investing in Children: A Focus On Child Care*:**

Conference Summary

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The use of child care has expanded dramatically as maternal employment has increased. Recent estimates of children age 5 or younger in regular child care arrangements range from 60 to 75 percent (Hofferth et al. 1998; and Smith 2000). With the implementation of new welfare regulations, such as work requirements and time limits on cash assistance, the proportion of young children in out-of-home care, especially among low-income families, is likely to continue rising. Child care arrangements for these children encompass a broad spectrum of settings, including regulated center-based child care, Early Head Start and Head Start, public prekindergarten programs, early intervention programs, regulated family child care homes, after-school programs, and unregulated care by family and friends. As more mothers of young children enter the workforce, concern about the availability, cost, and quality of child care has become an increasing focus of public policy debate. Discussion about the extent to which the government could and should invest in the child care market has increased among policymakers.

To further discussion of these issues, the Assistant Secretary for Planning and Evaluation (ASPE) of the U.S. Department of Health and Human Services (HHS) sponsored an invitational conference on May 3, 2001, entitled "The Economic Rationale for Investing in Children: A Focus on Child Care." The primary purpose of the conference was to engage a multidisciplinary group of economists, developmental psychologists, child care researchers, and policy analysts in a dialogue about the rationale for public investment in quality child care[(1)]. ASPE officials hoped that such a dialogue would generate fresh and innovative ideas and help ASPE set its future child care research agenda.

The conference built on a paper commissioned by ASPE— "Child Care Quality: Does It Matter and Does It Need to Be Improved?"— by Deborah Vandell and Barbara Wolfe[(2)]. The paper reviews evidence on the effects of quality child care on children's health and development and sets out an economic rationale for public investment that emerges from that evidence. To explore further the arguments discussed in the paper and to identify other potential arguments, the conference addressed the following questions:

- What are the current economic arguments for investing in quality child care, and what are the strengths and weaknesses of these arguments?
- What are the current economic arguments for public investment in other markets (labor, education, and health care)? To what extent could these be applied to the arguments for investing in quality child care? What are the strengths and weaknesses of these arguments when applied to quality child care?
- What questions need to be addressed to strengthen the economic rationale for investing in quality child care?

A summary of the main economic arguments identified during the conference for public investment in quality child care follows the overview of conference proceedings below.

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Overview of Proceedings

Barbara Broman, Acting Deputy Assistant Secretary for Human Services Policy at DHHS, opened the conference by welcoming participants and underscoring the conference goals of fostering dialogue across disciplines and eliciting new ideas about the rationale for public investment in quality child care. The aim of the conference was to solicit multiple points of view, raise issues, and identify areas in which further research is needed.

Next, to provide an overview of child care quality research and to set the stage for later discussions about the merits of government intervention in the child care market, Deborah Vandell and Barbara Wolfe presented highlights of their paper, "Child Care Quality: Does It Matter and Does It Need to Be Improved?" Their presentation addressed four key questions:

1. How is child care quality measured?
2. Does the quality of child care have meaningful effects on children's developmental outcomes?
3. What is the quality of child care in the United States?
4. Is there a persuasive economic rationale for improving quality?

Vandell and Wolfe argued that the quality of child care does affect children's health and development and their readiness for school. They described two main ways that child care quality has been measured. First, researchers observe children in their child care settings — including their interactions with other children and adults and the activities in which they participate — to measure indicators of process quality. Second, researchers measure quality by examining the structural characteristics of child care settings, such as child-adult ratios, group size, and the level of caregiver education. Vandell and Wolfe reported that the process quality of child care in the U.S. is, on average, "fair" or "minimal." Moreover, structural quality in typical settings does not meet recommended standards. Finally, they argued that failures in the child care market — including imperfect information, the presence of externalities in the market, and an imperfect capital market, justify government intervention. Such intervention could improve the market's performance and ensure equality of access to quality child care across families at all income levels.

The remainder of the day consisted of three panels in which economists with expertise in labor, education, and health care summarized the arguments for investment in these markets and explored the extent to which they could be applied to the child care market. In the first panel, Robinson Hollister summarized the arguments for public investment in the labor market, with a particular focus on training programs, in his paper, "Rationales for Public Sector Training and Other Investments in Labor Markets and Their Applicability to Public Investments in Child Care" (see Appendix B). Hollister asserted that human capital, equality of opportunity, and merit good rationales for public investment in the labor market applied most directly to the child care market. According to human capital arguments, government intervention is needed because individuals or firms may not invest in developing human capital (such as paying for employment training or high-quality child care) when they do not have good information about the investment, ignore externalities, or are unable to finance the investment. Public investment may also be justified to ensure equal access to opportunity (such as the opportunity to participate in training or quality child care). Merit good rationales assert that public investment in quality child care is warranted because, like elementary education, it is in children's best interests. Hollister presented other arguments for public investment in training programs but found them less relevant for the child care market. These arguments included those related to macroeconomics (public investment in training produces more favorable market conditions, such as lower unemployment and low inflation), segmented markets (public investment in training prepares workers to move out of labor surplus markets into markets with labor shortages), and area redevelopment (public investment in training improves the labor force and thus the economic prospects of workers in a specific geographic area).

In his remarks on the paper, discussant Joseph Hotz said that care must be taken to ensure that these arguments address problems specific to the child care market. For example, he said that distributional rationales alone may not justify public investment in child care. If people are poor and do not have equal access to capital markets, then why invest in child care instead of giving them cash and allowing them to make their own consumption choices? Hotz argued that information problems in the child care market, such as parents' lack of information about child care quality and lack of information about the positive effects of high-quality child care on children's development, are better rationales for government intervention.

Hotz also pointed to parents as imperfect agents for their children as another failure of the child care market. He asserted that, because the buyer of child care (the parent) is not also the consumer of child care (the child), the buyer may not make decisions that fully reflect the position of the consumer. Parents may fail to take into account the potential long-term consequences of their child care decisions. For example, they may underestimate the benefits of quality care that could accrue to the child later in life. He also pointed to the possibility that parents sometimes may not make decisions based on what is best for their child. For example, parents may choose a conveniently located child care arrangement rather than a higher-quality one farther from work or home.

Steven Rivkin presented the second paper, "Public Investment in Education: Lessons for Child Care Policy," in which he summarized the main arguments for public investment in primary and secondary education (see Appendix C). Specifically, he reviewed rationales for public investment in education related to externalities associated with schooling, inadequate information about school quality, equity and fairness, and protection of minors. Rivkin asserted that, although the details may be somewhat different, the arguments for public investment in elementary and secondary education also apply to the education of younger children. Next, Rivkin discussed what is known about the determinants of elementary and secondary school quality, then identified several policy implications for early childhood education. He recommended that additional years of schooling (early childhood education) not simply be added to the existing public school structure. Instead, competition and choice should be encouraged, at least in pilot programs. He also suggested that the government has an important role to play in disseminating information about the quality of early childhood education providers and in conducting evaluation and research on early childhood education.

In her comments on Rivkin's paper, Ann Witte identified additional arguments for public investment in child care. These included use of child care as a way to socialize children and assimilate new immigrants into American society, externalities produced by quality child care, imperfect capital markets (parents cannot borrow money to pay for quality child care), and imperfect information about child care quality and the benefits of quality care. Her arguments also included inequality in accessing quality child care and the potential for producing two generations of more productive workers (parents who trust their child care arrangements and children who benefit from high-quality settings). She also said that parents, acting as agents for their children in the child care market, may prioritize meeting short-term goals over the long-term benefits that may accrue to children who experience high-quality child care. This could occur because parents are not aware of the long-term benefits, are focusing on meeting immediate needs such as food and shelter, or are pursuing their own self-interests.

Witte also raised questions about the efficiency and equity of current government interventions in the child care market. She noted that the government currently funds multiple programs — such as Head Start, public prekindergarten, child care subsidies, and early intervention services — that are not always well integrated and thus are less efficient. These programs have multiple — and, at times, conflicting — goals. Some programs, such as Head Start and public prekindergarten, focus on producing positive outcomes in children, while the child care subsidy system focuses on enabling low-income parents to work. In addition, Witte noted that the mechanisms in place to publicly fund child care may not be equitable. Middle-class families receive government assistance paying for child care through tax credits and deductions, while low-income families receive assistance through child care vouchers and partially funded Head Start and prekindergarten programs. Finally, Witte asked whether the public resources already dedicated to child care could do more to improve the well-being of children if they were distributed more efficiently and equitably.

Janet Currie presented the third paper, "What Can We Learn About Child Care Policy from Public Investments in Children's Health?" (see Appendix D). She reviewed lessons from the expansions of public health insurance for low-income children, drawing heavily on lessons from the State Child Health Insurance Program, and applied those lessons to the child care market. She stressed the importance of setting clear goals for child care policy. For example, she described a lack of clarity about whether the policy goal in children's health is to equalize access to care across socioeconomic groups or to improve child health outcomes. Similarly, conflicting goals (for example, supporting parents' ability to work versus promoting positive child outcomes) could hamper efforts to develop sound child care policy.

Next, Currie identified several potential arguments for government intervention in child care markets. These included liquidity constraints (the inability of some parents to finance quality child care), imperfect information about child care quality (parents' lack of information about the quality of child care settings), and externalities in the child care market (the positive and negative impacts on society of parents' child care choices). Drawing on the experience of public health insurance for children, she also pointed to the possibility that low utilization of means-tested programs, "crowd out" in universal programs, and the need for outreach may be important child care policy issues[(3)]. Finally, she argued for rigorous evaluation of the long-term effects of high-quality child care on child outcomes. Because the family supplies most child care and family caregiving has the largest impact on children's development, she also argued for policies that support good parenting.

In her comments on Currie's paper, Genevieve Kenney concurred with Currie on the efficiency and equity arguments for public investment in the child health care and child care markets. She also agreed with her on the importance of clarifying policy objectives and then tailoring policies to meet those objectives. Kenney noted that current public investments in child care seem to be directed more at supporting parents' ability to sustain their employment than at enhancing children's developmental outcomes. Thus, characterizing child care as an essential work support for low-income parents could serve as a strong impetus for increased public spending on child care.

Kenney also cautioned that, in her experience in the health field, successful initiatives aimed at meeting specific policy objectives tended to be much more comprehensive and expensive than anticipated and involved more than removing financial barriers. Some problems with access to services can be readily addressed through program changes, such as greater outreach efforts and increased information about available services. In both health care and child care, however, family and parental characteristics (for example, parents' education levels) also affect the outcomes of interest, which makes it difficult for government subsidies aimed at reducing financial barriers alone to reduce gaps in access to services across socioeconomic groups. Finally, Kenney cautioned that the consensus among policymakers and the public that low-income children should have access to health insurance is not based primarily on failures in the health care market. Rather, it is based on societal expectations about providing access to health care for all children. With the exception of welfare mothers, the public is ambivalent about the extent to which mothers with young children should work and place their children in child care. Thus, while it is necessary to explore the economic rationale for public investment in child care, it is also important to recognize that arguments for public investment are likely to be driven by other factors, such as societal values about who should care for young children.

Next, John Love, Christine Ross, Deborah Vandell, and Barbara Wolfe reflected on the discussion that took place during the day and outlined a set of next steps for research that could help in formulating economic rationales for public investment in quality child care. Barbara Broman and Jeffrey Evans from the National Institutes of Child Health and Human Development made remarks to conclude the conference. The following sections describe the main issues and next steps that these speakers and other conference participants identified.

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Summary of the Main Arguments for Public Investment in Quality Child Care

Throughout the day, speakers and conference participants drew on the arguments for public investments in other markets to discuss the relevance of various arguments for public investment in quality child care. For the most part, conference participants agreed on the main types of failures in the child care market that could serve as arguments for government intervention, although they did not always agree on the relative strength of the arguments. The following sections summarize the main failures that participants identified in the child care market and present other economic arguments for government intervention.

Externalities. Quality child care may produce some benefits that accrue not only to parents and children, but also to society. When making child care decisions, however, individual parents may take into account only the benefits of quality care that accrue to the family and child. For example, participants cited such possible societal benefits as increased school readiness, lower school dropout rates, reduced crime, reduced substance abuse, and increased productivity as parents have fewer child-care-related absences from work.

Information Problems. Participants identified two failures in the child care market associated with information problems: (1) lack of information about the quality, cost, and availability of care; and (2) asymmetrical information among parents and child care providers. Because child care is offered by many small regulated and unregulated child care providers, parents have difficulty obtaining information about the availability of care and the relative quality and cost of available child care arrangements. In many communities, child care resource and referral agencies offer information about the availability and cost of regulated child care providers, but usually do not provide information about quality. Moreover, because quality is defined along multiple dimensions and is difficult to assess, parents do not know how to evaluate information that they are able to obtain about quality.

Furthermore, information about the quality of child care arrangements may not be equally available to parents and child care providers. The difficulties parents face in defining quality and identifying quality child care arrangements may create a disincentive for providers to reveal the quality of the care they offer. Because parents cannot identify quality, it is not reflected in the price of care. Thus, although the quality of available arrangements may vary, the price of care across these arrangements remains close to the mean price.

Imperfect Capital Markets and Liquidity Constraints. Low-income parents face severe income constraints. They cannot afford to purchase quality child care and many other goods that would benefit their children, nor can they borrow against a child's future income to pay for quality child care. Moreover, child care needs often occur when parents are young, and at one of the lowest points in their adult income streams. Some participants asserted that this argument was not sufficient to justify public investment in child care. They argued that, if the problem is poverty, the government should supplement parents' income, rather than provide goods in kind, and allow parents to make their own consumption choices. Others argued that, because child care consumes such a substantial portion of poor families' budgets — more than health care or college tuition — funding it is a good way to improve poor families' incomes.

Parents as Imperfect Agents. Related to market failures associated with imperfect information is the fact that parents act as agents for their children in the child care market. When the buyer of a good is not also the consumer, that buyer may not make decisions that fully reflect the interests of the consumer. Young children cannot make their positions on child care known, and parents may not take into account the potential long-term ramifications of their decisions on children's well-being. For example, parents may underestimate the benefits of high-quality child care that could accrue to the child later in life — either because they may discount the future too much or because they may not be aware of the potential long-term benefits of quality child care. In some cases, parents may not give enough weight to the best interests of their child when making child care decisions. For example, some parents may value convenience over quality —

choosing to purchase child care that is closer to the parent's workplace rather than quality child care that is not conveniently located.[(4)]

Equality of Opportunity. Children in various socioeconomic groups do not have equal access to quality child care, because low-income parents often do not have the financial resources to purchase quality care. If high-quality child care can improve cognitive ability, school readiness, and social development, and if maximizing these outcomes for all children is an important goal, then low-income families should have the same opportunity as higher-income families to access quality child care. In that case, government intervention in the child care market through subsidies or direct provision of care may be necessary to ensure equal access to quality child care across socioeconomic groups. Some participants also argued that government interventions aimed at reducing inequality of opportunity may be more potent when they occur during the children's early years than when they occur later in life (through such interventions as remedial education or adult employment and training programs).

Child Care as a Merit Good. Some participants argued that quality child care is a merit good. In other words, it is a good (such as elementary education or seat belts) that the government should compel people to consume in certain circumstances for their own good. Through welfare reform, the government and the public have made a value judgment that work is good for low-income parents. Thus, society has already made an implicit judgment that children in low-income families should attend child care (while their parents work) rather than stay at home with their parents. Some participants thought that, if child care is a merit good that enables low-income parents to work, mandating quality child care for those children would be a natural extension of that argument. Others asserted that, because of society's ambivalence about the value of child care and arguments for parental choice, it would be difficult to make a case that government should mandate the type of care that children should receive.

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Next Steps in Developing a Research Agenda

ASPE held the conference to generate new ideas about the economic rationale for investing in quality child care that could help the office develop its future research agenda. Throughout the day, participants identified areas in which additional research and policy analysis could be helpful. Speakers in the final session highlighted many of these ideas, which are summarized below.

Clarify objectives and priorities for public investment in child care. Several speakers and participants stated that current child care policy reflects multiple — and, at times, competing — objectives. For example, child care subsidies are viewed primarily as work supports for parents and are valued as a critical component of government efforts to help low-income parents make the transition from welfare to employment and self-sufficiency. However, the primary goal of several publicly funded early childhood programs — such as Head Start, public prekindergarten, and early intervention services — is to promote better child outcomes and enhanced school readiness. Some participants said that it may not be possible to achieve consensus about the priority that should be given to each child care policy goal. Nevertheless, participants agreed that further discussion and clarification of these goals is essential for continued policy development.

Define quality and disseminate clear information on how to measure quality. Several participants lamented the public perception that researchers do not know how to define and measure child care quality. Several child developmentalists argued strongly that child care researchers have indeed defined quality and developed reliable measures, including structural measures of child care settings and process measures related to children's experiences in care, that can be related to child outcomes. Nevertheless, most agreed that the measures are difficult to describe and complex and expensive to use. Participants agreed that child care researchers, for the most part, have not done a good job of communicating information on child care quality to policymakers and the public. Researchers need to look for ways to communicate their results in more concrete terms. Policymakers and the public need a clearer picture of what is "good or bad" about child care settings.

Conduct rigorous research that links high-quality child care to improved child outcomes. Although participants agreed that the child care research literature contains evidence that links the quality of child care to child outcomes, many participants said that more research in this area is needed. Policymakers need information about the impact of child care quality on child outcomes that is based on rigorous research designs and methods such as random assignment. Economists also would like to see analyses conducted on larger and more nationally representative samples, and with more controls for selection bias. Questions that researchers need to address include: How much difference does a particular increase in quality make for child outcomes? Which aspects of quality matter the most? Are different aspects of quality important at different ages? How does the impact of a quality child care intervention compare to the impact of a quality parenting intervention?

Identify proxy measures for process quality that are easier and less expensive to collect. Measuring process quality in child care is expensive and complex, because doing so requires trained observers to conduct reliable structured observations in child care settings. Several economists urged child care researchers to consider whether it would be possible to identify proxy measures of process quality whose collection would be less expensive and difficult. Such proxies have been identified to monitor quality in the health care sector. For example, less-expensive proxy measures in the health field include "percentage of children who receive immunizations on schedule" and "percentage of children with ear infections treated with the correct antibiotics." In the child care sector, proxies could be used as indicators for rating quality, communicating levels of quality to parents, and helping child care providers improve quality.

Conduct rigorous research on the costs and benefits of increasing child care quality. Several participants said that policymakers need more information about the levels of quality needed to produce positive child outcomes, as well as the cost associated with achieving those levels of quality. Questions raised about the costs and benefits of increasing child care quality include: How much does a given increase in quality cost, and how much does it improve child outcomes? Are the benefits of early, high-quality child care sufficiently great that shifting resources from care for older children to quality care for younger children would result in better outcomes? Can similar trade-offs be made by shifting resources from children in part-time care to those in full-time care? Are there thresholds such that increases from low quality to fair quality may be more cost-effective than increases from good quality to excellent quality?

Conduct research on whether public funds currently dedicated to child care could be distributed more efficiently and equitably. Participants noted that federal and state governments already invest in the child care market through tax credits and deductions; subsidies for low-income families; publicly funded Head Start, prekindergarten, and early intervention services; and other programs. These interventions are often not coordinated or integrated, nor is the impact of public investments on the quality of child care well understood. Several participants said that research and analysis are needed on whether the public funds already dedicated to child care and other out-of-home experiences that precede formal schooling could be used more effectively to provide high-quality experiences for children.

Design and test a comprehensive initiative to address information problems in the child care market. Participants identified information failures in the child care market as a key argument in favor of public intervention in the market. Several economists argued that a strong information intervention should be rigorously tested to determine the extent to which such an intervention could improve the child care market. Such an intervention could include aggressive outreach efforts to provide parents with information on the link between quality and child outcomes, the potential benefits of high-quality child care, and the quality of care that specific child care providers offer.

Consider child care in the broader context of children's experiences. In closing, several participants urged child care researchers to conduct their research on child care quality within the broader context of what makes children better off. Child care, parental care, health care, and other factors all contribute to child well-being. Policymakers need a broad understanding of these factors to make effective public policy that benefits children.

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Endnotes

1. See Appendix A for a list of conference participants, a conference agenda, and brief biographical sketches of the conference speakers.

2. This paper is available on the Internet at [aspe.hhs.gov/hsp/ccquality00/index.htm]

3. "Crowd out" refers to the extent to which publicly funded services replace privately funded ones without increasing overall use by the target population. For example, despite increases in publicly funded child health insurance in recent years, the proportion of children without insurance coverage has remained constant, while the use of private health insurance has fallen by the same amount that the use of public insurance has risen. This suggests the possibility that public insurance is "crowding out" private insurance (Currie 2001).

4. This rationale elicited disagreement among some conference participants who argued that many parents struggle to balance multiple demands. In general, economists were more comfortable than those from other disciplines with viewing parents as potential imperfect agents.

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Appendix A:
Conference Materials

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Appendix A.2: Agenda

Arlington Hilton and Towers
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Continental Breakfast	8:30 am
Morning Session	
Welcome from the Office of the Assistant Secretary for Planning and Evaluation Barbara Broman, Acting Deputy Assistant Secretary for Human Services Policy, ASPE	9:15 am
Child Care Quality: Does It Matter and Does It Need to Be Improved? *Presenters:* Deborah Vandell and Barbara Wolfe, University of Wisconsin-Madison *Moderators:* Martha Moorehouse, ASPE , Diane Paulsell, MPR	9:30 am

Break	10:30 am
The Case for Investment in Training Programs: Can We Translate These Arguments to Child Care? *Presenter:* Robinson Hollister, Swarthmore College *Discussant:* V. Joseph Hotz, University of California-Los Angeles *Moderators:* Laura Chadwick, ASPE, Ellen Kisker, MPR	10:45 am
Lunch	11:45 am
Afternoon Session	
The Case for Investment in Education: Can We Translate These Arguments to Child Care? *Presenter:* Steven G. Rivkin, Amherst College *Discussant:* Ann Witte, Wellesley College *Moderators:* Leila Rice, ASPE, Diane Paulsell, MPR	1:00 pm
Break	2:00 pm
The Case for Investment in Health Care: Can We Translate These Arguments to Child Care? *Presenter:* Janet Currie, University of California-Los Angeles *Discussant:* Genevieve Kenney, The Urban Institute *Moderators:* Julia Isaacs, ASPE, Ellen Kisker, MPR	2:15 pm
Reflections and Next Steps *Presenters:* John Love, Mathematica Policy Research, Christine Ross, Mathematica Policy Research Deborah Vandell, University of Wisconsin-Madison, Barbara Wolfe, University of Wisconsin-Madison *Moderators:* Julia Isaacs, ASPE, Diane Paulsell, MPR	3:15 pm
Concluding Remarks V. Jeffrey Evans, NICHD,Barbara Broman, ASPE	4:15 pm
Adjourn	4:30 pm

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Appendix A.3: Speakers

Janet Currie (Ph.D., Princeton University, Economics) is a Professor of Economics at the University of California at Los Angeles (UCLA). She spent three years at UCLA, and two years at the Massachusetts Institute of Technology, as an assistant and then associate professor before returning to UCLA in the fall of 1993, where she has been a full professor since 1996. She is a consultant with the Labor and Population Group at RAND, a research associate at the National Bureau of Economic Research, and a faculty associate at the Northwestern/University of Chicago Joint Center for Poverty Research. In addition, Professor Currie is an editor of the Journal of Labor Economics and on the editorial board of the Quarterly Journal of Economics and the Journal of Health Economics. She has also served on the National Science Foundation Economics Review Panel, and on several National Academy of Science panels investigating issues relevant to children. Her recent work focuses on the effects of welfare programs on poor children. In particular, she has studied the Head Start program (an enriched preschool program for poor children) and Medicaid (health insurance for low-income women and children).

Robinson Hollister (Ph.D., Stanford University, Economics) is the Joseph Wharton Professor of Economics at Swarthmore College. He has worked for many years on evaluations of employment and training programs. He served as principal investigator of the National Supported Work Demonstration and chaired a National Academy of Sciences committee on youth employment and training programs. He also served as an advisor to the Rockefeller Foundation on the Minority Female Single Parents Project. In 1991, he published Labour Market Policy and Unemployment Insurance, a comprehensive review of employment and training programs in the United States and Europe with co-authors A. Bjorklund, R. Haveman, and B. Holmlund. More recently, Professor Hollister has served on the national advisory committee for the evaluation of Job Corps. With respect to child care, Dr. Hollister served as advisor to the Rockefeller Foundation for the design of the Expanded Child Care Options Experiment. He also served as an advisor to the Pew Charitable Trust for the design of an evaluation of Chicago's Children's Initiative. Currently, he is a consultant to The Urban Institute and Westat for the National Head Start Impact Study.

V. Joseph Hotz (Ph.D., University of Wisconsin-Madison, Economics) is Professor and Chair of the Department of Economics at the University of California at Los Angeles. He also serves as pPrincipal investigator for the California Census Research Data Center and chair of the Center's Statewide Oversight Board. Prior to his current appointment, Dr. Hotz was on the faculty at the University of Chicago and served as the director of the Population Research Center at the National Opinion Research Corporation and University of Chicago. Professor Hotz is a member of the National Research Council's Panel on Data and Methods for Measuring the Effects of Changes in Social Welfare Programs. He is a national research affiliate of the Northwestern/University of Chicago Joint Center for Poverty Research, for which he recently chaired its Advisory Panel for Research Uses of Administrative Data and edited a major report on the emerging use of administrative data to monitor and evaluate the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. He also serves as a co-principal investigator for the California Statewide CalWORKs Evaluation, which will evaluate the impacts of the recent reform of California's welfare system on the employment, earnings, and continued welfare dependence of current recipients. Professor Hotz has published extensively in the areas of the economics of the family, applied econometrics, and the evaluation of social programs.

Genevieve Kenney (Ph.D., University of Michigan, Economics) is a Principal Research Associate in the Health Policy Center at The Urban Institute in Washington, DC. Her research focuses on how public policies affect health insurance coverage, access to health care, and use of health services by low-income children and pregnant women. She is currently co-director of The Urban Institute's evaluation of the State Children's Health Insurance Program and co-principal investigator of a project examining the effects of Medicaid managed care on birth outcomes.

John Love (Ph.D., University of Iowa, Child Behavior and Development) is a Senior Fellow at Mathematica Policy Research, with almost 30 years of experience conducting research, program evaluations, and policy studies with early care and education and family programs. Trained as a developmental psychologist, he has devoted much of his career to understanding issues in providing educational and support services that are designed to enhance the development and well-being of low-income children and families. Dr. Love co-chairs the panel of Research Partners for the National Center for Early Development and Learning, funded by the Early Childhood Institute in the Office of Educational Research and Improvement in the U.S. Department of Education. He has served on numerous panels and advisory committees, including the Head Start Performance Measures Technical Work Group, the advisory panel for the evaluation of the Carnegie Corporation's Starting Points initiative, and the U.S. Department of Health and Human Services Secretary's Advisory Committee on Head Start Research and Evaluation. Dr. Love is currently co-directing the national evaluation of the Early Head Start program for the Administration on Children, Youth and Families.

Steven G. Rivkin (Ph.D., University of California-Los Angeles, Economics) is Associate Professor of Economics at Amherst College, where he teaches labor economics, the economics of education, and a seminar in poverty and inequality. His recent work includes "School Desegregation, Academic Attainment, and Earnings" (published in the Journal of Human Resources, 2000), and "Tiebout Sorting, Aggregation, and the Estimation of Peer Group Effects" (forthcoming in the Economics of Education Review, 2001), as well as a paper for The Brookings Institution on education productivity. He also has written a number of working papers with Eric Hanushek and John Kain as part of the University of Texas at Dallas Schools Project. These include "Teachers, Schools, and Academic Attainment" (1998); "Inferring Program Effects for Specialized Populations: Does Special Education Raise Achievement for Students with Disabilities?" (1998); "Do Higher Salaries Buy Better Teachers?" (1998); "Does the Ability of Peers Affect School Achievement?" (forthcoming in Journal of Applied Econometrics); "Disruptions or Tiebout Improvements? The Cost and Benefits of Changing Schools" (1999); and "How Much Does School Integration Affect Student Achievement?" (2000). He is spending the 2000-2001 academic year at the Public Policy Institute of California conducting research on school quality for minority students in California.

Christine Ross (Ph.D., University of Wisconsin-Madison, Economics) is a Senior Economist at Mathematica Policy Research. One of her main areas of research has been the relationships between child care subsidy policies and child care supply, quality, affordability, and parents' choices of care. She recently completed a review of research on the effects of child care subsidy policies, quality, and flexibility on maternal employment, and developed a set of research designs to address further questions in these areas. Her research has also focused on the effects of welfare and child care policies on maternal employment and children's development. She is directing several studies, including a qualitative study of infant care under welfare reform, an evaluation of the impacts of welfare reform in Iowa on family and child well-being, and a planning project to develop child care policy demonstrations. She also has a lead role in the national evaluation of family and child impacts of Early Head Start.

Deborah Lowe Vandell (Ph.D., Boston University, Psychology) is Professor of Educational Psychology at the University of Wisconsin-Madison, where she is a core investigator at the Wisconsin Center for Education Research, the Institute for Research on Poverty, and the Waisman Center on Mental Retardation and Human Development. Early in her career, she was a kindergarten and second grade teacher. Since 1989, Professor Vandell has served on the Steering Committee for the NICHD Study of Early Child Care and Youth Development. Her professional service has included membership on the Maternal and Child Health review panel at NICHD and the associate editorship of the journal, Child Development. Dr. Vandell has been a member of the editorial boards of leading journals including Developmental Psychology, Contemporary Psychology, and Journal of Family Issues. Her research focuses on the effects of early child care experiences as well as the effects of school-aged child care on children and families. Much of her work considers the cumulative impact of family, child care, school, and neighborhood factors on children's developmental outcomes. Children's relationships with their parents, siblings, peers, and teachers have provided another unifying theme.

Ann Dryden Witte (Ph.D., North Carolina State University, Economics) is an applied microeconomist and econometrician. She is Professor of Economics at Wellesely College and a fellow of the American Statistical Association and the Royal Statistical Society. She has worked with federal, state, and local governments on child care issues since 1987. Currently, Professor Witte is principal investigator of the Wellesley Child Care Research Partnership. The partnership's research focuses on three primary questions: How do child care subsidies and family support policies affect the economic self-sufficiency of low-income families? How do child care subsidies and other family support policies affect the availability, cost, and quality of child care for all children, and, particularly, for low-income children? How do child care subsidies, after-school programs, and family support policies affect the school readiness and school performance of children?

Barbara L. Wolfe (Ph.D., University of Pennsylvania, Economics) is Professor of Economics, Preventive Medicine, and Public Affairs at the University of Wisconsin-Madison and Research Affiliate, Institute for Research on Poverty. From 1994 through 2000 she was director of the Institute for Research on Poverty, and since 1990 she has directed a training program in health and mental health economics supported by the National Institute of Mental Health. She has been a fellow-in-residence at the Netherlands Institute for Advanced Study in 1996-97 and 1984-85 and a visiting scholar at the Russell Sage Foundation in 1991-92. She is a member of the National Bureau of Economic Research and has served on the executive committee of the American Economics Association. She is currently on leave at the University of Amsterdam.

Professor Wolfe's primary fields of interest include health economics, the economics of poverty, and social policy and finance more generally.

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***The Economic Rationale For Investing in Children: A Focus On Child Care*:**

Appendix B: Rationales for Public Sector Training and Other Investments in Labor Markets and Their Applicability to Public Investments in Child Care

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Prepared for:
the conference *The Economic Rationale for Investing in Children: A Focus on Child Care*,
sponsored by the Office of the Assistant Secretary for Planning and Evaluation,
U.S. Department of Health and Human Services

Contents

I. Introduction

In this paper I attempt, first, to explicate rationales which have been given for public sector investment in employment and training and, second, to suggest to what degree some similar rationales might be applied to argue for public sector investment in child care.

Before launching into the detailed discussion, I summarize here the types of rationales for public sector investment in employment and training. I provide this summary in the form of an outline which contains the sections of the paper which follow.

Human Capital Rationales

- *Individual Human Capital Investment*
    - Poor Information
    - Externalities are Ignored by Individuals
    - Individual Inability to Finance the Investment
- *Human Capital Investment by Firms*
    - General and Specific Skill Investments
    - Asymmetric Information
    - "Efficiency Wages"

Macroeconomic Rationales

- Unemployment and Inflation
- Long Term Growth

Segmented Markets Rationales

Distributional Rationales

- Education and Youth Programs
- The "Second Chance System"

- Skills Mismatch and Spatial Mismatch
- "Soft Skills", contextual learning, social capital and social isolation
- Welfare Reform

Area Redevelopment Rationales

Merit Goods Rationales

Miscellany

- Timing, Targeting, and Early Intervention
- Child Care, Working Parents and the Child Care Workforce

After each section explicating a category of rationales as applied to employment and training, I provide a brief assessment of the degree to which that type of rationale might be applied to the case of public sector intervention in child care.

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II. Won't the Market Achieve Optimal Provision of this Service in the Most Efficient Fashion?

The traditional economist's approach to discussion of any government expenditure or regulation is to ask: why wouldn't this be better left to the market to accomplish? The demand is always to specify the nature of the *market failure* which requires government intervention to correct. The presumption is that, in the absence of clear indication of market failure, the free interplay of market actors will lead to a more *efficient* allocation of resources. By more efficient allocation of resources we mean the market action will generate greater output (of whatever the good or service) at a given cost of resources or the same output at a lower resource cost. The economist's rationale, then, for any government activity is a litany of potential cases of market failure. I will therefore proceed to such a litany as applied to government intervention in employment and training activities.

A. Human Capital Rationales

Economists look at certain types of human activities as analogous to the creation of physical capital. Physical capital — such as plant and equipment — contrasts with other productive inputs. Other productive inputs, such as labor and materials, are immediately transformed in a short time period into products or services. Physical capital, in contrast, requires a large investment at the outset and then produces returns over long periods of time. Human activities which take the form of investment at an early period and yield returns over long periods of time are referred to as human capital. The most common example is education. Education usually requires the bulk of resources at an early period — the investment — and yields benefits over long periods of time, e.g., greater productivity through the working years. In the economists' most common model, those benefits take the form of increased productivity of the individual and are reflected in higher earnings over the period following the initial investment in education.

There are of course other types of activities which have been called human capital, such as investment in better health, e.g., immunizations, or better eating and exercise activities, in that they yield benefits over longer periods of time. And there are benefits other than just increased productivity in a work activity that can accrue from human capital investments.

The major rationale given for employment creation and training activities is that they create human capital and the expectation is that the payoff from the investments in employment creation and training activities will be increased productivity. The above-cited economist's query is: if these are such good investments why doesn't the free operation of private markets provide the optimal amount of such investment and at the lowest cost in resources used?

To attempt to answer this query one examines the theory of the behavior of the two potential private market sources of investment in employment creation and training: the individual and the firm.

Individual Human Capital Investment

In the economist's model, rational individuals consider all the alternative uses of the set of resources they control and what benefits will accrue from each use of resources. With respect to education and training, they assess the investment required — in terms of direct costs (tuition, fees, materials) and the indirect cost (earnings foregone while engaged in the education or training activity). Then they calculate the benefits which will accrue, e.g., higher earnings paid for deploying the learned skill, over the useable lifetime of that investment — how long they expect to be able to use that skill and earn a premium for exercising it. (There is an added element of the calculus. The potential investor discounts to get present values of the future benefits. I won't go into this here except to say that benefits obtained far in the future have a present value which is far less than the value of the same magnitude of benefit obtained in the near future). If the benefits exceed the costs, the rational individual makes the human capital investment. In this basic model, all human capital investments that yield benefits greater than costs would be freely undertaken through the market mechanism.

What factors have been cited which limit the reach of this model and lead to an argument for intervention beyond the free markets?

Poor Information

The rational person model assumes that for individuals there is good information available about both the costs and the benefits of the investment and that individuals are in possession of that information. Particularly, in this case, the information about the long term pattern of benefits and costs is important for the decision calculus. Where individuals do not, or cannot, access the relevant information, the market will fail to provide optimal outcomes with respect to human capital investments.

In the case of employment and training there are a variety of circumstances which could give rise to a lack of good information on the part of individuals, several of which I will return to below. For now, however, I will leave it that information failures may provide a rationale for the public sector to intervene in employment and training markets.

Externalities Are Ignored by Individuals

The term externalities embraces a wide variety of situations which may be cited as causes of market failures. The usual example given of externalities is a situation involving pollution. Pollution imposes a cost, e.g., bad air or bad water, on individuals exposed to it. The polluter can ignore these costs to others that his actions cause because the *market does not measure it as a cost*. The costs the polluter takes into account are only those he pays for in producing his good or service where as the social costs are those costs the polluter pays plus the costs to others imposed by his pollution. Externalities cause social costs and benefits to diverge from those costs and benefits the individual takes into account in making decisions.

For employment and training activities there are again a wide variety of externalities which can arise and cause social costs or benefits to diverge from those which affect the individual engaged in these activities. Again, I will return to a number of these in discussion of other categories of rationales below. Just one relevant example: suppose there is a critical skill needed for a given production process and the productivity of other workers is directly affected by the presence or absence of that skill. The individual deciding whether to invest in that skill may undervalue it, from society's point of view, because she herself will not capture the enhanced returns from providing that skill which will accrue to the other workers or to the firm because the critical bottleneck has been avoided. The public sector, taking the wider societal perspective, may intervene to foster the investment.

Individual Inability to Finance the Investment

While the individual may correctly assess the benefits and costs of a given human capital investment they may lack control over sufficient resources to make the investment. With respect to investments in physical capital, the investor can often borrow funds for the investment, pledging a return on the basis of future earnings. However, since the outlawing of slavery, rights to human labor are not an alienable asset. A contract in which an individual pledges the future earnings as collateral would not be enforceable in court if the contractor sought to collect the collateral. This is often referred to as "an imperfection in capital markets". The inadequacy of markets for borrowing against human capital is a rationale often given for market failure, especially as applied to liquidity constrained individuals. Here again, the public sector may intervene to offset the failure of the market and either facilitate borrowing or engage in direct production of the human capital at lower cost to the individual.

Application of Individual Human Capital Rationales to Child Care

All of the rationales suggested in this section for public sector investment in employment and training would appear to carry over to a rationale for public sector investment in child care. As I go through these arguments I will, for the most part, stress potential positive benefits deriving from child care. It should be recognized, however, that there are also potentially negative effects emerging from individual parents' choices regarding child care; indeed there has been a long-running debate in some segments of the research community as to whether child care by other than the mother has negative effects on child development.

Poor Information. Surely individual parents will have difficulty assessing what the long term benefits (or costs) will be from having their child in a particular type of care situation. As I perceive it, assessments of what those benefits or costs might be over the long term remain disputed even among experts in the child care field[(1)]. At a minimum, the public sector should continue to invest in developing better knowledge of what long term effects of alternative child care settings may be. A public supported effort at dissemination of such information as exists at present would also seem justified. Public regulatory structures are generally advocated as a protection against lack of information by consumers and thus regulation of child care is a public sector intervention meant to offset consumer lack of information.

The poor information rationale would apply both to arguments for public investments which increase the quantity of child care and to arguments to increase the public investment in the quality of child care. A particularly important public service would be to provide parents with better information about how various types of quality in child care are likely to affect long term outcomes.

Externalities Ignored By Individuals. As has been the case with public education for a long time, there is a widespread belief that the wider community benefits from healthier, more intelligent, participatory individual citizens. To the extent that particular child care settings can be shown to help increase the number of such individual citizens, they are creating externalities that may be ignored by the parents. Calculation of *social*, as opposed to *private*, benefits would include such community gains. Of course, there are more specific forms of this "better citizen" externality that could be counted: lower crime, less substance abuse, lower school dropout rates, etc. While individual parents might take such benefits into account with respect to their child's well-being, there are broader costs in the community — incarceration, substance abuse treatment — which could, due to better child care, be avoided. The avoided-community-costs might not enter the parents' benefit calculus.

Recently, there has been a rash of research studies by economists regarding "peer effects". Some clever work has been done — using the fact that at some colleges roommates are essentially randomly assigned — to get presumably unbiased estimates of the relationships between the behavior of roommate pairs, a form of "peer effect.'[(2)]. Also, as part of the debate over the benefits of small class size, it has been suggested that a major influence on classroom learning of a given student is the degree of concentration of disruptive children in her classroom[(3)]. Thus better classroom behavior generated by specific child care settings for a given child could generate external benefits to that child's peers in the classroom. These external peer effects might not enter in to the calculus of individual parents.

Individual Inability to Finance the Investment. Clearly many types of child care are high cost. The costs are high relative to the incomes of families with only low skilled earners. This is particularly true for many low income single parents. Further, it is noteworthy that usually parents will have to be making investments in child care when they are at the early stages of their working careers and their current earnings are low relative to what their average earnings over their working years are likely to be. It is evident that many worthwhile investments in child care, from both a private benefit-cost perspective and from a social benefit-cost perspective, are likely not to be made because of parental inability to finance the investment. This would apply both to arguments for the quantity of child care and to those for the quality of child care.

Human Capital Investment by Firms

Firms are purchasers of the skills created through human capital investments and they are also producers of skills. When, or why, won't the free market operations of firms lead to optimal and efficient human capital investments?

In his classic work, Becker made the distinction between *specific human capital* and *general human capital*. Specific human capital is a set of skills that increase productivity of workers in a narrow context — in particular, as applied to the production process and/or organizational structures of a given firm. The term general human capital refers to skills whose productivity is widely transferable across different production processes and organizational settings. This distinction is critical for assessing possible sources of human capital market failure due to the actions, or inaction, of firms.

General and Specific Skill Investments

The usual starting point is the argument that firms will invest in skill development only to the extent they can capture the full returns on their investment in worker training. The major way they capture the return is to increase the wage of the newly skilled worker by less than her productivity has increased. Where general skills are involved firms might make an investment in skill improvement of a given worker but, shortly after she is trained, a rival firm recognizes a now more highly skilled worker and offers her a higher wage. The rival does not incur the training costs and does not have to recapture them through a wage/productivity differential so can offer a higher wage than the firm that trained her. This phenomenon is often referred to as "poaching". Recognizing this potential scenario at the outset, the firm will not invest in providing the training in general skills. This problem is thought not to arise with specific skills because the greater productivity these skills engender does not transfer to another firm. Therefore, the training firm can capture the return on their training costs by increasing wages by less than productivity increases.

The point about firms underinvesting in general skills usually leads to the argument that, since the general skills can be redeployed at another firm and higher wages obtained, the individual worker should be willing to pay for training in general skills. This argument clearly interacts with those in the previous section dealing with the inability of individuals to finance human capital investments; they may be unable to borrow to make the investment. The next question usually posed is: Why can't the worker finance it by taking a lower wage during the training period, a "training wage"- the mechanism traditionally used in "apprenticeships"? Some answer: very low skilled workers may have inadequate resources to sustain themselves and their families during the "training wage" period, and there is too much uncertainty about the marketability of the skill they are investing in through acceptance of lower wages. Further, what guarantee is there that the employer who is paying them a "training wage" (less than their actual productivity) and thereby gaining benefits will, in fact, pay them a sufficiently higher wage later or that their "general skill" will indeed be recognized in the market or that there will be demand for it?(4)

Several types of public sector interventions — suggested or carried out — to offset this under-investment by firms in general training have been undertaken. One is promotion of more industry-wide apprenticeship systems; the prime example cited is the extensive German apprenticeship systems. Another form of "internalizing the externality" is to institute sectoral training taxes on a "play or pay" basis. Firms are taxed to provide general funds to underwrite training. If the firm "plays", by itself providing approved training at at least the minimum level specified, the tax is reimbursed (or they are exempted). If they don't train themselves their tax goes to a central fund to subsidize training by other firms or by a public sector created and administered program. Another step that is sometimes thought to offset the uncertainty by individuals about the recognition of and payment of higher wages for their learned skill, is the creation of government-sponsored skill certification programs. And, of course, the public sector can, and does, provide general skills training directly, either fully financed by the public sector, or, in a few cases, with partial payment of costs by the trainee.

Asymmetric Information

I already noted above some of the information problems which could lead to a failure of the market to generate an optimal degree of investment in human capital. A literature has now grown up around the applications to employment and training investments of economic models involving asymmetric information.

The asymmetry in information can arise between the worker and the firm, or among firms. The relevant information in this case is information about workers' abilities and the degree to which they receive training. Further there is a possible interaction of abilities and training; workers may differ in their "trainability" so a given amount of training may increase the productivity of some workers more than others.

There are several ways in which these asymmetries could work either to decrease or increase the degree of training provided by firms. I will not try to reproduce the full array of models. To give just the flavor of how these work: I noted above that traditional theory suggested that firms will under-invest in general human capital because they risk losing their investment when competing firms bid away the trained worker. However, if the competing firm cannot determine the degree of training, or the degree to which the abilities of the given worker interact with the training investment, the asymmetry of knowledge will allow the firm that trains the worker to pay him somewhat less than his after-training marginal product — since the competing firm does not have complete knowledge of the degree to which training has increased that individual's productivity and therefore will not offer a competing wage that reflects that post-training productivity. Thus, here the firm giving the training can recapture its costs by paying a wage lower than the worker's post-training productivity.

In an interesting application of this type of model, an author (Autor 2000) has sought to explain a puzzling phenomenon: some temporary help supply firms provide computer skills training to workers. This training is general training and the above noted traditional model would suggest that temporary help firms would be the *least* likely to provide any general skills training since the workers they supply are effectively employed by others, the extreme form of "poaching". The author argues that the temporary help firms are providing not only workers to firms but also better information about the quality of those workers. Thus success in computer training can signal a more capable worker and this information is valuable to the firm.

It can be argued that government intervention could be structured to alleviate the impact of these asymmetric information problems. For example, the public sector can, and in some places does, subsidize temporary help agencies both to place and to train workers. Alternatively, through public training and certification programs, the public sector can provide information to firms about workers' abilities, trainability and productivity.

"Efficiency Wages"

In recent years there has been considerable attention paid in a variety of situations to the concept of what is called "efficiency wages." Again there is a wide variety of models of firm and worker behavior to which the label of "efficiency wages" has been applied and, in most cases, a root problem is asymmetric information.

In most "efficiency wage" models, it is suggested that some firms may pay wages that are higher than what other firms would pay for workers with given characteristics (often referred to as "the market wage"). The primary motivation suggested is to lower the costs of turnover (losing some workers and having to hire their replacements) in the firm by making workers see this particular job as more valuable than others they might obtain in the market. The workers therefore have a substantially lower probability of quitting.

A related feature is the problem of monitoring effort made by workers. In situations in which the supervisory span is wide, it may be difficult for the firm to assure that workers are not "shirking" on the job. The higher, "efficiency wage" is thought to make workers feel that they have more to lose if they are caught "shirking" and fired.

Since the "efficiency wage firms" are paying above the "market wage" they will employ fewer workers than if they paid the lower "market wage". Thus "efficiency wage" behavior may increase unemployment — both because these firms hire fewer workers and because they may induce "wait unemployment"[(5)]. The existence of both types of unemployment serves, it is argued, to heighten the motivational force of the "efficiency wage", as the potential for losing the "efficiency wage job" through being replaced by someone from the ranks of the unemployed is that much more palpable.

While there are some discussions of how "efficiency wages" affect the allocation between general and specific training and who pays for it, these do not seem to lead directly to arguments for public sector intervention in training. For our purposes here, however, the "efficiency wage" focus on the desire of firms to reduce their workforce turnover and to elicit maximum effort can carry over to our discussion of rationales for public investment in child care.

Applications to Child Care of Rationales Related to Human Capital Investment by Firms

General and Specific Skill Investments. This distinction does not seem to me to have any carry over to the child care outcomes. "Training" is provided by the child care institution, which is a producer of whatever human capital results from a given type of child care. But unlike the firm, it is not also a utilizer of the skills (embodied in the children) it is helping to produce; all such skills it produces are *general*, not *specific* skills. The "poaching issue" does not arise in this context.

On the other hand, the issues about ability to finance the investment in human capital do have some carry over in the case of the liquidity constrained family. This is a slight variant on the argument above about individual inability to finance human capital investment. Because it is not possible for the family to borrow against the higher future earning of the child which may emerge as a result of the impact of the particular type of child care, there is again a "capital market imperfection." This may result in under-investment in human capital producing child care and an argument can be made, on those grounds, for public intervention to subsidize child care investments. The under investment would apply to both quantity and quality of child care. The fact that quality child care is likely to be somewhat higher cost would imply that relieving the liquidity constraint on families would be particularly important to encourage higher quality child care.

Asymmetric Information. Here we would simply repeat the arguments made above with respect to the effects of poor information on the part of individuals, but the force of the emphasis on asymmetry is much less in this case. Much as in the case where there is an asymmetry between the worker and the firm as to what training is most productivity enhancing, there may be an asymmetry between the parents and the child care institution or child development experts about what type of child care is most "productivity" enhancing for the child. Thus, again, a rationale for government interventions is to reduce the information asymmetry.

Perhaps a closer analogy might arise with respect to asymmetry of information between the education system as a utilizer of the child's human capital from child care in its next stage of production of further human capital. The asymmetry could go in either direction. The parents may know more about the abilities of the child engendered by its child care experiences than do the education authorities. Or the education authorities may be more knowledgeable than the parents about the relevant skills engendered by a given type of child care experience, and how their subsequent human capital process should be adjusted in light of those abilities. Again, a case for further public sector intervention to offset the effects of the information asymmetry can be made.

"Efficiency Wages." Here we might pick up on the concerns that are said to lead to the payment of "efficiency wages," i.e., to reduce turnover at a firm by better binding workers to the firm or to induce greater effort on the job. Creating stability in employment and advancement in the job ladder for low skilled workers is often a stated objective of public policies. Though the connection may be loose, public intervention to support child care might help to meet some of the concerns which are theorized to lead to "efficiency wages"; they may enhance job stability and increase worker effort.

Provision of child care for the children of workers is one form in which an "efficiency wage" could be paid. It could be through subsidization of child care, either as provided by the employer at the place of work or close to the worker's home so the trip to work does not require a long diversion to leave kids off at child care and pick them up. Good attendance is said to be an important ingredient for enhancing chances of advancement up the job ladder and ease of movement to child care can enhance attendance. We also hear a good deal about child illness as a cause of irregular attendance that can lead to dismissal. In addition, the problems of child care for those engaged in shift work are often mentioned. Public intervention to provide child care in these situations could be justified as contributing to the "efficiency wage" goals of greater stability of employment and reduced "shirking."

The basic issue is that public sector subsidization of child care could enhance stability in employment. It is not clear, however, whether just promoting any child care assistance by the firm is sufficient or whether clearly higher quality child care made available through the firm would make workers even more "loyal to the firm".

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B. Macroeconomic Rationales

In the late 1970s and early 1980s there was a considerable amount of discussion of rationales for public sector employment and training interventions which were based on macroeconomic concerns. Since I do not perceive much of a carry over from these rationales to child care, I provide only a cursory review as a matter of completeness[(6)].

Unemployment and Inflation

Explaining persistent unemployment — and how government policies might affect it — has been perhaps the central problem in economics ever since the 1930s (though the long expansion of the 1990s in the U.S. has, for the moment, meant less attention is paid to this issue). The "Keynesian revolution" pushed government spending as a major countercyclical policy. In a recession, such spending could raise output and employment at a social cost less than the financial costs since it would mobilize otherwise underutilized labor and capital. Public sector employment programs were touted, particularly in the 1930s, as a major fiscal instrument for this purpose.

In the late 1970s and early 1980s we experienced a period of stagflation, with both high unemployment and high levels of inflation. This posed new problems for policy analysis since it was the general view that increased government spending to reduce unemployment could well lead to increased inflation. The belief was that there was, at best, an unemployment — inflation tradeoff and at worst that government spending to reduce unemployment below certain levels (the "natural rate of unemployment") would lead to accelerating inflation with no long term affect on unemployment.

At this point, economists began modeling the interaction of public employment and training programs and the unemployment-inflation trade-off. They sought to determine, among other things, the conditions under which government employment and training programs might yield more employment gains for any given degree of inflationary pressure than other forms of general government fiscal expansion would[(7)].

With respect to employment and training programs, the issue was the extent to which the programs either shifted labor demand towards high unemployment groups through targeted programs (wage subsidies or direct public employment would be examples of programs shifting labor demand) or shifted labor supply from those markets where there was an excess supply of workers toward those in which there was an excess demand (I discuss these types of programs in the following section on segmented markets). So the rationale for employment and training programs which follows from these models is that they may contribute to improving compatibility of low unemployment and low inflation.

Long Term Growth

In addition to the concerns about fluctuations in economic activity and the related short-term issues of unemployment and inflation, macro economics has devoted attention to determinants of the long term rates of national economic growth and how government policies may affect these rates. In the 1950s and 1960s "growth accounting" analysis sought to provide measures of the relative contribution of various factors to long-term growth rates. The traditional inputs thought to determine the level of national economic output were capital and labor. However, measured growth in labor and capital could explain only a small proportion of the total growth in national output. This left a large fraction of growth that was simply labeled "the residual factor." Immediately analysts sought to attribute the "residual factor" to other inputs. A leading one was a more refined measure of the growth of skills in the labor force, basically human capital. Much of the rest was simply labeled "technological change." The famous Solow growth model formalized the relationships between growth in inputs and the growth rate in aggregate economic output.

Interest in growth models faded for several decades, but just in the last ten years there has been a renewal of interest in new formulations of the Solow-type growth model which are referred to as endogenous growth models.

Applications to Child Care of Macroeconomic Rationales

The basic rationales applied to child care carry over, as in the previous sections, from the emphasis on investment in human capital. The more skilled the labor force the lower is the unemployment rate which is compatible with low rates of inflation. Individual parents are unlikely to take into account this added benefit from having more human capital engendered in their children as a result of exposure to specific types of child care situations. To the extent they fail to do so there will be social benefits that will not be obtained and it may be sensible, therefore, for the public sector to subsidize the greater human capital in order to obtain these social benefits. This rationale would seem more salient for arguments for public investment in the quality of child care since that might be expected to contribute more to eventual skill development than mere quantity.

C. Segmented Markets Rationales

In the human capital rationales for employment and training investments, it is assumed that the investment results in increased productivity of the worker due to greater skill accumulation, i.e., more human capital. Now we turn to a set of rationales that lead to arguments for public sector investments in training and employment even when those investments do not necessarily lead to greater human capital.

In some situations there may fail to be movement of workers out of labor surplus markets into labor shortage market. In the classical model of labor markets this sort of disequilibrium between markets should not persist over time. Labor surplus markets should exert downward pressure on wages and labor shortage markets should exert upward pressure on wages and workers should move across the markets from surplus to shortage markets in order to take advantage of the wage differential. Situations in which such movements do not occur and disequilibrium persists are sometime referred to as "segmentation of markets."

The segmentation of markets could arise from a variety of barriers to workers' cross-market mobility[(8)]. The lack of mobility could be geographical, with the barrier to mobility due to the lack of information about better opportunities in other areas, the costs of movement or the cultural attachment to a given area. In other cases, discrimination, either in employment or through residential segregation, could limit movement across markets. Inability to move wages downward in the labor surplus market has often been hypothesized as a reason for persistence of unemployment in labor surplus situations(9).

Public sector intervention can be formulated to enhance movement of workers across the boundaries of segmented markets. These could be programs that promote geographic mobility by providing information about distant job opportunities or by subsidizing some of the moving costs. Or they could be wage subsidies that increase labor demand in the labor surplus markets where rigidities have prevented downward movement in the nominal wage. The subsidies effectively lower the wage rate as the employer perceives it. They could be skills training programs which essentially relabel workers — even if they don't really increase inherent productivity — so they can qualify for the jobs in the markets with excess demand.

Public sector investment in training and employment in these cases is justified on the grounds that there are social gains from the reallocation of workers across the segmented markets and individual workers either do not perceive the gains to be made from switching markets or the institutional or social barriers prevent them from doing so.

Applications to Child Care of Segmented Market Rationales

The lack of child care availability may constitute a barrier which makes it difficult for workers to move across segmented markets. We often hear of the problems of workers who may want to take advantage of higher wages for second or third shift work but cannot find arrangements for child care that will fit with those schedules.

There may be some analogy as well in terms of segmentation of the child care market itself. The child care market could be thought of as segmented along several lines: relative care, unlicensed care, family day care and center-based care. More thought needs to be given to the question of whether this analogy can be pushed further in terms of sustained disequilibrium across these market segments.

Segmented market rationales may apply more to quality than quantity of child care since higher quality child care facilities are perhaps less likely to be located in low income neighborhoods. Public investment to make such quality more readily available in low income neighborhoods might free workers to more readily move across segmented markets.

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D. Distributional Rationales

Beyond rationales for public sector investments that are based on the sorts of market failures I have been reviewing, there is a general case often made for concerns about the distribution across the populace of command over resources and opportunities.

The economist's model of the operations of the economy takes as a given *some initial distribution of property rights* and the criterion of efficiency in the allocation of resources is defined *conditional* upon that initial distribution of property rights. Even if markets are working efficiently there will be inequalities in outcomes. Some of the rationales for public sector investment in training and employment are based on distributional criteria in light of the inequalities of property rights or inequalities in outcomes.

In the discussion of human capital rationales above I already mentioned some types of situations that could arise for which public sector investment is justified not on the grounds of market failures but on distributional grounds. For example, general training might not be undertaken because the individual worker would be unable to finance the investment in that training. A public sector intervention to facilitate such financing could be justified on the grounds of a more desirable distribution of opportunities to obtain human capital.

Education and Youth Programs

The public education system has always been justified, in part, on distributional grounds. Even given the public education system, there have been, in recent years, arguments for further public sector interventions on distributional grounds due to what some perceive as biases in the structure of the public school system in favor of those intending to go on to post-secondary education. In the late 1980s and early 1990s we had reports about "the forgotten half" of young Americans who would not go on to post-secondary education.

Two somewhat different public sector investments have been shaped with this "forgotten half" in mind. First, ever since the 1960s there have been major public sector investments in youth employment and training programs outside of the school system[(10)]. Second, in 1994 the Federal government passed the School-To-Work Opportunities Act. This program provided funds to States to pass on to schools to help in the creation of curricula and programs designed to facilitate movement from high school to the work place[(11)].

Both of these types of programs could be justified on the grounds of distributional concerns (though they have also been justified on human capital investment grounds).

The "Second Chance System"

The youth employment and training programs have often been referred to as part of a "second chance system." Other programs included in such a system are employment and training for adults that include major elements of remediation for deficits in "basic skills", i.e., basic reading and mathematics. This category could include many of the employment and training programs funded first under the Concentrated Employment and Training Act (CETA) of 1973, then under its successor the Job Training and Partnership Act (JTPA) and finally under the latest formulation, the Workforce Investment Act (WIA) of 1998[(12)]. While most of these programs have been justified as skills augmentation under the human capital grounds spelled out above, they all clearly focused primarily on "disadvantaged workers" and in that sense were also justified under distributional concerns.

Skills Mismatch and Spatial Mismatch

In the later 1980s and in the 1990s two "mismatch" themes began to emerge which were turned into rationales for certain public sector employment and training efforts.

The "skills mismatch" theme focused on the apparent effects of changing technology and increased international trade, e.g. "globalization.[(13)]" The argument was that the changing nature of technology was increasing the level of skills required in most jobs at the same time that increasing international competition was reducing the opportunities in the U.S. for jobs that required relatively few skills.

The fastest growing segments of the population that would make up the future labor force were groups that were more likely to have a large proportion of low skilled individuals. These are groups whose members had higher probabilities of not completing high school and lower probabilities of continuing on into post-secondary education and, therefore fewer potential workers with high skills. Thus, it was projected, there was likely to be a growing mismatch between the skills required for continued vigorous economic growth and international competitiveness, on the one hand, and the skill attainment of many new entrants into the workforce, on the other. Public education, employment and training programs were all needed, it was argued, to reduce this "skills mismatch". The rationales for public employment and training under this argument were both long term growth, discussed above, and distributional concerns that large segments of the population might not get the skills needed to do well in the "new economy."

The "spatial mismatch" theme focused on the shifting location of jobs, particularly lower-skill-requirement jobs, from the inner city to the suburban fringe[(14)]. The argument was that technology had changed such that central city location was less advantageous. This resulted in a growth in jobs in the suburban fringe and a decline in employment in the central city. The jobs moved but the low skilled people were constrained in their residential choice — this was (and is) particularly true for African-Americans — and could not move to residences near the suburban job locations. Further, the public transportation systems were not well aligned to make the trip of workers from the inner city to the suburban jobs easy and inexpensive.

Public intervention to alleviate spatial mismatch would be justified on distributional grounds; the burdens of weakened employment due to these changes were being unfairly borne by inner city, particularly minority, persons. Interventions to alleviate spatial mismatch could be taken in terms of some of the "market switching" forms suggested above. In addition, programs to reduce residential segregation would be justified, programs to improve transportation from the inner city to the suburban job locations would be justified, subsidization of movement from inner city housing, particularly public housing, to housing in the suburbs would be justified.

"Soft skills", Contextual Learning, Social Capital and Social Isolation

I group together here some disparate themes that arose in the 1990s with regard to employment and distributional considerations.

Once again under the general heading of technological change in job requirements, it has been argued that, in addition to an escalation in required technical skills, the new organization of work puts greater emphasis on what have been called "soft skills." "Soft skills" include: ability to communicate clearly with co-workers, supervisors and/or customers, ability to participate in team work, regularity in attendance, and sometimes dress and diction. Particularly as employment has shifted away from industrial settings toward service industries, "soft skills" are believed to become more important. This combines, in some people's minds, with the increased social isolation of low skill inner city residents so that there is an increasing disjuncture between "work place culture" and "street culture." There has been an increase in publicly funded training programs that place heavy emphasis on "teaching soft skills."

Because of the perceived increasing penalties associated with weak basic skills — reading and math — and the aversion of many without high school degrees to classroom settings for training, a greater emphasis has been placed on "contextual learning," i.e., basic skills remediation that is achieved in the context of work-related materials. For example, remediation would be achieved in the context of the reading abilities necessary to understand basic manuals describing processes required for a given job or basic math necessary for calculations in running machinery or doing basic accounting calculations.

As already noted, "spatial mismatch" hypotheses have pointed to the decline in the economic well-being of residents of the inner cities, the increasing concentration of poverty in such areas and the social isolation generated in these processes.[15] Particularly in the 1980s and 1990s the concept of "social capital" analogous to that of "human capital" has been increasingly developed(16). These concepts have been invoked as part of distributional arguments for public sector intervention in labor markets of the sort outlined above for dealing with "spatial mismatch". A related part of the "social capital" concept is that of "bridging social networks[17]". Weaknesses in networks of some groups are hypothesized to create barriers to movement into mainstream employment. Some public training programs have been in part justified as serving to compensate for these weak networks.

Welfare Reform

Since the early 1970s there have been attempts to "reform" the Aid to Families with Dependent Children (AFDC) program which put emphasis on increasing work among AFDC recipients. In the late 1980s a major overhaul of AFDC was legislated in the Family Support Act (FSA). FSA put heavy stress on increasing work requirements for AFDC recipients but combined that with support for training programs designed to facilitate the movement to work by long term welfare recipients through "basic skills" training and combinations of "work readiness" instruction and, in some cases, higher skills training. It was clear that distributional rationales had underlain the AFDC program for some time and that the employment and training components were similarly targeted under distributional criteria.

Finally, in 1996 there was the Personal Responsibility and Work Opportunity Act (PRWORA) welfare reform which stiffened the work requirements for receipt of cash assistance, now called Temporary Assistance for Needy Families (TANF), and, most notably, put a time limit of five years over an entire lifetime for receiving TANF payments. Under this reform effort there has been a large increase in discretion of the States over how TANF funds are used and so there is considerable diversity in the range of employment-related programs which they have created. Almost all have extensive job search assistance programs, many have work readiness training, some have "basic skills" remediation, some have short term public service jobs. All of these efforts have a distributional rationale. It was felt that if work is to be required of TANF recipients then some steps would need to be taken to assist the recipients, where needed, to get and hold jobs.

Applications to Child Care of Distributional Rationales

There are some repeated themes throughout this distributional section which possibly carry over to rationales for public investment in child care.

First, the basic distributional rationale derives from unequal access to resources and opportunities across the population. Unequal ability to finance access to child care is clearly analogous to unequal ability to finance job training.

Second, to some degree for custodial parents who are still in high school, access to child care can be an important component for increasing the chance of completing high school and to participate fully in school-to-work programs. Certainly for those who enter the "second chance" system, access to child care for custodial parents can be critical. In both these cases distributional rationales enter in because of unequal access to child care resources.

Third, in both the "skills mismatch" and "spatial mismatch" situations, access to child care for custodial parents can be critical in helping them overcome the mismatch. Particularly in the "spatial mismatch" case there are important locational considerations for custodial parents. If there is to be a long trip to work from the inner city to the suburban job site then child care location tremendously complicates the time necessary to complete the trip to and from work. The public sector could facilitate the development of child care slots near the homes of these workers or it could, on the other hand, subsidize child care facilities at or near the suburban job sites.

Fourth, social isolation can be reduced through the development of stronger neighborhood institutions. Common meeting at child care drop-off and pick-up might enhance connectedness. In some circumstance the child care program has become the site as well of parent training — it provides "teachable moments" for conveying better parenting practices. Perhaps "bridging social networks" can develop around the associations arising from utilization of common child care facilities. Public sector intervention to promote these opportunities could be justified under distributional rationales.

Fifth, though it is rather tenuous, one might argue that the foundations for "soft skills" can be built in the child care situation through an early exposure to socialization within a group of peers. In some of the debate over why the smaller class size in Tennessee's Project Star experiment may have had a positive effect some analysts have argued that the effect may work through better socialization skills developed in the small group setting.

Sixth, a particularly strong case can be made under welfare reform considerations for increased public investment in child care. If TANF recipients are going to be required to work then we need to take steps to try to make sure that they are able to work and affordable, accessible child care is a critical element in that process. This would hold not only for those currently receiving TANF but also for those "in danger of needing TANF". Public support for child care can help prevent the loss of employment and the necessity to resort to TANF.

Most of these distributional rationales would apply to arguments for public investment in the quantity of child care. The fifth rationale about "soft skills" might however be applied to arguments for support of quality child care.

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E. Area Redevelopment Rationales

There is considerable overlap with this category and previous categories. However, the major focus here is on "place-based" concerns versus individual concerns.

There has long been a concern about concentrations of disadvantaged persons in specific geographic areas. In some cases these are broad geographic designations, e.g., the Appalachians, the Mississippi Delta; in other cases they are smaller areas within broader geographies, e.g., inner city neighborhoods. In these cases, the focus has been on improving the "place" in order to benefit the disadvantaged persons residing there.

There has long been a tension between advocating improvement of the *places* where disadvantaged people reside and advocating moving the disadvantaged people to places where people may have better opportunities. In the case of inner city neighborhoods, this tension has been summarized in the apposition: "gilding the ghetto versus dispersing the ghetto."

Public investments have been rationalized in terms of some "place based" strategies that in turn relate to the labor market. It has long been argued that weakness in infrastructure and other facilities discourages business from moving into areas where many disadvantaged persons reside or that such weaknesses have led to the exit of business from such areas. In either case, the result would be lower employment opportunities. Thus the infrastructure investment is linked to the employment rationale.

Public investment in training and employment is justified under the rubric of "improving infrastructure" by providing a skilled labor force to attract or to hold industry in a given area.

A more convoluted argument arises from the "infant industry" (no pun intended) rationale for some activities to gain comparative advantage for a region. The argument is that some economic activities need, at the early stage of their development in a given region, protection from "excessive competition". Such protection is necessary in order for them to better learn how to implement the technology of that industry. They need to grow large enough to realize the economies of scale that, in turn, allow them to reach costs of production low enough for them to compete effectively in the wider market. Public investments could take the form of "protection against excessive competition", e.g., licensing requirements; special preferences in bidding for public contracts, e.g., minority set asides; or, more relevant, subsidization of the input costs (skills training, wage subsidies) or demand subsidies, e.g., health insurance subsidies.

Clearly a number of previously enumerated rationales apply to these area redevelopment situations, e.g., poor information, spatial mismatch.

Applications to Child Care of Area Redevelopment Rationales

I have already suggested the ways in which "place-based" problems can give rise to distributional rationales for public intervention in the child care market. Child care is a piece of the social and economic infrastructure that is necessary for sustaining healthy communities. Improving the quality of the labor force, which in turn serves to attract or hold industry, may — for many of the reasons listed above — require adequate child care. In at least one case that I am aware of in a rural area, the public provision of space for a child care facility within the area of an industrial park was said to have played an important role in drawing industries to locate in that area.

The "infant industry (again with apologies) protection" argument can be applied to child care in two somewhat peculiar ways. First, most child care providers are notoriously bad at management, particularly financial management[(18)]. Public sector investment to help providers "move up the learning curve" in business management can be an "infant industry" type justification. Likewise, creating adequate effective demand in a place one hopes to redevelop can help providers to realize such economies of scale as might exist. The vicious cycle of underdevelopment where, e.g., the lack of skills in the work force leads to the lack of employment opportunities which leads to a further lack of skill development, can apply to day care as well. The lack of sufficient demand for good quality child care in an area can lead to its lack of development; good quality center-based care may not develop in an economically depressed area unless there is subsidization (of either the provider or the parents, or both) for a period of time to create effective demand.

The area redevelopment rationales would appear to apply most to arguments for investment in quantity of child care.

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F. Merit Goods Rationales

The classic work in public finance by Richard Musgrave provides most of the framework of rationales for public sector interventions reviewed above. One final rationale for public sector intervention that he added was what he called *merit goods*.

This type of rationale has generally fallen into disfavor among economists. One economist is quoted in a leading public finance texts as follows:

> "The term *merit good* merely becomes a formal designation for the unadorned value judgement that [the putative merit goods] are good for society and therefore deserve financial support." (Rosen 1999 p. 52)

Economists, qua economists, don't like to be associated with "unadorned value judgments".

However, the other leading public finance textbook describes the merit good rationale as follows:

> "Even fully informed consumers may make ‘bad' decisions. Individuals continue to smoke even through it is bad for them … Individuals fail to wear seat belts, even though wearing seat belts increases the chances of survival…There are those who believe that the government should intervene in such cases…; the kind of intervention that must be provided is stronger than simply providing information. Goods that the government compels individuals to consume, like seat belts and elementary education, are called merit goods.
>
> The view that the government should intervene because it knows what is in the best interests of individuals better than they do themselves is referred to as *paternalism*…." (Stiglitz 2000 pp.82-87)

In the labor market individuals may make "bad decisions" about what training to undertake.

The merit good argument extends not only to elementary education but to choices about secondary school continuation, post-secondary education and training opportunities. Some would argue individuals may drop out or fail to enroll in training even though it would clearly "be good for them" or that their parents, who know it would be good for their child, are not sufficiently insistent on their pursuing such opportunities. These situations could give rise to "merit good" rationales for more compulsion to undertake these opportunities.

A more tangential merit good case arises with respect to the "free choice" of which programs to enroll in for skills training. Individuals have sometimes been drawn into long-term credit problems because of debts they incurred through enrollment in training programs that promised great results but delivered virtually nothing. The increased emphasis on provision of publicly subsidized training vouchers under the Workforce Investment Act has led to increased concerns in some quarters about the need to limit individual choice in these cases, perhaps through certification or other regulation of the training programs and constraining individual choice in the use of vouchers to regulated programs.

Some would extend the terminology of merit goods to public intervention in certain types of activities that the free market might not support. For example, public intervention in the training and subsidization of health professionals conditional on their serving for a period of time in "doctor shortage areas" in rural settings or inner cities has sometimes been linked to health services as merit goods for the residence of these areas. Similar arguments have been put forward for public intervention to try to increase the proportion of doctors entering into primary care as opposed to specialties such as surgery.

Applications to Child Care of Merit Good Rationales

The "merit goods" rationale is probably the most straightforward to carry over to day care. Children are clearly not able to determine the extent to which time spent in child care may be good for them in the long run. The parents are agents for their child but, in addition to lacking information about the long run benefits of child care[(19)], they may not be willing to invest in child care. Here, as with elementary education, society may decide that it is in the interests of the child, as well as society as a whole, to use public resources to at least influence, or at the extreme to compel, the parents to invest in child care. As noted in the second quote on merit goods, the rationale is sometimes referred to simply as paternalism.

Public sector intervention on merit good grounds could take many forms: subsidization of the parent's child care costs, subsidization of child care providers so as to lower costs, regulation of child care providers for health and safety reasons which parents might be unwilling to impose (by switching providers and/or paying the higher prices for safe care) or unable to impose.

"Merit good" rationales could be applied both to arguments for investment in quantity and to arguments for investment in quality child care.

G. Miscellany

Timing, Targeting, and Early Intervention

There has long been an argument as to whether public sector intervention to improve human capital outcomes is better made at the early stage of the life cycle or at the later stages. In his recent work Heckman argues strongly that intervention at the earliest stages is likely to be much more cost effective (Heckman 1999 p. 42). To a degree this is a matter best dealt with by resort to empirical evidence, which Heckman seeks to do. However, it may be useful to outline some theoretical considerations which impinge on this issue.

The traditional economist's model of rational investment decisions with respect to human capital which I sketched at the outset involves the estimates of the costs of the investment compared to the estimates of the benefits where the benefits are expected to be gained over a long period to time. A part of the calculus involves *discounting* of those longer term benefits to their *present value at the point at which the initial investment is to be made*[(20)]. The longer the delay from the time of investment to the time of realizing the benefit, the lower the present value of the benefit. Thus one factor that works against higher valuation of the human capital investment in early childhood (in this case child care) as opposed to the human capital investment at adolescence or later (in this case skills training) is the long time period between the initial investment and the realization of benefits.

The contrary factor which works *in favor* of earlier investment and which has been stated in traditional human capital models is a longer period in which to accrue benefits. To the extent that benefits are limited to, for example, the remaining time in the workforce, investments in younger persons are likely to have a greater present value than those in older persons as there is a longer time period over which benefits may be realized.

Another consideration, cited by Heckman, is that there may be complementarities over time in skill development. Early stage skills may influence the returns to later stage investments in human capital, so, for example, higher "school readiness" engendered by specific types of child care exposure may generate higher returns to skill development investments in elementary school, and so on up a chain of human capital investments.

A counter consideration, however, is what has been referred to as "targeting" of public sector interventions. If public sector investments are justified on distributional terms to assist those with the greatest problems, then early investments may be much more poorly targeted than are those occurring later when the disadvantaged individual is more clearly identified. When talking about families in poor neighborhoods or children in poor families, we tend to forget that even though the probabilities of problems are much higher, the majority emerge without problems; while unemployment is high in poverty neighborhoods, the majority are employed; and while children raised in poverty are more "at risk" there is still a majority of "resilient" children who emerge without major problems. The same amount of public sector investment tightly targeted on those with problems may yield a far higher social benefit than it would if spread broadly across groups. While at present we have been hearing a great deal about early brain development and the importance of good developmental experiences at that time, in earlier debates about early childhood interventions the view that early deprivations could not be offset by later compensatory interventions was strongly challenged. To the extent that later compensatory action can be effective, tighter targeting on those in greatest need will be possible.

Working Parents and the Child Care Workforce

In attempting benefit-cost calculations for investment in child care, we should include in the benefits any direct benefits to the parents that come from an impact of child care on their workforce attainment. In addition, we should count benefits that come through increased family income which accrue to the children above and beyond the benefits (positive or negative) to the children derived directly from the child care experience, i.e., regardless of whether the child goes through child care or not, the child's well being may be increased by the goods and services attainable through the higher income of the parents.

One of the major problems facing the "child care industry" is the low pay and high turnover of child care staff. Of course, many of the issues regarding rationales for investment in training which have been reviewed above could be applied to the child care workforce situation as well.

I would argue that perhaps the deepest dilemma facing the expansion of child care derives from the nature of what economists might call "the child care production function," that is the extent and types of inputs necessary to produce child care services (whether "low quality" or "high quality"). Basically, in this case, it is the high adult labor input required per unit of child output. This impinges on the two sides of the child care market equation. The costs of child care are driven by the costs of providing adult care givers. The demand for child care is driven by the ability (and willingness) of parents to pay for the care. The costs of child care will equal a high percentage of the earnings of low income parents, even if the child care giver's wages remain low. Without public sector intervention, the low incomes of parents will translate into either no child care for them or into low payments to the child care giver. When one adds to this dilemma arguments that "quality child care" requires either higher adult to child ratios or higher-skilled-adults to child ratio, or both, then the dilemmas become even greater. It seems to me that without substantial public intervention and subsidy, there is no clear way out of this dilemma; we are faced with a low paid, high turnover child care workforce or no child care for low income parents and limited day care provided by a better paid child care giver workforce accessible only to high income parents.

The authors of two interesting papers approach this dilemma from a different standpoint. In Folbre and Nelson (2000), the authors address the fact that as women move increasingly into paid work, many of the "caring tasks" performed at home become paid tasks negotiated through markets. Child care is foremost among such "caring tasks." They suggest that the economic rhetoric which simply transfers the traditional market models to these "caring tasks" may be misguided and harmful. Because they have shifted from the home where neither the "input" of the care giver nor the "output" of the child care were priced, the social valuation of both was not explicitly quantified. Then, as they move into the market place that lack of valuation may carry over into misvaluation in the new market-mediated state. They call for research to develop a new framework that better values the mixture of "love and money" that market-provided child care represents.

In a related paper, Nelson (2000) provides a review of the ways economists seek to explain why child care wages are low and an elucidation — particularly shaped for child care advocates — of the underlying assumptions and technical details of such explanations. She also suggests counter-arguments to these economists' explanations.

Neither of these papers provides operational directions as to how the deep dilemma of the child care production function might be overcome, but they do provide useful warnings about the dangers of relying on traditional economic rhetoric in determining policy in child care.

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Endnotes

1. Blau (1999) gives the following overview of the literature: "Recent reviews of the literature…identify about 30 studies of the effects of child care inputs on child development or child behavior. Only about one-third of these studies provide interpretable results…Around half of [the 30 studies] find that either smaller groups, more staff per group, or better trained teachers have positive and statistically significant effects on child development and behavior. The others find either no statistically significant effects of any of the inputs or statistically significant effects of the 'wrong

sign'….Most of the studies include only a few measures of the home environment…and do not consider the possibility of selection on unobserved aspects of the home. In view of this and...other problems…it is hard to know how much credence to give to the results of these studies". Pp.788,789 His own work, reported in this article, using the National Longitudinal Survey of Youth, leads him to the following conclusion: "Child care characteristics have little association with child development on average. Associations are found for some groups of children, but they are as likely to be of the ‘wrong' sign as they are to be of the sign predicted by developmental psychologists". Abstract, p.786

2. See Hoxby (2000); Sacerdote (2000); Zimmerman (1999)

3. Lazear (1999).

4. There is recently an active publication of research related to these questions of whether and under what circumstances employer's might, or do, invest in general skills training. See, for example, Acemoglu and Pischke (1998); Acemoglu and Pischke (1999); Autor (2000); Barron, Berger, and Black (1999a); Barron, Berger, and Black (1999b).

5. "Wait unemployment" occurs when workers perceive that there is a potentially higher wage opportunity out there for someone with their level of skills and there is a non-zero probability they might get an offer of such a job. In this case, rather than take a "market wage" job, they remain unemployed and "wait" for a shot at the "efficiency wage job".

6. A somewhat fuller discussion of these rationales is provided in Haveman and Hollister (1991).

7. The "non-accelerating-inflation rate of unemployment" (NAIRU) was a central analytic concept in this approach. Analysts sought to determine which alternative government policies — including employment and training — would most contribute to lowering the NAIRU. See Johnson and Layard (1986).

8. In the 1960s and 70s institutional and radical economists argued that labor was barred from freely competing across labor markets because of institutional arrangements which essentially created different competitive conditions in various segments of the labor market. This disputed view was often referred to as "dual labor market theory." See Lang and Dickens (1987).

9. See Solow (1991)

10. See Betsey, Hollister, and Papageourgiou (1985) for a review and assessment of such programs.

11. See Lerman (2000) and Hershey, Silverberg, Haimson, Paula, and Jackson (1999) for a brief history and assessment of school-to-work efforts.

12. See Barnow, King, and editors (2000) for a quick review of the history of these programs and recent appraisal of effectiveness.

13. See Skills (1991).

14. Holzer, Ihlanfeldt, and Sjoquist (1994); Ihanfeldt (1998).

15. See Johnson, Farrell, and Stoloff (2000).

16. The noted landmarks in this development are: Coleman (1988) and Putnam (1995).

17. The major exposition on networks and employment is found in Granovetter (1974). See Johnson, Bienenstock, Farrell, and Glanville (2000) for a recent concrete application.

18. The fact that many state government and resource and referral agencies run course for child care providers on business management is evidence for this statement. Here is a quote from a manual for child care advocates and lenders: "Our years of experience lending to child care providers have shown that the lack of technical assistance on management issues is a major barrier to the expansion and quality improvement of the field" p. 3 Self-Help (1999).

19. This is a classic example of what in the economics literature is referred to as the principal-agent problem. The problem is that the goals of the principal and agent will not perfectly coincide. An agent may make side-deals that further his goal (more profit) at the expense of sacrificing some of the goals of his principal. I could have introduced this terminology at several places earlier but have deferred it until now.

20. The discounting to present values is necessary in order to *compare* different investment opportunities which may have quite different time patterns in the benefit stream. Some investments may yield high benefits soon after the initial investment but tail off rather quickly after that, while other investments yield low benefits in the first few periods after investment but then grow to be quite large over the longer period of time. In order to compare these two investments we need to collapse the time dimension so we can compare the benefits directly in a single dimension. We collapse the time dimension by discounting future benefits into a single present value. The discounting reflects the fact that benefits that are realized early in a time period can in theory be reinvested in some other investment opportunity and earn more benefits there; there is an opportunity cost in waiting for benefits which can only be realized later in the time period. By discounting to present values we distill the diverse time patterns into a single dimension which allows direct comparison across the diverse investment opportunities.

Where to?

The Economic Rationale For Investing in Children: A Focus On Child Care:

Appendix C
Public Investment in Education: Lessons for Child Care Policy

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Abstract

The dramatic increase in labor market participation of married women and single parents with young children has led to a considerable expansion in day care and other early education programs. Widespread concern that many children attend low quality day care centers or preschools has lead to a call for substantial funding increases and a much more active government role in regulating these sectors. The widely held belief that readiness to learn upon entering kindergarten is a key to future academic performance for economically disadvantaged children has only added to the demand for better early education.

This paper draws from the experiences of elementary and secondary education in the U.S. to consider the rationale for government intervention in childcare and early education as well as the desirability of specific policies. Section II considers the rationale for government intervention in the elementary and secondary education sector and the relevance of these arguments for early education. It focuses on issues of market failure, equality of opportunity and protection of minors. Section III turns to a review of the evidence on the determinants of school quality. Though there is evidence that resources such as smaller classes improve the rate at which some students learn, the primary determinant of school effectiveness is the quality of instruction. Importantly, the majority of the variation in teacher quality is not explained by differences in salary, teacher education or other factors that lend themselves to simple government interventions. The final section offers a number of policy recommendations based upon the evidence from research on public schools. It emphasizes the importance of instructional quality and the lack of success that public schools have had in trying to procure better teaching simply by raising requirements that prospective teachers must meet. The section also highlights the dynamic nature of the education sector, in particular the need to learn from experience.

I. Introduction

A guiding principle behind President George W. Bush's education policy is that "no child should be left behind," and Congress is currently formulating legislation to assist and place additional pressure on failing schools to raise their level of performance. This commitment is well placed because of the dramatic increase in the economic penalty for poor quality schooling. Murphy and Welch (1992), Levy and Murnane (1992) and many others document the substantial increase in the return to both years of schooling and school quality during the latter part of the 20th century.

Yet despite numerous education reforms and the expenditure of substantial resources, the view that the public schools can be prodded and helped to succeed in providing at least a basic education for all children seems rather farfetched. In a recent New York Times Magazine article, Traub (2000) raises doubts about the ability of schools to lift disadvantaged children out of poverty. He argues that even the most ambitious school reforms are unlikely to produce dramatic improvements in student performance "in the face of the kind of disadvantages that so many ghetto children bring with them to the schoolhouse door, and return to at home." To Traub, the popularity of school reform as a solution to the problem of poverty emanates in part because "school reform involves relatively little money, asks practically nothing of the nonpoor and is accompanied by the enabling sensation that comes from expressing faith in the capacity of the poor to overcome disadvantage by themselves."

Though Traub refers to myriad disadvantages, perhaps the most important concern is the readiness of children to learn upon entering public school at age five or six. Importantly, the government role in early childhood care and education is far less intensive than in elementary and secondary education. Perhaps the most active involvement is through State Departments of Children and Family Services, where these often understaffed and overburdened agencies attempt to identify and rectify the most egregious cases of child abuse and neglect.

This raises the important question of why those arguments that justify government regulation, finance, and provision of elementary and secondary education have not been applied to the preschool years. Importantly, not all forces for change push greater government involvement. To the contrary, the rise in home schooling, expansion of charter schools and growth of voucher programs all demonstrate movements toward less government intervention along a number of dimensions.

In this paper consideration is given to the experience of government involvement in elementary and secondary education in order to provide another perspective from which to examine government early education policies. Section II describes the standard issues that enter the debate over the appropriate government role in education. Section III reviews the evidence on the determination of school quality and the productivity of investments in elementary and secondary education. This section emphasizes the determinants of teacher quality and the returns to smaller classes and other expenditures, focusing on economically disadvantaged students. The final section offers a number of policy recommendations for early education based on the experiences from elementary and secondary schooling. Reaching a consensus that the private sector fails to provide the optimal quantity of education along a number of dimensions does not imply that government intervention will be beneficial. Any regulations or investments must be made with great care and a commitment to evaluation and learning from experience.

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II. Rationale for Government Role in Education

The various levels and branches of governments have played quite active roles in the financing, attendance patterns, content, and other aspects of education in the United States. States mandate the minimum age at which children may drop out, the maximum age by which students must begin attending school, the number of days students must attend school per year, and a variety of requirements and regulations that must be met by schools and teachers. States also provide a substantial portion of education funding, though there exists wide variation from state to state. While playing a less active role, the federal government has promoted school integration and appropriate education for students with disabilities through both legislation and court decisions. It has devoted resources to the education of disadvantaged children. Finally, local jurisdictions not only provide much of the funding, but they also have the primary governance responsibilities over elementary and secondary education.

Constitutional provisions form the basis for much of the state and federal government actions with regards to education. The Supreme Court ruling striking down the tenet of separate but equal as it applies to education (Brown v. Board of Education, 1954), court imposed school finance reform based on state constitutional guarantees of an adequate schooling, and a number of other interventions emanate from constitutional protections[(1)]. Rather than exploring the details of these constitutional issues and their applications to K thru 12 schooling, this paper focuses on the more abstract economic arguments regarding the appropriate roles of government in the education sector. These include the by now standard issues of market failure, distribution and protection of minors[(2)]. Subsequently, there is discussion of their relevance to childcare and preschool.

A. Market Failure

Why would family decisions regarding investments in education diverge from socially optimal allocations? One answer is that education is not a purely private good, in that there are benefits from schooling above and beyond those that accrue to students and their families. Education may promote social cohesion, reduce crime and welfare, foster a more active and productive democracy, and improve other factors for which the value to society exceeds the value to students. However, in the absence of government intervention, families would seek to maximize private welfare and would presumably consider only the private aspects of the return to schooling. This might lead to under investment in years of schooling or school quality, and perhaps more importantly, to under investment in the external benefits of schooling at the expense of factors more closely linked with private benefits.

A second source of market failure is inadequate information regarding school quality. Families, particularly immigrant families who face language barriers, may have a very difficult time sorting schools on the basis of quality. Of course schools produce a number of outcomes, and there is little agreement over how to separate the contributions of schools from the myriad other factors that affect achievement and other school products. Consequently, while information on test scores, absenteeism and other quality indicators can be disseminated, their association with actual differences in school effectiveness is often weak.

A third potential source of market failure is monopoly power. Consider a rural area in which there are only enough students to fill a single school. There is no reason to believe that a profit maximizing firm would provide an appropriate quality of schooling. In fact much criticism of public schools focuses on the problems created by their virtual monopoly in many areas[(3)].

B. Equity and Fairness

While there is considerable debate over the relative importance of external versus private benefits of schooling, there is much more consensus over the notion of equality of educational opportunity. The lack of material resources should not deprive children of the opportunity to acquire human capital and scale the social and economic ladder. Certainly there is disagreement over the interpretation of equality of opportunity and the extent of redistribution justified by this principle, but the basic tenet that all children deserve access to a quality education underlies the notion of meritocracy and the fairness of the ensuing distribution of wealth.

C. Protection of Minors

A final justification for government intervention is the protection of minors. Some parents might choose to put children to work at a young age, while others might exhibit very little interest in their development. Just as a lack of resources should not limit educational opportunity, parental preferences or indifference also should not limit educational options. By mandating school attendance, limiting child employment and regulating public schools, government takes an active role in the determination of both the quantity and quality of schooling.

D. Implications for Child Care and Preschool

Many of the arguments in support of government intervention in the realm of elementary and secondary schooling also apply to earlier ages, though the details may differ somewhat. Consider first issues related to market failure. If readiness for first grade is a primary determinant of school performance, by definition it is an important determinant of the public aspects of schooling such as good citizenry, etc. Preschool may be a particularly good time to expose children to different religions, ethnic groups, etc., and to inculcate values of tolerance and a shared experience. There may also be inadequate information regarding day care quality, though measurement problems might be even more difficult at early ages. The final issue raised under market failure is the potential for monopoly power in low density areas. Particularly for a single parent who works irregular or odd hours, there may not be enough demand to justify the presence of a number of child care providers.

Perhaps the most compelling justification for government intervention in early education is equality of educational opportunity, and growing evidence suggests that schools may find it difficult if not virtually impossible to overcome severe disadvantages in early childhood. If substantial resources, expanded choice, remedial programs and other interventions do not significantly improve academic outcomes for economically or socially disadvantaged students, investments in early childhood care and schooling may be a far better investment. At this time, however, early education programs such as Head Start are not entitlements and they do not have a clear academic objective[(4)]. The disparity between the universal support for elementary and secondary school years and the limited support for early education seems unjustified. Importantly, early childhood education should not be viewed as an entirely separate entity, and tradeoffs between investments in the quality and availability of early education and support for elementary and secondary schooling should be considered.

The final and certainly most difficult issue philosophically is the protection of minors. While parents would not have their three-year-old child work rather than attend school, neglect, either benign or not so benign, could severely harm academic development. Evidence from the Coleman Report (1966) and many other studies documents the importance of family background in the determination of academic outcomes. Yet such quantitative analyses do not capture much of the variation in family support for schooling, as parents with similar ages, family structures, education and income appear to provide very different levels of support.

Even if it were a simple matter to identify children likely to receive the least support at home (e.g., children with teenage mothers without a high school diploma and no father in the home), a requirement that only these children must attend day care or preschool would likely be unconstitutional. Yet work requirements for public assistance recipients and other regulations essentially require many single mothers to place their preschool age children in the care of others.

Currently public funding for day care has not kept pace with the growing demand, particularly for public assistance recipients. It is difficult to identify a potentially more damaging unfunded mandate than child care for mothers on public assistance, making a strong case for full government financing of child care and preschool education for children whose mothers are required to work. The amount of the funding should depend upon the return to additional investments in early education in the form of higher quality programs.

Yet just as previous Medicaid eligibility requirements discouraged exit from public assistance, child care subsidies strongly linked with welfare participation would also inhibit departure from the program. One argument in favor of a more far-reaching program of government support for all low income children or even all children is that it would reduce or even eliminate this problem of perverse incentives while expanding protection for minors. However, more generous child care benefits for families not receiving public assistance would lead some families to substitute paid day care for home care, perhaps to the detriment of some children. In addition, the expansion of benefits would simply provide a transfer of resources to many families already using child care in much the same way that private school vouchers would transfer resources to students already attending private school.

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III. The Determinants of Elementary and Secondary School Quality

Debate over the effectiveness of public schools and the determinants of academic and labor market attainment has gone on for decades[5]. Two basic questions command a central position in most policy discussions. First, partly resulting from common misinterpretations of the Coleman Report, a surprising amount of controversy continues over whether schools and teachers "make a difference" or not. This issue comes down to a simple one of whether or not there are significant differences among schools and teachers in their abilities to raise achievement or improve other outcomes. Second, controversy exists over how much money matters, i.e., how much each additional dollar improves school quality. This section discusses evidence on each of these questions, focusing on findings most relevant for younger children.

A. Do Schools and Teachers Make a Difference?

Convincing evidence that home buyers pay a premium to live in particular school attendance zones (see Black (1999)) and the emphasis on education in the national policy debate strongly supports the notion that parents and the public at large believe both that schools make an important difference and that there is substantial variation in school quality. However, the identification of actual differences in school quality has proven to be a more difficult task. The fact that families choose where to live and where to send their children to school impedes the separation of school and family effects on outcomes. Other factors including cost of living differences and the likely existence of compensating differentials (e.g., better working conditions) for teachers add additional complications. Moreover, a finding that specific, measurable school inputs including expenditures are not strongly related to student outcomes does not imply that other aspects of schools are not important.

Several recent papers have taken a different approach to the identification of school effects on achievement by examining within-school variation in teacher quality. Both Sanders and Horn (1994) and Rivkin, Hanushek, and Kain (1998) document substantial variation in teacher quality within schools. Such evidence provides a lower bound estimate of the overall importance of schools and teachers, because it ignores between-school differences in both teacher quality and other factors.

The results from Rivkin, Hanushek and Kain (1998), in particular, provide powerful evidence in support of an important role for teachers and schools. The magnitude of the teacher effects is striking. Consider first the impact on students of moving up the mathematics teacher quality distribution by one standard deviation. This is roughly equivalent to lining up all teachers from least to most effective and passing one third of the teachers. The impact of moving up one standard deviation in teacher quality raises 5th and 6th grade mathematics test scores by at least twice as much (and probably much more) as the very expensive policy of reducing average class size by five students.

The comparison of teacher effects and of family differences provides another perspective. The gain from having a very good teacher (one standard deviation better) rather than an average teacher for five years in a row is at least as large as the average mathematics test score differential between lower income students eligible for a subsidized lunch and higher income students not so eligible. This finding that schools can exert an effect similar in size to family income contrasts sharply with research on education that focuses on specific characteristics such as expenditure, class size, or teacher education.

These results support the notion that schools exert a very important influence on academic development, an influence much more similar in magnitude to the popular perception of the importance of schools. Importantly, this conclusion emerges only following the relaxation of the view of schools as monolithic institutions whose quality is determined by the salaries paid to teachers, the gleam of the laboratory, the size of classrooms, and the availability of the latest computers. While these factors do exert both a direct effect on students and an indirect effect via making the school more attractive to prospective teachers, it is only consideration of the substantial variation in teacher quality within school buildings that leads to the finding that the quality of school instruction is a primary determinant of academic achievement. Importantly, for policy purposes, a key element is that variations in teacher quality occur among teachers who look the same in terms of degree earned, experience, and class size.

B. School Resource Effects

The results from the existing large body of literature on the effects of school resources on a variety of outcomes remains highly variable, in large part due to the aforementioned difficulty of controlling for all relevant achievement inputs(6). Failure to find a systematic relationship between outcomes on the one hand and either total expenditures or specific resources on the other may result from problems with the model or data, differences by grade or student demographics in the link between outcomes and resources or inefficiency in the operations of schools and districts. Because variations in the price of teacher quality due to the existence of compensating differentials and other factors are difficult to capture, the discussion emphasizes findings on class size, teacher experience and teacher education. As these variables are the primary determinants of total expenditures on teachers and in the case of class size the main lever for school policy during the latter half of the twentieth century, evidence for these factors provides important information on the effectiveness of school resource policies.

The clearest finding, from both recent studies as well as the bulk of past research, is the lack of a systematic relationship between teacher quality as measured by student performance and the possession of a Masters degree. There is little or no evidence that an M.A. raises outcomes, and the results do not appear to be driven by the fact that schools with more difficult to educate students are more likely to hire teachers who possess an M.A. Since most school districts pay a premium to teachers with advanced degrees and some require advanced degrees in order to teach, this evidence raises serious questions about the appropriateness of such practices and more generally about the belief that education requirements necessarily improve instructional quality.

Two closely related measures of teacher quality are college quality and scores on standardized tests. There is not a consensus as to whether or not either of these variables is significantly related to student performance(7). Yet these variables explain little of the variation in teacher or school quality even in those papers that find a significant relationship.

Another important finding is that smaller classes appear to exert a significant, albeit small, effect on academic achievement. The random assignment experiment in the state of Tennessee described by Krueger (1999), the quasi-experimental study using data from Israel (Angrist and Lavy (1999)) and a study using matched panel data for the state of Texas (Rivkin, Hanushek and Kain (1998)) all produce qualitatively similar results. While the details vary somewhat, the impact of smaller classes appears to decrease with age, and it appears to be larger for economically disadvantaged students. The finding that the benefits of smaller classes are larger at lower grades suggests that benefits from smaller classes or low pupil to teacher or day care worker ratios might be substantial.

The findings for teacher experience present many similarities to those for class size in that effects appear to be larger in earlier grades and for lower income students, though the pattern is not quite as pronounced (Rivkin, Hanushek, and Kain (1998)). Importantly, the results show that only the first two years of experience have a significant impact on teacher quality as measured by student achievement gains. Teachers improve dramatically following their first year and by a somewhat smaller amount following the second year, but there is little or no evidence that additional years of experience have a significant effect on quality.

One additional finding that is relevant for early education is that special education appears to have a positive and significant effect on the achievement gains of children classified as disabled (Hanushek, Rivkin, and Kain (forthcoming)). Learning more about the effectiveness of diagnosing and treating learning disabilities and other special needs early in life should be included as part of a comprehensive evaluation of early education.

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IV. Policy Implications

This concluding section presents a number of policy recommendations for early education based on evidence for elementary and secondary school children. Most of the section emphasizes broad principles, though a few specific points are touched upon. Prior to this discussion, however, it is important to describe the general financial and technological context within which early education providers function.

A. The Inevitability of Rising Costs

Between 1890 and 1990 real per student expenditure for elementary and secondary education (1990 dollars) rose from $164 per student to $4,622 per student, an almost thirty fold increase (Hanushek and Rivkin (1997)). While a longer school year and smaller classes contributed to the increase, a much larger portion of the change resulted from an increase in the price of teachers caused primarily by rising real wages. Because wages rise roughly in proportion to the average change in productivity, sectors with slow or nonexistent gains in labor productivity face steadily increasing costs.

One explanation for the stagnation of labor productivity in education is that the nature of the production technology limits substitution possibilities. Many argue that the link between school quality and the pupil/teacher ratio is quite strong and resistant to substitution of capital for labor. The plight of such slow productivity growth sectors such as education, as described by Scitovsky and Scitovsky (1959), Baumol (1967), and Baumol and Bowen (1965), is steadily rising costs resulting from increases in labor productivity in other sectors. Of course other factors may have discouraged potentially cost saving opportunities for capital substitution, in which case the failure to adopt new technologies would be an additional manifestation of inefficiency. Yet even if technological innovations exist at higher grades, it seems highly unlikely that they would be relevant for early education.

Two other changes have contributed to the cost increases in the education sector. One is the decline in discrimination against women that has raised wages and thus the price of teachers, roughly two thirds of whom are women. Rising opportunities for women probably have an even larger impact on education for younger children where females constitute a larger percentage of teachers and care-givers. A second development that has raised the price of teachers has been the increase in the return to education. Though many child care and early education workers do not currently possess a bachelors degree, an expanded program modeled on elementary schools might lead to increases in the education requirements. Importantly, the increase in the value of education also raises the value of pre-school and child care, so the return on the investment remains largely unaffected. These and other factors that adversely affect the labor market position of early education providers should be considered at the time policy decisions are made.

B. Policy Recommendations

Role of government in child care and preschool education. The substantial difference in the roles of government prior to and following the age of six has lessened over time and will likely continue to diminish. A number of questions arise over the appropriate role for government in the regulation, financing, provision, and other support for early education. The following are my recommendations.

1. ***Long run outcomes should be emphasized and policies for all levels of schooling should be coordinated.*** Though the details of child care and early education provision may differ dramatically from elementary and secondary education, the objectives largely coincide. Therefore tradeoffs between support for older and younger children should be considered as a part of decisions over where to allocate resources. Institutions should be judged on their contribution to development rather than on the basis of behaviors that do not correlate with future success.
2. ***Additional years of schooling for preschoolers should not simply be added on to the current structure of schools.*** In other words, universal public provision of

early education by local monopolies does not constitute an appropriate policy. The innovations, experimentation, and critical evaluations currently taking place in the elementary and secondary school sector should lead to productive changes. As evidence on charter schools, voucher programs, school accountability, public and private competition, and other structural reforms accumulates, much more will be learned about effective provision of schooling[(8)]. The mediocre quality of many schools that precipitated the widespread demand for reform should not be replicated for early education.

3. ***Competition and choice should be encouraged, at least in pilot programs.*** While the appeal of competition in theory is quite clear and well stated by Friedman (1962) and many others, there is little solid evidence that competition actually improves outcomes. The literature on Catholic schools beginning with Coleman, Hoffman, and Kilgore (1982) finds that private school students outperform those in public schools, though questions remain concerning the ability of these researchers to separate causal effects from other factors that differ systematically between the sectors. The aforementioned preliminary evidence on merit schools, accountability programs, charter schools, vouchers, competition from other public schools and from private schools suggests that schools may respond to competition, but definitive answers have yet to emerge.
4. ***Program evaluation requires extensive information to disentangle the contribution of families, teachers and institutions.*** One reason for the general resistance by elementary and secondary school administrators and teachers of incentive systems is a concern about what is rewarded. We know that families make a huge difference in the education of students. An implication of this is that we should not reward or punish pre-school personnel for the education they are not responsible for. If some children come to school better prepared than others, their teachers and administrators should not receive extra rewards. Similarly, if students come from disadvantaged backgrounds that leave them less well prepared for schools, we should not punish their teachers.
5. ***Government should disseminate information about the quality of early education providers.*** Information on inputs including child/staff ratios, teacher qualifications and facilities are important and should be provided, but attempts should be made to develop measures of value added (the impact of the school on academic or other outcomes) despite the difficulty of measuring outcomes at early ages. Longer term outcomes might provide the best information for policy makers and parents alike. Evidence from elementary and secondary education demonstrates that resources and easily observable school and teacher characteristics do not explain the bulk of the variation in quality.
6. ***The Federal Government has an important role to play in terms of research and development.*** Given the lack of knowledge of a single best practice, it is imperative that evaluation accompanies any expanded participation in early education. However, learning about reforms takes more than merely collecting data. There must be a stated commitment to evaluation of outcomes. Unfortunately, most past experience reveals little systematic learning about what programs do and do not work in elementary and secondary education as well as early education and child care. This slow learning has resulted both from a lack of

commitment to evaluation and a failure to build evaluation into the design. The simple example of the California class size reduction program of 1997 illustrates the issue. The State of California instituted a program of fiscal incentives designed to bring down class sizes in early grades. This program was put in effect for all districts across the state and, at the time, there was limited measurement of student performance. As a result, even though California is currently spending some $1.5 billion annually on class size reduction, it is extremely difficult to discover whether or not the program has been beneficial in terms of student outcomes.

7. ***The Perry Preschool evaluation provides a model that should be replicated in many different settings to learn much more about a variety of policies and pedagogies[9].*** Though it is quite difficult to measure outcomes and separate the contributions of elementary or high schools from other factors using statistical techniques, it is probably even more difficult in the case of early education. This increases the importance of undertaking well-structured random assignment experiments. Long as well as short term outcomes should be studied, and objective measures should be utilized wherever possible.

Personnel Policies. The findings from research on elementary education highlight both the importance of teacher quality in the determination of academic outcomes and the difficulty of predicting quality from observable characteristics such as degree earned, experience, college quality or even test scores. Though Ballou (1996) finds strong evidence that higher skilled applicants are not systematically preferred over other prospective teachers, even those administrators who utilize very thorough hiring procedures may find it difficult to consistently select those who turn out to be high quality teachers. The fact that teachers improve considerably in their first two years on the job makes it that much more difficult. I believe that the lack of predictive power of observable characteristics in combination with substantial within school variation in teacher quality supports a number of specific recommendations:

8. ***Requirements for prospective teachers and staff including mandatory degrees and formal examinations should be adopted with great care*** — While a move to professionalize teaching or day care could improve the quality of applicants and training, it may also reduce the supply of teachers without a corresponding improvement in quality. All meaningful requirements increase the opportunity cost of becoming a pre-school or child care worker thereby reducing supply. Most are very blunt screening devices, eliminating some competent teachers. This includes education requirements such as a community college associates degree or even a high school diploma. There may be many immigrants or elderly workers who could provide quite good care, particularly for very young children. Even an examination that has fairly good predictive power will explain little of the variation in teacher quality. Claims that a particular training pedagogy teaches ‘best practice' methods should be scrutinized closely. The belief that teachers learn by doing, respond to a variety of methods, and require very different skills depending upon characteristics of children likely provides a better framework for developing appropriate training and hiring policies. In general it is not possible to

prescribe good teaching with specific teacher training pedagogy, magic in-service development programs, or a series of requirements that must be satisfied.

9. ***Successful policies must take the substantial variation of skill and effort into consideration rather than attempt to eliminate it through a series of regulations.*** There is little reason to believe that any new regulations will reduce substantially the variation in the quality of teaching except possibly by discouraging high quality students from entering the profession. In fact it is the variation in teacher skill and effort, even among those with similar educational backgrounds, that is and will continue to be one of the most important characteristic of teachers and child care workers, just as it is an important characteristic of doctors, lawyers, and virtually all other occupations. Administrators must focus on individual performance in their hiring, retention and mentoring practices in order to select the best possible staff and encourage effort.
10. ***Rigid salary structures that determine pay on the basis of education and experience are unlikely to attract and retain the best teachers. At the very least organizations should not link salaries with characteristics not significantly related to outcomes, and organizations should experiment with more flexible pay and promotion structures that reward superior performance.*** Most current pay structures lead teachers to invest in low cost programs in order to move up the pay scale. If performance rather than credentials were rewarded directly there would be a much stronger incentive to seek out more productive training programs. While the evidence does not provide strong support for merit pay (c.f. Cohen and Murnane (1986)), additional experimentation with alternative pay structures might prove to be quite rewarding. Recently, districts including the Cincinnati, Ohio, school district have adopted an alternative form of performance pay in which pay would depend on the teacher job classification. Teachers ranked quite highly by peers and administrators are classified in special, higher paying categories. To date there is little or no evidence on the effectiveness of this approach in raising teacher quality.
11. ***College Scholarships that require recipients to teach a minimum number of years following graduation raise problems that should limit their use until pilot programs show them to be effective.*** Not only is the ability to enforce such contracts questionable, forcing someone who dislikes teaching to complete her obligation is unlikely to yield positive results in the classroom or day care center. While such scholarships enable the state to raise the compensation of new teachers without affecting that of current teachers, the costs may not justify the benefits. Alternatives such as two tier contracts that would pay new entrants (and existing teachers who wish to enter the program) higher salaries but also impose greater accountability may prove more effective at raising school quality. Such programs are more difficult to organize at the state level, however. Another alternative is the provision of in kind benefits such as housing assistance to new teachers, which may be particularly useful in high cost metropolitan areas.
12. ***Reductions in the child/staff ratio should be undertaken with great caution. The hiring of additional teachers is quite costly, and any gains from more intense instruction might be offset by a dilution in average quality. A rapid expansion of the number of children enrolled in preschool or child care would likely***

exacerbate the negative impact on the quality of new hires. The aforementioned evidence suggested that reducing the pupil/staff ratio has a positive effect on achievement that is larger in earlier grades and for economically disadvantaged students. However, across the board class size reductions such as the California Class Size Reduction program have contributed to severe teacher shortages. The percentage of teachers with little or no experience more than doubled following the cut in average class size of roughly ten students for the early grades, while the percentage of teachers who lacked full certification rose by an order of magnitude. Importantly, economically disadvantaged and minority children appear to have born the brunt of the decline in teacher quality, as the creation of additional teaching jobs in middle class communities led to movement of teachers out of lower income areas and into those districts. Investments in smaller pupil/staff ratios should be targeted towards disadvantaged children who derive the most benefit from such expenditures.

13. ***Pre-school or child care administrators play a crucial role in the determination of education quality, and institutional structures that reward good performance and hold administrators accountable should be the norm.*** Higher income families appear to have a number of child care alternatives, and that competition likely improves the quality of care. In contrast, the oversubscribed Head Start program provides little incentive for superior performance. Unless administrators maintain an important stake in the outcomes, as a group they are unlikely to make systematically the difficult choices necessary to achieve high quality outcomes. Moreover, some ambitious and effective administrators will choose not to work in child care if compensation and quality are not linked. Of course getting the incentives right is a far more difficult task than merely pointing out the fact that administrators and teachers respond to rewards and penalties.

C. Summary

The current structure of early education and child care is far more flexible than that of elementary and secondary education. However, rapid growth in the number of children in day care centers and preschools may lead to additional government involvement in a variety of dimensions. Policy makers must learn from other sectors, particularly elementary and secondary education, in order not to repeat many of the same mistakes. The lack of rigid structure today provides a golden opportunity to support an innovative and dynamic early education sector.

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Endnotes

1. Murray, Evans and Schwab (1998) describe changes in school financing following judicial rulings.

2. This discussion follows the framework used by Stiglitz (1991).

3. See for example Chubb and Moe (1990).

4. Head Start is the main federally funded early education program for economically disadvantaged children.

5. See Hanushek (1996) for a discussion of these issues.

6. See Hanushek (1996) and Greenwald, Hedges and Laine (1996) for summaries of the education production function literature and the debate over the link between outcomes and resources.

7. See Hanushek, Kain and Rivkin (1999) and Ferguson (1991) for evidence on teacher test scores and Brewer and Ehrenberg (1994) for evidence on a number of teacher characteristics.

8. Tiebout (1956) describes the effects of residential choice on the provision of local public services. Clotfelter and Ladd (1996) find limited evidence that the merit school program in Dallas exerted a positive effect on performance, though the results are far from conclusive due to the difficulty of specifying appropriate control groups. The results in Hoxby (forthcoming) suggest that metropolitan areas in which students have more districts from which to choose tend to have more productive schools, and the results from Hoxby (1994) suggest that an expansion of the availability of private school alternatives also increases public school productivity. Rouse (1999) finds some support for the superiority of private schools, though the evidence is not overwhelming and the identification strategy may have some problems. To date the evidence for charter schools is quite limited.

9. The Perry Preschool study randomly assigned students to treatment (Perry Preschool) and control groups and evaluated children for a number of years following preschool.

The Economic Rationale For Investing in Children: A Focus On Child Care:

Appendix D
What Can We Learn about Child Care Policy from Public Investments in Children's Health?

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Contents

Abstract

This paper attempts to draw lessons from evaluations of health care policy for the debate over child care policy. Conclusions include: The desirability of setting clear goals for policy; the importance of liquidity constraints, information failures, and externalities in the market for child care; the fact that eligibles may not participate (low takeup), that publicly provided programs may "crowdout" private childcare, and that outreach to eligible non-participants may be necessary; the need for rigorous evaluation of child care quality and its long-term effects; and the fact that since the family is still the primary supplier of child care, policies that support good parenting are likely to be an important component of sound child care policy.

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I. Introduction

Many public policies affect child well-being. These policies are generally analyzed in isolation, although the issues involved are often similar. This paper draws lessons from evaluations of health care policy for the debate over child care policy. It begins with a discussion of the goals of child health policy, and the theoretical economic justifications for government intervention in this market. At each stage, the implications for the child care market are highlighted. I then turn to a discussion of the evidence regarding the effectiveness of recent expansions of public health insurance for pregnant women, infants, and children, again with a view towards drawing out implications for child care policy.

One of the most noteworthy child health initiatives over the past 20 years has been a series of expansions of public health insurance to low income children, which culminated in the $40 billion Child Health Insurance (SCHIP) initiative of 1997. These initiatives received a remarkable degree of bipartisan support, and have sparked a great deal of research. Hence, much of this review focuses on lessons from the evaluation of these insurance extensions.

The conclusions include: The desirability of setting clear goals for policy; the likely importance of liquidity constraints, information failures, and externalities in the market for child care; the fact that eligibles may not participate (low takeup) or that publicly provided programs may "crowdout" private childcare and that outreach to eligible non-participants may be necessary; the need for rigorous evaluation of child care quality and its long-term effects; and the fact that since the family is still the primary supplier of child care, policies that support good parenting are likely to be an important component of sound child care policy.

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II. What Are the Goals of Public Investments in Children?

By focusing exclusively on measures of the utilization of health care, much of the discussion of child health programs implicitly assumes that the goal of such programs should be to equalize access to health care across groups of differing socioeconomic status. According to this viewpoint, additional doctor visits for poor children are desirable, if wealthier children are obtaining these services. Alternatively, one may take a different approach, and assume that the goal of public policy should be to improve health. Given this point of view, additional doctor visits for children who are already healthy and who are receiving adequate preventive care are socially wasteful, and not a desirable outcome of health policy, regardless of the socioeconomic status of the children who receive them.

The idea that child health policy should aim to improve child health is supported by increasing evidence that adult outcomes are affected by child health. Adult health may be directly affected by child health. For example, David Barker and his colleagues have linked a number of adult disorders, including heart disease, to under-nutrition of the mother during critical gestational periods (c.f. Barker and Martyn, 1992). Since health affects wages and labor force participation (c.f. Currie and Madrian, 1998), poor health in childhood can lead directly to lower future wages and participation. Child health may also be linked to adult labor market success, through its effects on schooling attainment (c.f. Grossman, 2000). Some of the effect of health on schooling is through mechanisms such as days lost. Some of it is also likely to be through effects on cognition. Currie (2000) provides a review of some of the large literature linking indicators of child health status to cognitive outcomes. Thus the evidence suggests that investments in child health pay off in the form of better adult health, and superior educational outcomes, labor force participation, and wages.

This discussion has several implications for child care policy. First, there may be similar confusions or conflicts regarding the goals of child care policy. These goals may include:

The provision of early intervention services to disadvantaged children; support of working mothers; enhancement of child cognitive skills; and socialization of children. Policies that provide services to the maximum number of mothers may not be those that most effectively enhance child development. Targeting needy children for services may miss other children who could also benefit from quality child care. And child care centers that promote social skills may not be the most effective at also enhancing the cognitive skills necessary for success in life. While it may be unrealistic to expect unanimous agreement on the priority that should be given to different child care policy goals, a recognition that goals can conflict is likely to be helpful to policy discussion and evaluation. Second, hard evidence that quality child care matters for future outcomes is likely to be essential to building and maintaining support for child care programs.

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III. What is the Economic Case for Governmental Investment in Children?

A. Equity

An economic case for government intervention in child health programs can be made on the grounds of equity. People who start out with very unequal endowments are likely to end up with very unequal allocations, even if the outcome is efficient (Inman 1986). A government that is concerned with equity can compensate for differences in final outcomes, attempt to equalize initial endowments, or both. In principal, spending on programs of each type can be increased until the marginal benefit associated with an additional dollar of spending is equalized.

However, equalizing early endowments through provision of appropriate preventive care may be a superior approach to the problem of unequal allocations, both because it avoids many of the moral hazard problems that arise when society attempts to compensate those with poor outcomes, and because prevention may be a more cost-effective way of promoting equity than compensating for unequal outcomes ex poste. In many cases, an ounce of prevention is worth much more than a pound of cure. For example, lead abatement and the treatment of lead poisoning prevents permanent brain damage, and abstention from alcohol during pregnancy prevents retardation caused by fetal alcohol syndrome (the leading preventable cause of mental retardation in developed countries).

Similarly, Furstenberg, Brooks-Gunn, and Morgan (1987) present evidence that it is important for children to get "off on the right foot" in school, and that children who lived in disadvantaged families when they started school had worse average performance than other children even if their parents' situation improved subsequently. The difficulty of overcoming poor endowments later in life, for example through job training programs for high school dropouts, makes early intervention through quality child care attractive as well[(1)]. The fact that so much policy emphasis has been placed on providing health care to uninsured children probably reflects concerns about equity, much more than it reflects concerns about the existence of the possible "failures" in the market for health care which are discussed in the next section.

B. Market Failures: Liquidity Constraints, Information Problems, and Externalities

A second broad justification for government intervention in child health programs is that there is a market failure in this area that the government might be able to address. Indeed, several market failures are likely to be important, including liquidity constraints, information failures, and externalities.

Liquidity constraints may prevent parents from making optimal investments in the human capital of their children. It is worth pointing out that liquidity constraints are likely to be much more binding in the case of child care than in the case of basic preventive medical services for children. For example, it may cost $50 to $100 to take a child for a checkup, but Blau (2000) reports that in 1993, the average employed mother spent $80.57 (1999 dollars) per week on child care while working, if she made any payment. Moreover, high quality child care is much more expensive, with some parents paying $8,000 per year or more for center-based care.

However, liquidity constraints alone would only justify financial assistance to certain parents, not direct government intervention in the provision of health services. But information failures are also likely to be important. For example, studies of the content of prenatal care have indicated that one of the most important aspects of care is advice regarding appropriate weight gain, and abstention from smoking, alcohol, and illegal drugs (Kogan et al., 1994). The existence of information failures suggests that providing financial relief alone is unlikely to bring about optimal health outcomes.

Information failures are also likely to be important in the market for child care. For example, there is increasing evidence that parents find it difficult to evaluate the quality of child care centers, and that some parents pay for care of such low quality that it may be harmful to their children (Helburn and Howes, 1995; U.S. Department of Health and Human Services, 1998). This finding suggests that government may be able to improve quality by developing, publicizing and enforcing standards (see Klein and Leffler, 1981 for a theoretical development of this argument).

Finally, even altruistic parents may not take into account the consequences of the effects of their child raising decisions on those outside the family. For example, a child who is not immunized and later becomes hospitalized with a preventable illness, and/or infects others, imposes a burden on other citizens, a cost which may not be considered by the parents when they decide on their own investments in the child's human capital. Similarly, a child who becomes a welfare mother or a criminal creates negative externalities which may not be considered by the parents when they make child care decisions, while a successful child may create positive externalities in the form, for example, of higher tax revenues.

Externalities provide perhaps the strongest theoretical justification for direct government investments in the human capital of children. However, even the best justifications in terms of equity or market failures are moot if it is not actually possible to improve children's outcomes through intervention. Also, the theoretical literature is largely silent on the important question of whether government should focus primarily on improving the quantity or quality of child care. This question is really an empirical one in that the answer depends on whether government investments in quantity or quality have larger positive impacts. The next several sections draw out lessons regarding the effectiveness of child health policy that may have implications for child care policy.

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IV. Did Public Health Insurance Extensions Improve Children's Utilization of Health Care?

Although it is argued above that the goal of child health policy should be to improve health rather than merely to increase the utilization of care, in some cases, improvements in health are most likely to be obtained through increases in the use of medical care. Hence, this section considers the evidence regarding the effectiveness of the public health insurance expansions in increasing the utilization of care.

The first subsection offers a brief overview of these expansions. The second section deals with the problem of "takeup." The implication of this discussion for child care policy is that a policy that was like Medicaid, in that it made some children eligible for free or reduced price child care, would presumably also fail to achieve full takeup among eligibles, and might have particularly low takeup among some groups, such as immigrants.

As in Medicaid, low takeup might be due to the transactions costs associated with establishing eligibility for means-tested programs; to lack of information about eligibility for the programs or about the benefits of the programs (problems which could be addressed via outreach); or to a lack of supply of providers in some areas or for some children, at the government mandated price. A state-sponsored universal child care program (such as the system of creches in France) would overcome many of these problems since parents would know about it; transactions costs associated with enrolling would be minimal; and supply would be assured by the state as it is for public schools.

The third subsection deals with the problem of crowd out of private health insurance by the Medicaid program. Similarly, a large-scale publicly funded child care program is likely to replace a good deal of current private spending on child care. From a social perspective, one's view of such crowdout may differ depending on whether the care crowded out is better or worse on average than the care provided by the government. This issue may be politically charged in the case of child care, since some of the care "crowded out" is likely to be mother care.

A. An Overview of Recent Extensions of Eligibility for Health Insurance to Low Income Pregnant Women, Infants, and Children

The United States does not have universal health insurance coverage, but does have public insurance programs which cover the elderly, the disabled, and some women and children in poor families. Medicaid is the government program that covers the latter group. Medicaid was implemented in the late 1960s and early 1970s and was phased in at different rates across the states. From its inception until the mid-1980s, Medicaid coverage was tied to the receipt of cash welfare benefits. Income thresholds for welfare varied widely across states, but in general only female-headed households were eligible for benefits. Hence, as many as 30 percent of poor children lacked health insurance coverage (Bloom, 1990). A good deal of research has established that uninsured children have lower utilization rates, a less efficient distribution of utilization across sites of care, and worse health outcomes than other children (c.f. Kasper, 1986; Short and Lefkowitz, 1992).

In response to this lack of coverage and to rates of mortality and morbidity among U.S. children that were higher than in many other developed countries, the U.S. government began expanding Medicaid eligibility to previously uncovered groups of pregnant women and children in the mid-1980s. By July 1, 1991, states were required to cover all children born after Sept. 30, 1983 whose family incomes were below the poverty line. Currie and Gruber (1996a) estimate that these Medicaid expansions roughly doubled eligibility for Medicaid coverage among women of child bearing age from 15 to 35 percent, while Currie and Gruber (1996b) find that eligibility among children increased from 15 to 30 percent. It may surprise readers who think of the U.S. medical insurance system as primarily private to learn that approximately 40 percent of births were paid for by Medicaid in 1995 (National Governor's Association, 1997).

Typically, states were first given the option of extending coverage to specific groups, and then required to do so. The important point is that since states took up these options at different rates, and programs varied tremendously in terms of generosity to begin with, there has been a great deal of variation across states in both the income thresholds and the age limits governing Medicaid eligibility[(2)]. This variation in eligibility across states, years, and child age groups, can be used to identify the effects of eligibility for public insurance among the poor and near-poor children who became eligible.

As discussed above, SCHIP is the most recent in this line of federal initiatives. It is aimed at covering children in somewhat higher income families (families with incomes up to 200 percent of poverty). States have the option of continuing to expand their Medicaid programs, or of creating a new program.

B. Takeup, Transactions Costs, and the Importance of Outreach

Many analysts have shown that children with Medicaid coverage tend to have higher rates of utilization of care than uninsured children (c.f. Weisman and Epstein, 1990), though it is difficult to determine whether this relationship is causal. Currie and Thomas

(1995) use data from the National Longitudinal Survey of Youth (NLSY), which has followed the children of the initial female respondents since 1986. The longitudinal nature of the data allows them to include a fixed effect for each child, which controls for any unobserved, constant, characteristics of the home environment and of the child that might be correlated with Medicaid status. Their estimates indicate that both private insurance coverage and Medicaid coverage are associated with a higher number of visits for illness among white children, while for African-American children, insurance coverage has no significant effect on the number of sick child visits. Both white and African-American children receive more preventive care on Medicaid than with private health insurance.

However, there is no guarantee that increases in eligibility for health insurance will be translated into increases in coverage. Studies of the first years of these expansions of the income cutoffs show that despite the high fraction of births that are being paid for by the Medicaid program, many newly eligible, uninsured, pregnant women did not take up coverage in time to benefit from improved prenatal care. For example, Currie and Gruber (1996a) suggest that as many as half of newly eligible women did not take up coverage in time. These rates of non-participation are higher than those that have been estimated for AFDC and Food Stamps (Blank and Ruggles, 1996), or unemployment insurance (Blank and Card, 1991). Moreover, non-participation was concentrated among women who were not income-eligible for AFDC, suggesting that simply increasing the income eligibility cutoff did not break the link between receipt of cash welfare and Medicaid coverage. However, Currie and Gruber (2000) find that increases in Medicaid eligibility were associated with increases in the utilization of obstetric procedures, which is consistent with the view that when women did finally become covered (sometimes when they arrived at the hospital to deliver) they received more services.

Similarly, Currie and Gruber (1996b) analyze data from the Current Population Surveys and National Health Interview Surveys and find that about half of newly eligible children took up their Medicaid benefits, and that increases in eligibility were associated with increases in the utilization of care. For example, the probability that a child did not receive a doctor's visit in the past year fell 10 percentage points from a baseline level of 19 percent. That is, becoming eligible for Medicaid was estimated to reduce the probability of going without a doctor's visit by more than half.

Currie (1999) reports evidence that for immigrant children, eligibility may be associated with increased utilization of care even when coverage does not rise. This result seems to be attributable to the fact that in some cases providers can obtain reimbursement ex poste for treating Medicaid eligibles who are not covered at the time of service. Also, parents of eligible children may minimize the transactions costs associated with becoming covered by obtaining coverage only when they need services. Currie (1999) reports that Medicaid enrollments follow a seasonal pattern, rising in the summer (when children are presumably preparing for school) and falling to their lowest level in the winter when parents would be required to recertify them.

Most states have tried to encourage takeup by adopting administrative measures designed to simplify the Medicaid application process, especially for pregnant women. Common reforms include: presuming that pregnant women are eligible for Medicaid while their applications are being processed and/or expediting the processing of applications for pregnant women; dramatically shortening and simplifying application forms; and eliminating the requirement for face-to-face interviews by allowing mail-in applications from pregnant women. At the same time, recent declines in welfare caseloads may have caused many pregnant women and children to lose their Medicaid coverage. Many poor women obtained Medicaid coverage "automatically" when they enrolled in the Aid to Families with Dependent Children (AFDC) program. Thus, the loss of AFDC (now the Temporary Assistance for Needy Families or TANF program) effectively raised the administrative bar for women seeking Medicaid coverage, by requiring them to go through a separate and unfamiliar application process (Ellwood and Kenney, 1995)[(3)].

Currie and Grogger (2000) conduct a comparative evaluation of the effects of three types of policies (changes in income eligibility, administrative reforms, and changes in welfare caseloads) on the use of prenatal care and infant health using data from birth certificates covering all U.S. births between 1990 and 1996. They find that increases in income cutoffs were associated with increased use of prenatal care, while decreases in welfare caseloads were associated with reduced use of prenatal care, especially among African-Americans. The administrative reforms they considered had little effect. The fact that welfare caseloads continue to be linked to Medicaid takeup suggests that transactions costs or informational problems remain an important barrier to Medicaid coverage, despite the administrative reforms that have been undertaken. Low takeup of the Medicaid expansions have inspired other types of state efforts. For example, many states have conducted outreach programs designed to get women into prenatal care (Utah ran one of the earliest campaigns, called "Baby Your Baby"), and the new SCHIP program requires states to submit an outreach plan to the Health Care Financing Administration in order to receive federal matching funds. However, there has been little systematic attempt to evaluate these outreach efforts, or even to determine whether lack of information is the main reason that Medicaid eligibles remain unenrolled. In one of the few studies to examine characteristics of state outreach programs, Aizer (2001) reports that states that contracted out outreach efforts had higher enrollments in public health insurance than states that did not.

Even those who are covered by Medicaid may have difficulty obtaining preventive care, since Medicaid typically pays about half of what private health insurance would pay. One study of new mothers who had arrived in emergency rooms to deliver with "no physician of record" found that 64 percent of the women cited their inability to find a doctor willing to accept them as the largest barrier to obtaining prenatal care (Aved et al., 1993). Baker and Royalty (1996) use data from a longitudinal survey of California physicians observed in 1987 and 1991 and find that expansions of Medicaid eligibility to previously uninsured women and children increased the utilization of care provided by public clinics and hospitals but had little effect on visits to office based physicians. This is consistent with much previous evidence that many providers either do not accept Medicaid payments, or limit the amount of time that they spend with Medicaid patients (Sloan, Mitchell, and

Cromwell, 1978; Decker, 1992). These problems may be even more severe for minority mothers. American cities are highly segregated by race and income (Massey and Denton, 1993). Urban minorities often live in parts of the city that are shunned by physicians in private practice and hence are more likely to be served by large urban teaching hospitals (Fossett et al., 1992).

It is worth considering the one instance of great success in terms of takeup: the fact that most eligible pregnant women now have their deliveries paid for by Medicaid. While it may be quite difficult for individuals to overcome barriers to obtaining coverage, hospitals have both the incentive and the means to help women gain coverage since they must provide care to women in labor (Saywell, 1989). Many hospitals have established Medicaid enrollment offices on site. These offices assist people in completing applications and tell them how to obtain necessary documentation (GAO, 1994). Hospitals in at least 32 states and the District of Columbia also employ private firms to help them enroll eligible patients in the Medicaid program. Thus, it is not surprising that many births are covered by Medicaid even when prenatal care is not. This example indicates that takeup is likely to be higher when: a) the service is one that everyone wants; b) providers have incentives to facilitate takeup; and c) individual transactions costs are minimized.

C. Crowdout

In 1993, 67 percent of U.S. children were covered by private health insurance provided primarily by their parent's employers, 20 percent were covered by Medicaid, and 13.5 percent were uninsured (U.S. General Accounting Office, 1995b). A good deal of recent research focuses on the issue of whether public insurance tends to crowd out private insurance. The figures on insurance coverage for children are extremely suggestive: Despite the dramatic increases in public insurance coverage discussed above, the fraction of children without insurance coverage has stayed remarkably constant in recent years because private health insurance coverage has fallen by the same amount that public insurance coverage has risen (U.S. General Accounting Office, 1995b). However, private health insurance coverage has also been falling among groups that one would not expect to be affected by the Medicaid expansions, such as single men. Thus, it is not obvious to what extent the relationship between increases in public insurance and decreases in private insurance is causal.

Estimates of the extent of crowdout are sensitive to the methods used to control for possibly pre-existing trends in the provision of private health insurance coverage. At the high end of the spectrum of estimates, Cutler and Gruber (1996, 1997) estimate that for every two people covered by the Medicaid expansions, one person lost private health insurance. However, some of these people (such as household heads who decided they would no longer purchase health insurance once their children became eligible) were not themselves eligible for Medicaid — so not all of the people crowded out ended up getting insurance at public expense. They calculate that in fact about 40 percent of those crowded out ended up on Medicaid. Other observers have posed the question somewhat differently, and come up with correspondingly different estimates. For example, Dubay and Kenney (1997) find that about 22 percent of the increase in Medicaid coverage came from people who used to be privately insured. Since not everyone who became eligible for Medicaid did so as a result of the expansions, this number is necessarily smaller than Cutler and Gruber's estimate. Finally, one might ask what share of the overall decline in private insurance coverage is a result of the Medicaid expansions. The answer to this question is about 15 percent which suggests that a great deal of research remains to be done on the causes of this decline.

One issue obscured by the focus on crowdout is the fact that Medicaid insurance coverage may be better than what is privately available to many families. For example, many private policies do not cover routine pediatric preventive care such as immunizations, and most have copayments and limits on what they will pay. Hence, the substitution of Medicaid for private insurance coverage may improve children's health care, and this improvement should be valued when the costs and benefits of the expansions are weighed. Also, from a societal point of view, it does not matter whether private or public insurers pay for health care, except in so far as taxation creates a dead-weight loss, and public insurance transfers resources to families with children. Still, policy makers reluctant to raise (or eager to cut) taxes remain deeply concerned about crowdout.

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V. Does Public Investment in Health Care Improve Child Health?

This section continues the discussion of expansions of health insurance for low-income women and children, and also discusses recent progress in improving compliance with vaccination schedules among preschoolers. An important lesson for child care policy which can be drawn from these two examples is that factors that limit takeup may also limit the cost-effectiveness of child care programs. Suppose for example, that the children who would gain the most from quality child care are the least likely to enroll. This could occur if disadvantaged parents are most likely to be put off by complicated applications or most likely to lack information about programs that might be beneficial for their children. More research on takeup of existing child care programs is necessary to assess the extent to which these concerns are valid.

The immunization example also illustrates the fact that simply eliminating financial barriers is not sufficient to insure that the most needy children receive services. Moreover, it illustrates the importance of outreach to providers as well as eligible families in order to insure that quality care is received.

Finally, the evidence suggests that while health insurance expansions improved child health, they did not do so in the most cost-effective way possible. This conclusion may also have implications for child care policy although it would be very difficult to assess the cost effectiveness of child care policy at present given the lack of systematic information about a broad range of child outcomes and/or costs. Greater attention should be paid to rigorous evaluation of child care policy. It is conceivable that some policies (such as encouraging very young children to use computers, or encouraging the placement of infants in center-based care) may turn out to do more harm than good on average. It would be wise to remember the physician's motto of "First, do no harm"!

A. Effects of the Expansions in Eligibility for Insurance on Child Health

The least controversial measure of health is mortality. Mortality is affected both by underlying health status and by medical care received, and it is not possible to separate out these factors using mortality data alone. In the case of infants, it is possible to proxy underlying health status using birth weight. Currie and Gruber (1996a) focus on the recent extensions of Medicaid eligibility to pregnant women and infants and ask whether these extensions reduced the incidence of low birth weight in addition to reducing the infant mortality rate. They use state rules to calculate the fraction of 15 to 44 year old women in the March CPS who would be eligible for Medicaid coverage in the event of pregnancy in each state and year from 1979 to 1990. They then estimate models in which the fraction of low birth weight infants in the state, and the state infant mortality rates, are functions of the fraction of women who are potentially eligible. State and year dummies are included in the models in order to control for any state or year specific determinants of mortality[(4)].

They find that the observed 20 percentage point increase in Medicaid eligibility over the 1980s reduced the incidence of low birth weight by two percent and the incidence of infant mortality by 8.5 percent. Cole (1994) reports similar results regarding the incidence of low birthweight using county-level data. This finding supports an earlier study by Hanratty (1992) which showed that the introduction of universal health insurance in Canada was associated with a decrease in the infant mortality rate. As in the U.S., public health insurance was adopted by the Canadian provinces at different rates.

Currie and Gruber (1996b) estimate models in which aggregate state-level child mortality rates depend on the fraction of children eligible in each state, year, and age group. Using this objective measure of child health they find that the 15 percentage point increase in the fraction of children eligible for public insurance between 1984 and 1992 was associated with a .2 percentage point decline in child mortality, which translates into a 5.1 percent decrease in child mortality. Moreover, this difference is statistically significant for deaths from internal causes such as disease (which one might expect to be affected by medical intervention), but not for external causes such as accidents and homicides.

Thus, the evidence suggests that the expansions of public health insurance of the 1980s and 1990s were effective in reducing infant and child mortality. However, they probably did not achieve this goal in the most cost effective way. For example, some of the infants saved by Medicaid coverage of their births, might have been better served by earlier access to prenatal care. Moreover, as discussed above, Medicaid does not necessarily give children access to private physicians, and it is much costlier to treat children in settings such as emergency rooms. Children served in emergency rooms and outpatient clinics are more likely to be hospitalized (Gold and Greenlick, 1981) and audits of hospital records suggest both that 20 to 30 percent of pediatric hospitalizations are medically unnecessary, and that Medicaid coverage increases the probability of unnecessary hospitalization (Kemper, 1988). Medicaid coverage also seems to be associated with an increase in necessary hospitalizations for conditions that could have been prevented with adequate primary care. Both uninsured and Medicaid patients are more likely than privately insured patients to be hospitalized for chronic conditions such as asthma, and communities in which people report barriers to medical care also have higher rates of such hospitalizations (Bindman et al., 1995; Weisman et al., 1992).

B. Immunizations

While much of the attention of the public health community has been focused on expansions of public health insurance to low income women and children, there are other public health measures aimed at improving utilization of care which have had a significant impact. One of the most notable of these was the national effort to increase childhood immunization rates during the 1990s.

Immunizations are one of the few health care services to have been unambiguously shown to be cost effective. Some estimates suggest that a dollar spent immunizing a child can save up to $14.00 in future costs. Yet, a measles epidemic among preschoolers in the early 1990s highlighted the fact that immunization rates for preschoolers in the U.S. remained disturbingly low as of 1991 and 1992. Initial inquiries into the question suggested that one possible suspect should be ruled out. It is sometimes argued that relative to European countries, for example, the U.S. faces special public health problems because of a relatively large minority population. However, immunization rates were low even if one focused only on white children. For instance among three year old white children only 69 percent were up-to-date on Diptheria, Polio and Tetanus immunizations (Harvey, 1990).

Financial barriers seemed a more likely suspect, especially given the evidence that many American children were uninsured. The hypothesis that poverty might play a role prompted the federal government to develop the Vaccine for Children program in 1993. This program provides free vaccines to all children 18 and younger who are eligible for Medicaid, uninsured, under-insured (i.e. their private insurance coverage does not cover vaccines), or Native American. The aim of the program is to provide states with vaccines for free distribution to eligible children. However, four studies conducted by the Centers for Disease Control and Prevention concluded that vaccine costs had not been a major barrier to immunizations in the past because most children already had access to free vaccines through Medicaid or public health clinics.

The CDC concluded instead that many children were not immunized because their doctors failed to vaccinate them! "Missed opportunities" to vaccinate occur when a child who is eligible for a vaccination sees a provider and is not vaccinated, even though there are no valid contraindications. Researchers found that a high fraction of under-immunized children had in fact seen a provider recently (U.S. GAO, 1995a). For example, data from the 1988 National Maternal and Infant Health Survey suggested that 60 percent of inadequately immunized children in this national survey were reported to have received three well child visits by eight months of age (Mustin, Holt, and Connell, 1994).

The last few years have seen dramatic declines in the incidence of vaccine preventable diseases. In contrast to the thousands of cases of vaccine-preventable disease that occurred annually in the early 1990s, there were no cases of tetanus among children in 1996, or of polio, and only 4 cases of diptheria (U.S. DHHS, 1997). Moreover, indigenous transmission of measles has been interrupted, meaning that all new cases are brought in from outside the country (Orenstein, 2000). This tremendous improvement has been attributed to the Childhood Immunization Initiative (CII) launched by the federal government in 1993.

This initiative had many different components. First, new federal resources were given to state and local agencies to enable them to develop computerized tracking systems. Second, a national outreach program aimed at both parents and providers was launched. For example, providers can obtain a kit from CDC called "Make Every Visit Count" that enables them to assess their immunization practices. Third, the Centers for Disease Control undertook to develop a National Immunization Survey of preschool children which would allow them to identify problem areas. Fourth, efforts were made to coordinate the activities of federal agencies that provide vaccines or have access to high-risk populations of children (such as the Special Supplemental Feeding Program for Women Infants and Children (WIC), which serves approximately 44 percent of the U.S. birth cohort) so that it would be possible to keep better track of immunizations. Finally, funding was set aside for research into improved vaccines (such as new combination vaccines) which would make it easier to comply with immunization schedules. The initiative also included the federal Vaccine for Children Program discussed above, as well as funds to hire personnel and extend immunization clinic hours (U.S. Centers for Disease Control 1994, 1997).

This example suggests that even in the case of an intervention that is known to be cost effective, and is widely accepted as being beneficial by parents, it takes a concerted and multi-pronged effort to make sure that the intervention is delivered to everyone who needs it. The elimination of financial barriers was not sufficient to get every child immunized. It was also necessary to undertake outreach to both providers and parents, and to track children in order to insure that they were getting the needed immunizations.

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VI. The Importance of Non-Medical Threats to Health

Although the bulk of this essay focuses on the effects of recent extensions of health insurance coverage, it is important to remember that health care is only one input into the production of child health, and there is overwhelming evidence that in most cases it is far from the most important input. Improvements in standards of living, advances in knowledge about disease and hygiene, and public health measures such as improved sanitation and the provision of clean drinking water have done more to improve child health in the past 150 years than even the most spectacular advances in personal medical care (Preston, 1977). Today, accidents and violence are the major killers of young children in wealthy countries after the first year of life (Unicef, 2001). Accidents are often viewed as unavoidable and violence is seen as a problem for the criminal justice system rather than a public health problem. Yet variation in rates of death from these causes across countries suggests that many deaths could be prevented. For example, in the U.S. there were approximately 25 accidental deaths per 100,000 children 1 to 14 per year in the 1990s compared to 13 deaths per 100,000 in Sweden over the same period. Moreover, substance abuse and poor eating habits threaten children from conception and into adulthood.

Currie and Hotz (2001) show that some types of child care regulation, and particularly minimum educational requirements for care givers in day cares, are effective in preventing accidental deaths in children. Thus, there may be some scope for child care policy to directly affect health outcomes, although most accidents occur outside child care settings.

Similarly, although quality child care may improve child outcomes (and poor quality child care can harm children), it is important to remember that families are the most important overall contributors to child well-being. The NICHD Study of Early Child Care found that child care situations with better "structures" as measured by safer, cleaner, more stimulating environments and better child-staff ratios also tended to be better in terms of "classroom process" — that is, caregivers who were more sensitive to the children and provided more cognitively stimulating care (NICHD Early Child Care Research Network, 1999). However, the study found that family income, maternal vocabulary, home environment and maternal cognitive stimulation were much stronger predictors of children's behavior problems and cognitive development than any characteristics of the child care they were in (NICHD Early Child Care Research Network, 2000). Thus, programs such as Head Start, which emphasize a holistic approach to assisting preschool children from needy families, may be on the right track, though this aspect of Head Start has not been subject to rigorous evaluation.[(5)]

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VII. Conclusions

The rationale for government involvement in child care policy is similar to that for investment in child health in that it rests on a commitment to equity as well as the existence of market failures such as liquidity constraints, imperfect information, and externalities associated with sub-optimal investment in children by parents. The two types of interventions share a fundamental goal, which is to improve short and long-term child outcomes. Moreover, quality child care may play a direct role in the promotion of child health by preventing injury, abuse, and neglect.

Given these similarities and the relatively long involvement of government in efforts to improve child health, some important lessons can be drawn for child care policy. First, it is important for the goals of particular policy recommendations to be explicit, since goals may conflict. Second, there is a tradeoff between the problems of takeup faced by means-tested programs, and the much larger amount of crowdout that is likely to be created by universal programs. Third, there is a great need for rigorous evaluation of all aspects of child care policy. That is, we need to know more about the long-term effects of child care as well as about issues surrounding takeup, crowdout, etc. Finally, we need to remember that just as the family is the most important mechanism for safeguarding child health, the family is likely to remain the most important supplier of child care. Hence, policies that support good parenting are likely to be an important component of sound child care policy.

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Endnotes

1. Evaluations of public sector efforts to train low-skilled adult workers have generally found very small returns. Lalonde's (1995) survey of the training literature points out that most training programs for adult males and youths have been ineffective (the exception for youths being the costly Job Corps program). And among poor adult women, the

evidence shows rapidly diminishing returns to training investments suggesting that it may not be possible to raise earnings a great deal.

2. This point can be illustrated with reference to 11 of the largest states. As of January 1988, 8 of these states had taken advantage of the option to extend Medicaid coverage to previously ineligible children. By December 1989, all 11 of them had done so. However there was still a great extended coverage to children up to 6 years old in families with incomes below 100% of the poverty line, while New York only covered children up to one year old, but extended coverage to infants in families with incomes up to 185% of the poverty line.

3. Pregnant women who are not automatically eligible for Medicaid may be required to show birth certificates and/or citizenship papers, rent receipts and utility bills to prove residency, and pay stubs as proof of income. Many states have a time limit on the number of days the applicant can take to provide documentation — for example, Georgia gives 10 working days. Applicants are often required to return for several interviews. The available evidence suggests that up to a quarter of Medicaid applications are denied because applicants do not fulfill these administrative requirements: They cannot produce the necessary documentation within the required time or fail to attend all of the required interviews (GAO, 1994).

4. A possible drawback to this strategy is that since Medicaid is means-tested, the actual fraction eligible for Medicaid may depend on business cycle effects, or on omitted variables specific to states and years. It is possible to construct an eligibility measure that reflects only variations in state rules by using a nationally representative sample and calculating the fraction of women in this sample who would be eligible for Medicaid in each state and year. This "simulated eligibility" measure will be exogenous as long as state rules can themselves be treated as exogenous variables. The plausibility of this assumption is bolstered in this case by the fact that much of the change in legislation (though not all) was in response to federal mandates, and thus not directly under the control of state legislators. An additional advantage of this procedure is that sampling variation due to the fact that there are small cell sizes in some states and years is eliminated. This procedure was used to obtain the estimates discussed in this section.

5. Head Start is a preschool program for disadvantaged children which aims to improve their skills so that they can begin schooling on an equal footing with their more advantaged peers. In addition to quality center-based care, Head Start offers training to parents and referrals to other community services. Currie (2001) provides an evaluation of the existing evidence regarding Head Start and other early intervention programs.

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