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EARLY CHILDHOOD EDUCATION AND CARE

THE CASE FOR INVESTING IN DISADVANTAGED YOUNG CHILDREN*

JAMES J. HECKMAN**

Introduction

In a series of papers with distinguished co-authors, I have developed the case for intervening in the lives of disadvantaged children. This paper reviews the arguments developed in Cunha, Heckman, Lochner and Masterov (2006), Heckman and Masterov (2007) and Heckman (2000, 2008).

This body of research examines the origins of inequality and analyzes policies to alleviate it. Families play a powerful role in shaping adult outcomes. The accident of birth is a major source of inequality. Recent research by Cunha and Heckman (2007a) shows that in American society, about half of the inequality in the present value of lifetime earnings is due to factors determined by age 18. It is possible that the figure is as high or even higher in Western Europe because labor market inequality is lower there. Compared to 50 years ago, a greater fraction of American children is being born into disadvantaged families where investments in children are smaller than in advantaged families. Growing unassimilated immigrant populations in Western Europe create similar adverse trends there. Policies that supplement the child rearing resources available to disadvantaged families reduce inequality and raise productivity.

The argument made in the cited papers can be summarized by the following 15 points:

1. Many major economic and social problems such as crime, teenage pregnancy, dropping out of

- high school and adverse health conditions are linked to low levels of skill and ability in society.
2. In analyzing policies that foster skills and abilities, society should recognize the multiplicity of human abilities.
3. Currently, public policy in the U.S. and many other countries focuses on promoting and measuring cognitive ability through IQ and achievement tests. A focus on achievement test scores ignores important noncognitive factors that promote success in school and life.
4. Cognitive abilities are important determinants of socioeconomic success.
5. So are socioemotional skills, physical and mental health, perseverance, attention, motivation, and self confidence. They contribute to performance in society at large and even help determine scores on the very tests that are commonly used to measure cognitive achievement.
6. Ability gaps between the advantaged and disadvantaged open up early in the lives of children.
7. Family environments of young children are major predictors of cognitive and socioemotional abilities, as well as a variety of outcomes, such as crime and health.
8. Family environments in the U.S. and many other countries around the world have deteriorated over the past 40 years. A greater proportion of children is being born into disadvantaged families including minorities and immigrant groups. Disadvantage should be measured by the quality of parenting and not necessarily by the resources available to families.
9. Experimental evidence on the positive effects of early interventions on children in disadvantaged families is consistent with a large body of non-experimental evidence showing that the absence of supportive family environments harms child outcomes.
10. If society intervenes early enough, it can improve cognitive and socioemotional abilities and the health of disadvantaged children.
11. Early interventions promote schooling, reduce crime, foster workforce productivity and reduce teenage pregnancy.
12. These interventions are estimated to have high benefit-cost ratios and rates of return.



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13. As programs are currently configured, interventions early in the life cycle of disadvantaged children have much higher economic returns than later interventions, such as reduced pupil-teacher ratios, public job training, convict rehabilitation programs, adult literacy programs, tuition subsidies or expenditure on police. The returns are much higher than those found in most active labor market programs in Europe (See Heckman, LaLonde and Smith (1999) and Martin and Grubb (2001)).
14. Life cycle skill formation is dynamic in nature. Skill begets skill; motivation begets motivation. Motivation cross-fosters skill and skill cross-fosters motivation. If a child is not motivated to learn and engage early on in life, the more likely it is that when the child becomes an adult, he or she will fail in social and economic life. The longer society waits to intervene in the life cycle of a disadvantaged child, the more costly disadvantage is to remediate.
15. A major refocus of policy is required to capitalize on knowledge about the importance of the early years in creating inequality and in producing skills for the workforce.

The evidence assembled in this body of work substantially amends the analysis of *The Bell Curve* by Herrnstein and Murray (1994). Those authors made an important contribution to academic and policy analysis by showing that cognitive ability as captured by achievement test scores measured in a child's adolescent years predicts adult socioeconomic success on a variety of dimensions. Heckman, Stixrud and Urzua (2006) and Borghans, Duckworth, Heckman, and ter Weel (2008) demonstrate that personality factors are also powerfully predictive of socioeconomic success and are as powerful as cognitive abilities in producing many adult outcomes. Achievement tests of the sort used by Herrnstein and Murray reflect both cognitive and noncognitive factors.

The Bell Curve assigned a primary role to genetics in explaining the origins of differences in human cognitive ability and a primary role to cognitive ability in shaping adult outcomes. If cognitive ability is genetically determined and is primary in shaping adult outcomes, public policy towards disadvantaged populations is limited to transfer payments to the less able. Recent research, summarized in the cited papers, establishes the power of socioemotional abilities and an important role for environment and intervention in creating abilities. The field of epigenetics demonstrates how genetic expression is strongly influenced by envi-

ronmental influences and that environmental effects on gene expression can be inherited. The cited papers show that high quality early childhood interventions foster abilities and that inequality can be attacked at its source. Early interventions also boost the productivity of the economy.

Enriching early environments can partially compensate for early adversity

Experiments that enrich the early environments of disadvantaged children demonstrate causal effects of early environments on adolescent and adult outcomes, and provide powerful evidence against the genetic determinism of Herrnstein and Murray (1994). Enhancements of family environments improve child outcomes and affect both cognitive and noncognitive skills. Noncognitive skills – personality factors, motivation and the like – are an important channel of improvement (Heckman, Malofeeva, Pinto, and Savelyev (2008)).

The most reliable data come from experiments that substantially enrich the early environments of children living in low-income families. Two of these investigations, the Perry Preschool Program and the Abecedarian Program, are very informative for the purposes of this discussion because they use a random assignment design and collect long-term follow-up data. These longitudinal studies demonstrate substantial positive effects of early environmental enrichment on a range of cognitive and noncognitive skills, schooling achievement, job performance, and social behaviors, long after the interventions ended. Data from David Olds' Nurse Family Partnership Program (2002) and from non-controlled assessments of Head Start and the Chicago Child-Parent Centers programs confirm these findings.¹

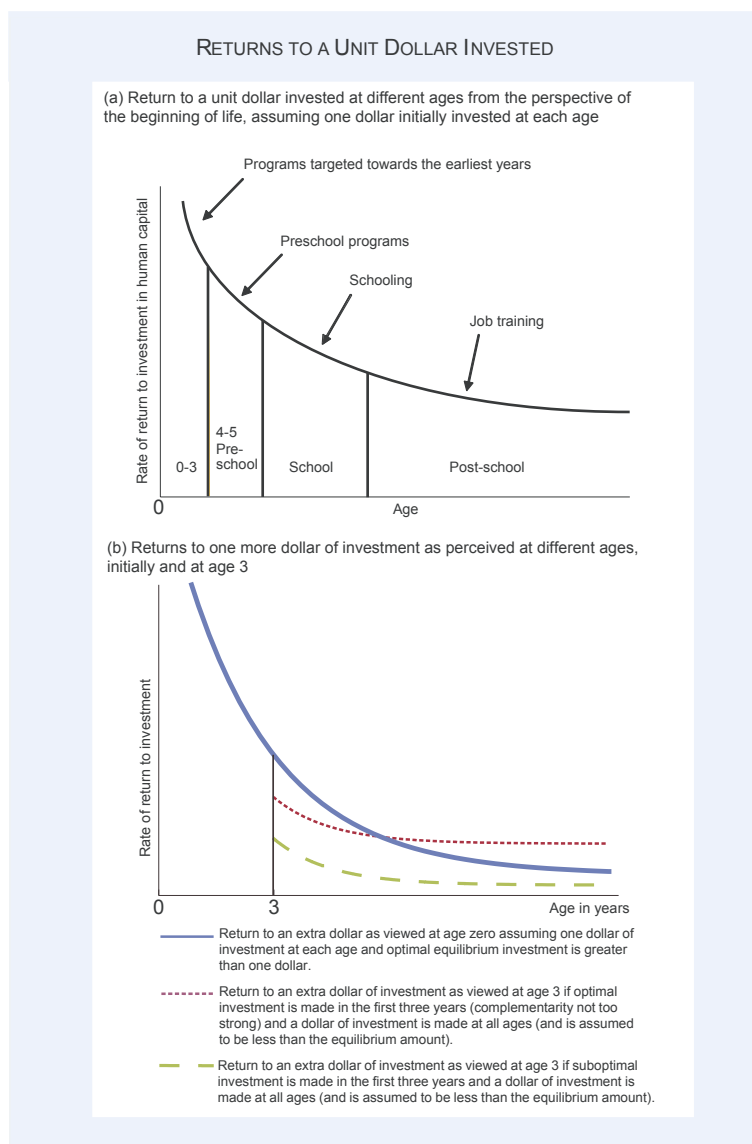
An estimated rate of return (the return per dollar of cost) to the Perry Program is in excess of 14 percent.² This high rate of return is higher than standard returns on stock market equity (7.2 percent) and suggests that society at large can benefit substantially from such interventions. These are underestimates of the rate of return because they ignore the economic returns to health and mental health.

Several observations about the evidence from the intervention studies and non-experimental longitudi-

¹ See Cunha, Heckman, Lochner, and Masterov (2006) and Heckman (2008) for a detailed discussion of these programs.

² See Heckman, Moon, Pinto, and Yavitz (2008).

Figure 1



nal studies are relevant. Skills beget skills and capabilities foster future capabilities. All capabilities are built on a foundation of capacities that are developed earlier. Early mastery of a range of cognitive, social, and emotional competencies makes learning at later ages more efficient and therefore easier and more likely to continue.

As currently configured, public job training programs, adult literacy services, prisoner rehabilitation programs, and education programs for disadvantaged

adults produce low economic returns.³ Moreover, for studies in which later intervention shows some benefits, the performance of disadvantaged children is still behind the performance of children who experienced earlier interventions in the preschool years. If the base is weak, the return to later investment is low.

The advantages gained from effective early interventions are best sustained when they are followed by continued high quality learning experiences. The technology of skill formation developed in Cunha and Heckman (2007b) and Heckman (2007) shows that the returns on school investment are higher for persons with higher ability, where ability is formed in the early years. Figure 1 (a) shows the return to a marginal increase in investment at different stages of the life cycle starting from a position of low but equal initial investment at all ages.⁴

Due to dynamic complementarity, or synergy, early investments must be followed by later investments if maximum value is to be realized. One unusual feature of early interventions that

is stressed in Cunha and Heckman (2007b) and Heckman and Masterov (2007) is that the traditional equity-efficiency trade-off that plagues most policies is absent. Early interventions promote economic efficiency and reduce lifetime inequality. Remedial interventions for disadvantaged adolescents who do not receive a strong initial foundation of skills face an equity-efficiency trade-off. They are difficult to justify on the grounds of economic efficiency and generally have low rates of return.

Cunha and Heckman (2008) and Cunha, Heckman, and Schennach (2007) estimate technologies of skill formation to understand how the skills of children evolve in response to (1) the stock of skills children have already accumulated; (2) the investments made by their parents; and (3) the stock of skills accumulated by the parents themselves.

³ See Cunha, Heckman, Lochner, and Masterov (2006) and Heckman and Lochner (2000) for evidence on the returns to adolescent interventions for disadvantaged youth.

⁴ The curve is not an equilibrium schedule. It is a return to a unit of investment at each age assuming an initial low and equal investment at all ages that is below the final equilibrium level at each age. The equilibrium investment policy would allocate more resources to the early years and less to later years.

Table 1

Comparison of different investment strategies with regard to disadvantaged children^{a)}

Outcome	Baseline	Changing early conditions: changing investment from the 1 st to 7 th decile of the overall distribution of early investment	Adolescent intervention: moving investments at last transition from 1 st to 9 th decile of overall investment ^{b)}	Changing initial conditions and performing a balanced intervention using the resources spent on the adolescent intervention
High school graduation	0.4109	0.6579	0.6391	0.9135
Enrollment in college	0.0448	0.1264	0.1165	0.3755
Conviction	0.2276	0.1710	0.1773	0.1083
Probation	0.2152	0.1487	0.1562	0.0815
Welfare	0.1767	0.0905	0.0968	0.0259

^{a)} Disadvantaged children: First decile in the distribution of cognitive and noncognitive skills at age 6. Mothers are in first decile in the distribution of cognitive and noncognitive skills at ages 14–21. ^{b)} 35–50%; more costly. This is the range produced from a two standard deviation confidence interval.

Source: Cunha and Heckman (2006).

Figure 1(b) repeats the curve of Figure 1(a) on a different scale and also shows the return to an extra dollar of investment at *age three* under two different scenarios. In the first scenario (depicted by the tightly-spaced dashed line), optimal investment up to age three is assumed to have been made. An additional dollar is invested at each age after age three and the return to the next dollar after that is computed. At age three, the curve starts below the curve (a) that is determined at age zero because substantial investment is assumed to have been made at age three. This is a manifestation of diminishing re-turns. After age three, the return eventually is greater than the initial curve for Figure 1(a) because of dynamic complementarity. The higher skill base at three enhances the productivity of later investment.⁵

The third curve (the curve with wider dashes) depicts a case with suboptimal investment in the years zero to three. Assuming that a dollar is initially invested in each year after age three, the return to the next dollar is less than the return viewed prospectively. When the initial base is substantially compromised, so are the returns to later investment.⁶

Table 1 presents a simulation of the model of Cunha et al. (2007). It considers a population of disadvantaged children with low levels of skills as

measured at ages four to six. The investments they receive place them at the bottom decile of the overall population ability distribution. Their mothers are also at the bottom decile of the distribution of maternal endowments. For the outcomes listed in the first column, the baseline (no treatment) performance is presented in the second column “Baseline.” These outcomes are those of the Perry control group.

Using an empirically determined technology, Cunha and Heckman (2006) simulate an intervention that moves children from the bottom decile of family resources to the seventh decile (from the bottom) in terms of their family environments. This produces the outcomes displayed in the third column of Table 1. This intervention essentially produces the outcomes for the Perry treatment group (see Schweinhart, Montie, Xiang, Barnett, Belfield, and Nores (2005)). The fourth column of Table 1 is a later adolescent intervention that also causes children to achieve Perry outcomes. To achieve Perry results in this fashion requires 35–50 percent *more* investment costs in present value terms discounted back to ages four to six (the age of the initial intervention). Family resources must be moved from the bottom decile to the ninth decile to achieve with later interventions what can be achieved with earlier interventions.

It is possible to remediate rather than to intervene early, but it is also much more costly. The outcomes displayed in the final column of Table 1 result from allocating the resources spent in the adolescent intervention more smoothly over the life cycle of the child. Such interventions front load investment in

⁵ The curve is drawn assuming moderate dynamic complementarity. In principle, the interval between age three and the crossing age could be made arbitrarily small.

⁶ Many different configurations of the age three investment curve are possible depending on the extent of diminishing returns within a period and the strength of dynamic complementarity of investments over time.

the early years, following the logic of Figure 1(a) and the model developed in Cunha and Heckman (2007b) and Heckman (2007, 2008). Relatively more investment is spent in the early years, but early investments are supported by later investments.

Suppose that the resources required to produce Perry outcomes solely from adolescent interventions are spread more smoothly over the life cycle using an optimal investment strategy. This causes Perry-like children to attain middle class outcomes as is shown in the final column of numbers.

The evidence in the recent research literature supports the economic efficiency of early initial investment that is sustained. The optimal policy is to invest relatively more in the early years. But early investment must be followed up to be effective. This is a consequence of dynamic complementarity. Later remediation for early disadvantage is possible but to attain what is accomplished by early investment is much more costly. If society intervenes too late and individuals are at too low a level of skill, later investment can be economically inefficient. Middle-class children receive massive doses of early enriched environments. Children from disadvantaged environments do not.

Practical issues in implementing early childhood programs

A variety of practical issues arise in implementing early childhood programs.

- *Who should be targeted?* The returns to early childhood programs are the highest for disadvantaged children who do not receive substantial amounts of parental investment in the early years. The proper measure of disadvantage is not necessarily family poverty or parental education. The available evidence suggests that the quality of *parenting* is the important scarce resource. The quality of parenting is not always closely linked to family income or parental education. Measures of risky family environments should be developed that facilitate efficient targeting.
- *With what programs?* Programs that target the early years seem to have the greatest promise. The Nurse-Family Partnership Program (Olds (2002)), the Abecedarian Program and the Perry Program have been evaluated and show high

returns. Programs with home visits affect the lives of the parents and create a permanent change in the home environment that supports the child after center-based interventions end. Programs that build character and motivation that do not focus exclusively on cognition appear to be the most effective.

- *Who should provide the programs?* In designing any early childhood program that aims to improve the cognitive and socioemotional skills of disadvantaged children, it is important to respect the sanctity of early family life and to respect cultural diversity. The goal of early childhood programs is to create a base of productive skills and traits for disadvantaged children living in culturally diverse settings. By engaging private industry and other social groups that draw in private resources, create community support, and represent diverse points of view, effective and culturally sensitive programs can be created.
- *Who should pay for them?* One could make the programs universal to avoid stigmatization. Universal programs would be much more expensive and create the possibility of deadweight losses, whereby public programs displace private investments by families. One solution to these problems is to make the programs universal but to offer a sliding fee schedule by family income to avoid deadweight losses.
- *Will the programs achieve high levels of compliance?* It is important to recognize potential problems with program compliance. Many successful programs change the values and motivations of the child. Some of these changes may run counter to the values of parents. There may be serious tension between the needs of the child and the acceptance of interventions by the parent. Developing culturally diverse programs will help avoid such tensions. One cannot assume that there will be no conflict between the values of society as it seeks to develop the potential of the child and the values of the family, although the extent of such conflicts is not yet known.

Summary

About 50 percent of the variance in inequality in lifetime earnings is determined by age 18. The family plays a powerful role in shaping adult outcomes that is not fully appreciated in current policies around the world.

Current social policy directed toward children focuses on improving cognition. Yet more than intelligence is required for success in life. Gaps in both cognitive and noncognitive skills between the advantaged and the disadvantaged emerge early and can be traced in part to adverse early environments. A greater percentage of children in the U.S. and many other countries is being born into adverse environments.

The problems of rising inequality and diminished productivity growth are not due mainly to defects in public schools or to high college tuition rates. Late remediation strategies designed to compensate for early disadvantage such as job training programs, high school classroom size reductions, convict rehabilitation programs, adult literacy programs and other active labor market programs are not effective, at least as currently constituted. Remediation in the adolescent years can repair the damage of adverse early environments, but it is costly. There is no equity-efficiency trade-off for programs targeted toward the early years of the lives of disadvantaged children. There is a substantial equity-efficiency trade-off for programs targeted toward the adolescent years of disadvantaged youth. Social policy should be directed toward the malleable early years.

Any proposed program should respect the primacy of the family. Policy proposals should be culturally sensitive and recognize the diversity of values in society. Effective strategies would engage the private sector to mobilize resources and produce a menu of programs from which parents can choose.

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WHY GOVERNMENTS SHOULD INVEST IN EARLY EDUCATION

W. STEVE BARNETT*

Over a century ago, the English economist Alfred Marshall elucidated the rationale for public investment in education in his *Principles of Economics*: “Education must be made more thorough. The schoolmaster must learn that his main duty is not to impart knowledge, for a few shillings will buy more printed knowledge than a man’s brain can hold. It is to educate character, faculties, and activities; so that the children of even those parents who are not thoughtful themselves may have a better chance of being trained up to become thoughtful parents of the next generation. To this end public money must follow freely. And it must flow freely to provide fresh air and space for wholesome play for the children in all working class quarters.”

Today, his conclusion applies to education from the very earliest years and in every nation around the globe. Indeed, the public interest in early education has become universal and transnational. As I hope to make clear, the citizens of the wealthiest countries have reason to be concerned about the education of all young children in their own countries and in less developed countries.

Scientists have learned much about the effects of education outside the home in the first five years of life. It is well-established that intensive early education can dramatically improve the learning and development of children from economically disadvantaged families. These early gains have long-term consequences for school success, employment and earnings, delinquency and crime, family formation

and fertility, and health. The evidence includes randomized trials (the gold standard for establishing causal connections) in nations that differ by orders of magnitude in their economic development, from the United States to Mauritius.

Three key studies

The fact that we can improve the learning, development, and life course of children through early educational investments does not mean that there is an economic rationale for such investments. An economic case for such investments requires estimates of their costs and benefits. Fortunately, three rigorous cost-benefit analyses have been conducted based on longitudinal studies through adulthood. These studies constitute a kind of Rosetta stone for interpreting the broader evidence on investments in early education. Their findings are summarized in Table 1, and each is briefly described.

All three studies were conducted in the United States to assess the effects of classroom-based education before age five on children from low-income families. I have worked on two of these, beginning with a cost-benefit analysis of the Perry Preschool program in 1981 using data through age 19. More recently, I helped update that analysis with data through age 40. In between, Len Masse and I conducted a cost-benefit analysis of the Abecedarian program, and other researchers conducted a similar cost-benefit analysis on the Chicago Child-Parent Centers.

Each of these cost-benefit analyses is independently important. However, they are even more important when considered together and in the context of the larger research literature. By considering them together we learn from the ways in which they are similar and gain confidence in the findings that are replicated. We also learn from their differences, which help to us to generalize beyond a specific time, location, population, program design and pedagogical approach, and to understand how variations in persons, process, and context affect the return on investment.



* W. Steve Barnett is Director of the National Institute for Early Education Research, and Board of Governors Professor, Rutgers University, New Brunswick, NJ.

Program descriptions

The High/Scope Perry Preschool was a two-and-a-half hours per day education program offered to small numbers of children in the public schools during the school year. Economically disadvantaged children were randomly assigned to the Perry Preschool at age three (for a small number age four) or to attend kindergarten at the normal starting age of five. The Perry Preschool classes had one teacher for every 6 or 7 children, whereas the typical primary school might have one teacher in a classroom of 25 to 30 children. The preschool teachers had at least baccalaureate degrees in education and were licensed public school teachers. The curriculum emphasized the broad development of the child, much along the lines advocated by Marshall, though influenced more by Piaget and other psychologists.

The Abecedarian program was developed a decade later than the Perry Preschool, at a time when full-day child care was more acceptable. In this randomized trial, the program delivered education in classrooms for up to ten hours per day over 50 weeks, and served children from before age one to age five. With this schedule and age range, it is the only one of these three programs that met the child care needs of parents working full-time or even long part-time hours. Thus, it is also the only one that might increase maternal employment. Abecedarian had broad educational goals and emphasized play, but it may have been more educationally narrow than the other programs. Staffing patterns were similar to the Perry Preschool in having high ratios of well-qualified and adequately paid teachers to children, though of course there were even fewer children per teacher for children under three (e.g., three children per adult for infants).

Yet another decade later, the Child-Parent Center (CPC) study was launched. In contrast to the other two studies, it was not a randomized trial, but compared children in matched neighborhoods. Some consider this study to provide a better “real life” test of early education because it was implemented on a large scale by the Chicago Public Schools with teacher-child ratios that are more typical of preschool programs in the United States. The CPCs can be viewed as a replication of the Perry Preschool approach (in overall design) at a lower dosage. Both were two-and-a-half hour per day programs during the school year (about 180 days) with well-educated, adequately paid teachers. However, the CPCs

employed one teacher and an assistant (who may have no post-secondary education) for every classroom of 18 children. Thus, it is a less intensive, lower dosage program from which one would expect the same kinds of effects as produced by Perry, but smaller in size.

Program effects

All three of these preschool education programs were found to produce gains in long-term academic achievement and educational attainment (e.g., completing of secondary school). In addition, there were other indications of positive effects on school progress: all three decreased special education and two decreased grade repetition (when children fail and must repeat a grade). These results have been replicated by many other studies in Europe and Latin America as well as the United States, with the most common long-term findings being reductions in grade repetition and special education placement.

The two studies (Perry and Abecedarian) that measured effects on cognitive abilities prior to age five both found large gains from program participation. These early cognitive gains give rise to the later achievement and school progress gains. These early cognitive gains are quite large, roughly an order of magnitude larger than the cognitive gains found for typical child care or parenting education programs. However, there is an interesting difference in cognitive outcomes between the Perry and Abecedarian studies.

The Abecedarian program produced a permanent increase in IQ (general cognitive ability) as well as in achievement (subject matter specific knowledge and skills). Perry produced a permanent increase in only achievement. This pattern is seen across the larger research literature – only classroom programs over most of the first five years of life have produced permanent gains in IQ. Thus, educational investments that start prior to age three may have an advantage in building more foundational cognitive abilities, though the practical consequences of this are unknown. It is tempting to attribute the persistence of achievement effects in the absence of permanent IQ gains to motivation, persistence, and other “non-cognitive” traits. This leap is not warranted. Perhaps IQ represents potential abilities, and achievement attained abilities. Perhaps children who attended preschool education learned more and developed

stronger cognitive abilities in reading and math, but these do not generalize to IQ at older ages.

The entire literature indicates that some decline in the initial cognitive advantages of early education occurs after children leave the preschool program and begin school. In the Abecedarian study, for example, the permanent IQ advantage was only about half the initial gain. However, “fade out” is neither so rapid nor so great as to preclude permanent educational advantages. Indeed, to some extent it is not a fade out at all, but the result of cognitive gains after school entry for children who did not have preschool education. The grade repetition and special education results themselves are evidence that school systems spend greater resources compensating children who are further behind.

Two other interesting effects evident in these studies are decreased crime and decreased smoking. Both are predicted by the well-known association between educational attainment and these activities. Although the CPC study did not ask participants about cigarette smoking, the other two studies did. Although there is no statistically significant effect when the studies are considered individually, I noticed the similarity in results between the two studies and pooled their data to provide a more powerful statistical test. When the studies are pooled, the result is statistically significant. There may well be other long-term health behaviors that are improved by preschool education, but which could be detected only in large studies because they affect relatively small parts of the population.

All three studies investigated effects on crime, but only two found such effects. Both half-day programs found effects on arrests. The full-day program did not. There are at least two plausible explanations for this result. One is differences in the curriculum. Several randomized trials have found that curricula vary in their influence on executive function, self-regulation, and social skills and behavior, thereby producing different impacts on behavior while having the same impacts on achievement. As Marshall might have said, it is possible to improve intellect without improving character. The other explanation concerns differences in context. The Abecedarian study took place in a community with a very low rate of crime. It may not be possible to further reduce crime if it is already quite low. The Perry and CPC studies had nearly identical impacts on juvenile arrests (the CPC study has not yet published adult crime results).

Remarkably, a randomized trial of enriched half-day preschool education in Mauritius replicated this finding of crime reduction in young adults.

Costs and benefits

Economic analysis of these preschool education studies begins by estimating their costs and benefits. To make all costs and benefits comparable, adjustments are made for inflation and timing (a benefit next year is worth more than the same benefit 20 years later). Thus, the costs and benefits in the Table are the present value of the estimated streams of costs and benefits over time calculated using a real discount rate of three percent. All three programs yield benefits that far exceed costs, that is, net present value is strongly positive. Net present value remains positive at very high discount rates for the two half-day programs and somewhat higher rates for the Abecedarian program. Thus, the results withstand reasonable variations in the choice of discount rate, and are particularly robust for the part-day programs. In fact, the part-day programs yield double digit real rates of return, far exceeding the historical average for private equities.

The consistency across the three cost-benefit analyses is notable, especially since not all benefits were included in every study. All three include the benefits of reduced costs of special education and grade repetition in primary and secondary schools (to some extent offset by increased costs of more post-secondary education). All three include the value of increased compensation in the labor market for program participants and their mothers (zero for half-day programs). All three include the value of any decreases in criminal justice system and victim costs (zero for the full-day program).

The Abecedarian benefit-cost analysis was the most comprehensive. The half-day program analyses omitted from consideration two key benefits: health benefits (from decreased smoking) and second generation earnings benefits (projected based on the intergenerational transmission of labor market productivity). All three underestimate health benefits as even the Abecedarian study includes only the value of decreased mortality and omits health care cost savings and the benefits of better health *per se*.

One of the most striking differences illuminated by a cross-study comparison concerns child care and

maternal earnings. Every preschool education classroom provides child care and education. They are as much “joint products” as wool and mutton. However, just as sheep may be raised primarily for meat or wool, so it is with child care and education. The part-day programs produced little child care, a few hours per day 180 days per year, requiring a mid-day pick-up that would conflict with many regular work schedules. Abecedarian provided up to 10 hours per day virtually every work day for nearly five years. Accordingly, Abecedarian was much more expensive. The short-term value of its child care was considerable, but would not offset the added cost of an intensive educational program like Abecedarian. However, mothers in the Abecedarian study were asked to report their earnings in years after the children entered school, and we found a substantial increase in their long-term compensation. Apparently, mothers who took more time out of the labor force to care for their children over those five years paid a high price in terms of lower long-term earnings.

Two other striking differences in benefit estimates are found. First, estimated earnings gains are larger in the Perry study, but this is not likely a true difference in effects. The other two studies have only collected data to the end of secondary education or just beyond. Thus, their estimated effects on earnings are conservative projections based on census data relating educational attainment to earnings. The Perry study has actual earnings data through age 40, and was much less reliant on projections. Second, the Abecedarian program did not reduce crime. In the other two studies benefits from crime reduction are quite large.

Public policies

These and other studies indicate that there are high rates of return to investments in preschool education, at least for economically disadvantaged children. However, it may be asked whether public investments are necessary to secure these benefits. I would say yes for several reasons. The highest economic returns are for children from lower income families who have limited ability to pay for such programs. Also, individual families face substantial risks that their child might not receive average or even near average benefits. Even if they could borrow at reasonable rates to finance early education, parents cannot be assured of having the means to repay the

loans. Of at least equal importance, many benefits accrue to others in society – those who pay for the schools and the criminal justice and welfare systems, those who are victims of crime and those who benefit from tax payments on increased earnings. This is a classic externality problem. For the part-day programs most of the benefits do not accrue to the participants.

There are more reasons it is unwise to depend on parents and the private sector to obtain the benefits of preschool education. First, from a purely selfish perspective, parents can obtain substantial benefits by investing in inexpensive, custodial care while avoiding paying for the more intensive education that would generate public benefits (i.e., the positive externalities). If the Abecedarian parents had purchased care privately (costing about the \$27,000 over five years) they would have had higher earnings immediately (not estimated in the Table) and over the long run (as increased continuity in employment resulted in greater on-the-job skill building, seniority, etc.). Their private return would be more than double their cost.

Even the most altruistic parents face a daunting problem in identifying preschool education of sufficiently high quality. The nature of the service is that it is provided in the parent’s absence, and young children cannot adequately report on the quality. Surveys find that parental reporting on program quality does not correspond well with expert measurements of program quality. Thus, even if parents had the means and inclination to purchase intensive preschool education, they are unlikely to be able to do so in the private market.

Thus, there is a strong economic case that government should finance preschool education and ensure that programs are of the quality needed to produce the desired benefits. However, to whom should these programs be provided? Most research to date has focused on children from lower income families. However, newer studies have expanded our knowledge, and I believe that support should be broader in two ways.

An economic argument can be made that government-financed high quality preschool education should be made available to all children regardless of family background. Recent studies find no clear dividing line between lower and higher income at which either the problems addressed (e.g., school

failure or crime) or the gains produced by preschool education (e.g., improved cognitive abilities and character) sharply decline. Rather there is a very smooth decline as income rises so that expected returns at the median income might easily be half that for children in poverty. Even at one-tenth the return, public investment in a part-day program would pay-off. Also, it is costly and difficult to identify and serve only economically disadvantaged children, and some parents will avoid programs that serve only disadvantaged families. Finally, as a political matter it may be easier to secure public support for the quality needed to produce the desired results in a program that serves all children.

An economic case also can be made that governments in high-income nations should support early education investments in low-income nations. This case is more speculative, but once again depends on the expected externalities. The world is so inter-related today culturally, politically and economically that the benefits to wealthy nations could well exceed

costs. The costs would be relatively low, given the lower cost of preschool education in low-income nations, and it might suffice to offer matching funds as an incentive for local financing. Stimulating the full talents of one additional Goethe, Gates, or Gandhi might warrant financing early education for an entire small nation. Greater educational attainment and productivity in many countries would contribute to prosperity and stability beyond their borders, as well as within. Of course, the benefits of early education depend on the broader infrastructure that provides a context, including publicly supported primary and secondary education, and returns to early investments would vary accordingly.

I have not addressed the question of the precise level and form of public support warranted by the economic benefits. For the first year of life, the most productive investments may be paid parental leave and education for parents on how best to enhance their child's learning and development. Paid leave should be the responsibility of government, not business,

Table

Three benefit-cost analyses

	Carolina Abecedarian	Chicago Child-Parent Centers	High/Scope Perry Preschool
Year began	1972	1983	1962
Location	Chapel Hill, NC	Chicago, IL	Ypsilanti, MI
Sample size	111	1,539	123
Research design	Random assignment	Matched neighborhood	Random assignment
Ages	6 weeks to age 5	Ages 3-4	Ages 3-4
Program schedule	Full-day, year round	Half-day, school year	Half-day, school year
Findings			
Increased IQ short-term	Yes	Not collected	Yes
Increased IQ long-term	Yes	Not collected	No
Increased achievement long-term	Yes	Yes	Yes
Special education	25% v. 48%	14% v. 25%	37% v. 50%
Retained in grade	31% v. 55%	23% v. 38%	35% v. 40%
High school graduation	67% v. 51%	62% v. 51%	65% v. 45%
Ever arrested as juvenile	45% v. 41%	17% v. 25%	16% v. 25%
Mean number of adult arrests	1.7 v. 1.5 (age 21)	Not yet available	2.3 v. 4.6 (age 27)
Adult smoker	39% v. 55% (age 21)	Not yet available	42% v. 55% (age 40)
Cost-benefit results (2002 dollars, discounted at 3%) in \$			
Cost	-63,476	-7,417	-15,386
Child care	27,621	1,829	919
Maternal earnings	68,728	0	0
K-12 cost savings	8,836	5,377	8,556
Post-secondary ed. cost	-8,128	-615	-1,309
Abuse & neglect cost savings	Not estimated	329	Not estimated
Crime cost savings	0	36,902	173,959
Welfare cost savings	196	Not estimated	774
Health cost savings	17,781	Not estimated	Not estimated
Earnings	37,531	30,638	65,455
Second generation earnings	5,722	Not estimated	Not estimated
Total benefits	158,278	74,981	248,354
B-C ratio	2.5	10.1	16.1

though government might finance leave for many by letting parents save tax free to support time out of the labor force later. I am less clear about the best course after that and until age three when public education for all children clearly is warranted. As time out of the labor force imposes a heavy cost, it may be best to offer parents choices among remaining at home, part-day programs and full-day programs. Research on the consequences of these options would be well-advised if we are to have a better idea of their costs and benefits.

In conclusion, I return to Marshall's *Principles* where he noted that "The wisdom of expending public and private funds on education is not to be measured by its direct fruits alone". The truth of that statement is highly evident in what we have learned about preschool education. Yet, today public and private investments continue to evince little awareness of the indirect benefits of early education. This article and the others in this issue offer a modest corrective. As this information becomes more broadly available, public and private investments should be strengthened. To some extent, governments are already responding, and public and private investments have expanded early education. However, many preschool programs fail to produce even short-term meaningful gains in learning and development much less what is required for the benefits detailed in Table 1. The same difficulties that parents face in judging the quality of private programs put the public at risk of poor-quality government financed programs. Thus, there is a clear role for the philanthropic sector and others to provide information about such programs, and this is already taking place in the United States and Europe. Without such efforts, *quis custodiet ipsos custodes?*

EFFICIENT PROVISION OF HIGH-QUALITY EARLY CHILDHOOD EDUCATION: DOES THE PRIVATE SECTOR OR PUBLIC SECTOR DO IT BEST?

DAVID BLAU* AND
JANET CURRIE**

Introduction

There is a broad consensus in the United States that the benefits to children and society from investments in the cognitive and non-cognitive skills of disadvantaged pre-school age children far outweigh the social costs of such investments. Evidence from random assignment evaluations of very high-quality experimental pre-school programs shows long-term benefits in the form of higher educational attainment, greater labor force participation, higher earnings, reduced dependence on public assistance and reduced crime. The value of these benefits is estimated to be much larger than the costs of the programs, despite high program costs due to the very high quality and intensity of the treatment (Belfield et al. 2006; Masse and Barnett 2002). Both the federally-funded Head Start program and a rapidly growing set of state-funded pre-kindergarten programs are popular across the political spectrum in the US. The quality of these large-scale programs is lower than the quality of the small-scale experimental programs, but generally high enough to meet standards recommended by accrediting organizations. Evaluations of Head Start and Pre-K programs show substantial short-run improvements in child skills, and in the case of Head Start there is evidence of beneficial long-run effects as well (U.S. Department

of Health and Human Services 2005; Gormley et al. 2005; Currie and Thomas 1995).

The case for public investment in high-quality Early Childhood Education (ECE) programs for disadvantaged children rests on standard market failure arguments. Parents may not recognize the long-run benefits to their children from such programs and may not have enough information to evaluate program quality. Credit constraints may limit the ability of low-income parents to make high-return investments in their children. Perhaps most important, there is no “market” for some of the benefits, such as reduced crime and welfare dependence (Blau and Currie 2006). These arguments seem to be widely accepted, judging by the popularity of ECE programs.

An important question that has not been addressed is the appropriate form of public sector involvement in ECE. In the US, the main forms of public sector involvement in ECE are (1) subsidies to the private sector, often accompanied by regulation; (2) grants to local service providers; and (3) direct provision by public institutions such as schools. These three forms coexist in the US: the Child Care and Development Fund (CCDF) provides subsidies to low-income child-care users or the providers who serve them; Head Start is funded by grants to local service providers; and many state Pre-K programs are provided by public schools.

In contrast, many western European countries use a single approach: direct provision by the public sector (for example, see Table 1 in Blau 2003 and the DICE database). It is also the case that a much higher proportion of ECE is funded publicly in Europe than in the US. Is public sector provision dominant in Europe because of the close-to-universal nature of most European ECE programs? Does Europe know something about efficient public sector provision of services that the US does not know? Or does the US predilection for market solutions actually result in an efficient outcome in this case? Despite recent proposals for expanded ECE programs in the US, there has been very little discussion of this question.



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In this article we discuss evidence on which approach to public sector investment in ECE provides the most bang for the buck. The obvious advantage of the private sector is efficient utilization of resources, driven by the profit motive, or in the case of not-for-profit providers by resource constraints. But there are serious questions about the quality of care typically found in the private sector, and quality is critical in order to reap the high returns discussed above. The advantage of the public sector is likely to be the ability to deliver high-quality care, but the obvious disadvantage is the possibility of inefficient use of resources, resulting in high cost. Hence the key issues are (1) whether and how the private sector is able to use public subsidies to provide high-quality ECE; and (2) whether and how the public sector can provide ECE efficiently.

Subsidies to the private sector

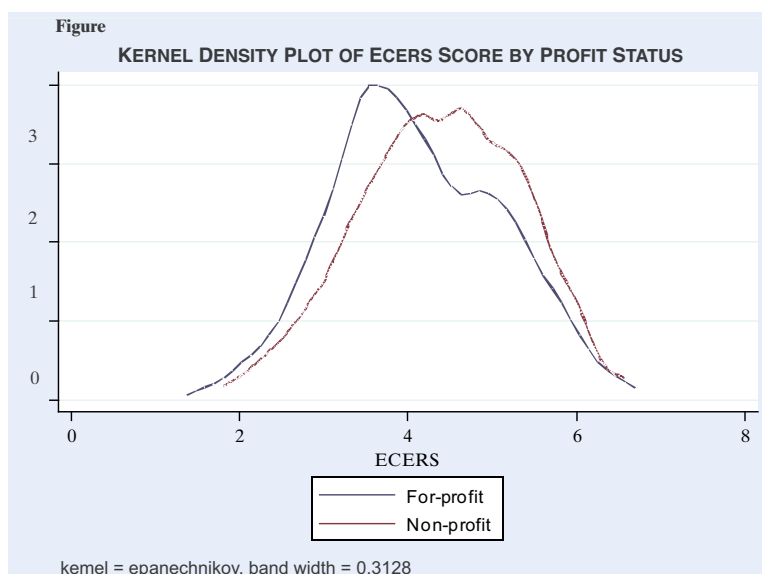
The main question about the private sector is whether it is capable of providing high-quality care on a large scale at a reasonable cost. Child-care subsidies have induced a large expansion in the quantity of child care provided in the US private sector, at moderate cost (Blau 2001, chapter 5). But these subsidies either impose no minimum quality standards (e.g., the child-care tax credit) or require only that the subsidized child care meet state regulatory standards, which are often quite lax (e.g., the CCDF). Unfortunately, there is little direct evidence on the effect of child-care subsidies on child-care quality. Baker et al. (2005) show that a major expansion of child-care subsidies in Quebec resulted in worse child outcomes, as measured by behavior (hyperac-

tivity-inattention, general anxiety, etc.), motor and social development, and health. The New Hope Demonstration project included a child-care subsidy component, and New Hope resulted in increased use of formal child care and improved child outcomes (Huston et al. 2003). But there is no evidence on how the demonstration affected the quality of child care.

The quality of child care is measured by instruments designed by developmental psychologists that use trained observers to rate child-care arrangements on a large number of items related to the developmental appropriateness of the care provided. The most widely used instrument is the Early Childhood Environment Rating Scale (ECERS), which is scaled from 1 (inadequate) to 7 (excellent). The ECERS has been found to be reliable (i.e., to produce independent ratings of the same arrangements that are highly correlated (Cryer et al. 1995)) and valid in the sense that higher quality ratings are associated with better outcomes for children (Peisner-Feinberg et al. 1999).

The Cost, Quality, and Outcomes study (CQO; Helburn 1995) surveyed about 400 day care centers in four states in 1993, taking a stratified random sample of centers that provided year-round, full-time care. The average quality of care was characterized as “mediocre” based on the mean ECERS score of 4.0. Non-profit centers were found to provide higher-quality care on average, but there is substantial heterogeneity within both the for-profit and non-profit sectors. This is illustrated in the Figure, which plots the entire distribution of the ECERS score by profit status. The figure shows a wide range of quality scores within both sectors and substantial overlap in the distributions. The latter point is important because non-profit centers may face resource constraints that would make it difficult for them to expand in order to serve more children. For example, many non-profit centers cover a substantial portion of their cost with donations of space, materials, and labor (Morris et al. 1995).

We provide some evidence on the existence of high-quality care in the private sector by focusing on the subsample of centers in the CQO study with



Table

Comparison of day care center characteristics by profit status and quality

	Non-profit		For-profit	
	Low quality	High quality	Low quality	High quality
ECERS Score	3.91	5.48	3.75	5.53
Average cost per child-hour of care	2.97	4.09	2.94	3.74
Average annual cost per child	6,128	7,837	5,607	7,563
National chain			0.27	0.17
Church-sponsored	0.48	0.24		
Full-time equivalent enrollment	60	66	81	64
Center age	16	18	11	8
Job tenure of teacher	4.6	5.5	3.3	4.3
Job experience of teacher	10.3	11.0	7.6	9.1
Teacher is a college graduate	0.38	0.44	0.29	0.47
Sample size	128	54	142	35

Notes: Low quality is defined by an Early Childhood Environment Rating Scale (ECERS) score of less than 5.0, and high quality is defined by an ECERS score of 5.0 or more. See the text for a discussion of the scale of the ECERS instrument. The ECERS score for a center is the weighted average of the scores for the preschool classrooms that were rated, with weights given by the number of children per room. Cost includes the imputed value of donated space, materials, and labor. Costs have been inflated by the Consumer Price Index to 2006 dollars. Full-time equivalent enrollment is calculated by dividing total child-hours of care per week by 40. Center age is the number of years the center has been in operation. Job tenure is the (weighted average) number of years the teacher in the rated classroom has been employed at the center. Job experience is the (weighted average) number of years the teacher in the rated classrooms has been employed in child care.

Source: Authors' calculations from the Cost, Quality, and Outcomes Study data.

an ECERS rating of 5.0 or greater. A score of 5.0 is high enough to meet early childhood education accreditation standards (Bredekamp and Copple 1997).¹ The Table presents four-way comparisons by quality and profit status of a number of center characteristics. High-quality centers are less likely to be church-sponsored, less likely to be part of a national chain and have better educated, longer-tenure and more experienced staff than lower-quality centers. The average cost per hour of care in lower-quality centers is virtually identical across sectors at \$2.94–\$2.97 (in 2006 dollars), while the average cost of higher-quality care is \$3.74 in for-profits and \$4.09 in non-profits, for care of similar average quality. These comparisons suggest two points: (1) higher-quality care is more costly than lower-quality care, but not by a substantial amount, and (2) the cost of moving from lower to higher-quality care is

less in the for-profit sector than in the non-profit sector.

More formal evidence on the relationship between cost and quality was provided by Blau and Mocan (2002), who used the CQO data to estimate a cost function. Their estimate is that each one point increase in quality would increase cost by 5.6 percent, other things equal. Moving from the low-quality for-profit mean quality score of 3.75 to the high-quality for-profit mean quality score of 5.53 would increase cost by 10 percent according to this estimate. These findings suggest two conclusions: (1) The private sector is capable of providing high-quality child care at a moderate cost; and (2) the for-profit sector is as capable of doing this as the non-profit sector. Thus, even if the non-profit sector is unable to expand enough to meet the increased demand for high-quality care that would be caused by a

large-scale, quality-contingent child-care subsidy, the for-profit sector may be able to do so. However, these conclusions are based on data from a single cross-sectional 15-year-old study. It is important to collect data to attempt to replicate these findings in the post-welfare-reform era. One may wonder why the average quality of child care in the US is “mediocre” if the cost of improving quality is relatively small. Blau and Hagy (1998) and Blau (2001, chapter 4) provide evidence that the income elasticity of demand for child-care quality is very small. This suggests that the market failure arguments discussed above are important in practice.

Public sector provision

In the public sector, the two models prominent in the US are funding of local child-care providers through grants and direct provision of child care through preschool programs in public schools. The most prominent example of the first model is Head Start, a preschool program for disadvantaged 3-to-5-year-old pre-school children. There is a good deal of research

¹ By way of comparison, the average ECERS score of the seven Head Start centers in the CQO sample is 5.06. The sample frame for the CQO was centers providing full day care, so only Head Start centers that provided wrap around care were eligible for inclusion. The range of the ECERS score for the seven Head Start centers in the sample is 3.62 to 6.34, indicating that Head Start is not guaranteed to be of high developmental quality.

showing that Head Start has positive effects relative to both no pre-school and other pre-schools.

A major problem in evaluating Head Start is that programs are required to identify and enroll the neediest children who apply. Hence, comparisons of children who attended Head Start to children who did not attend Head Start (or to children who attended other pre-schools) are likely to produce results that are unfavorable to the Head Start children. In order to address these problems, a number of US studies have used data drawn from national surveys that follow children over time (the National Longitudinal Survey of Youth (NLSY) and the Panel Study of Income Dynamics) to compare the outcomes of children who attended Head Start to those of their own siblings who did not attend. The sibling design offers a powerful way to control for family background, though it is not without potential pitfalls which might lead to underestimation of the effects of Head Start. Currie and Thomas (1995) find that Head Start closed about a third of the gap between the verbal and reading scores of disadvantaged children and others (though there was no effect on math scores). Initial impacts were the same for African-American and other children, while the initial impacts of Head Start on test scores “faded out” for blacks but not for whites.² Currie and Thomas (2000) attribute this fade out to the fact that black Head Start children often go on to attend poor schools, while white Head Start children go on to attend schools similar to those attended by the average white child.

This finding suggests that for whites, poverty may be more fleeting so that experiencing the Head Start program during a particularly vulnerable period of life has lasting positive effects on test scores. Whites also benefited by being less likely to have been retained in grade by early adolescence. Further work examining young adults found that whites retained these educational advantages. For example, they were more likely to have ever attended college (Garces, Thomas, and Currie 2002). Among African-Americans, young adults were less likely to have been booked or charged with a crime if they participated in Head Start.

Recently, Ludwig and Miller (2007) have used evidence from the introduction of the Head Start program to show that it was associated with large reductions in mortality among children 5 to 9. Their results

highlight the fact that Head Start has a broad mandate: it is intended not only to increase test scores, but also to improve the health and nutritional status of children by providing access to medical care and adequate nutrition. Carneiro and Ginja (2008) use discontinuities in eligibility rules to identify the longer-term effects of Head Start in the children of the NLSY. They find that Head Start decreases behavior problems, grade repetition and obesity at ages 12 and 13, and depression, criminal behavior and obesity at ages 16 and 17.

The most recent study of Head Start’s short-term effects is the “Head Start Impact Study”, which randomly assigned children to either the Head Start “treatment” group, or a non-Head Start “control” group. The majority of the control children in this study attended a non-Head Start pre-school, so the question addressed by the study is whether Head Start is better for low-income children than the other arrangements (including pre-schools) that are available to them. Even relative to this standard, Head Start led to gains in several cognitive measures and in access to health care, as well as a reduction in behavior problems in the first year of the program (U.S. Department of Health and Human Services 2005).

These positive results of Head Start relative to other child-care settings may be surprising given the frequent claim that Head Start is of low quality. But audits have consistently shown that Head Start is of high quality relative to other child-care centers available to low income children (Resnick and Zill 2000). Claims that Head Start teachers are generally unqualified and vastly underpaid are also erroneous: the vast majority of Head Start teachers have the mandated child development qualifications and are paid an hourly rate that is similar to that of the average woman with a Bachelors degree (Currie and Neidell 2007).

The uniformity of the conclusions across different data sets, time periods and methods is striking. Head Start does not close the gap between disadvantaged children and average children. But it has significant positive lasting effects at a relatively modest cost – about \$7,287 per child in 2006 (U.S. Department of Health and Human Services 2006). The average cost per child in the high-quality subsamples of the CQO sample shown in the Table above is \$7,563 among the for-profits, and \$7,837 among the non-profits (in 2006 dollars). However, these are for full-day programs, while many Head Start programs are still half

² Currie and Thomas (1999) also find large effects of Head Start for Hispanic children. These studies are all reviewed in Currie (2006).

day. Thus, it appears that Head Start may have a substantially higher hourly cost than the available “high-quality” private pre-schools. However, we have no evidence on whether these pre-schools have positive effects similar to those of Head Start.

How does Head Start quality compare to newer state-sponsored public programs run through the public schools? These programs may be closer to the European model. However, there have been few rigorous evaluations, and the quality of state programs is extremely variable. Barnett et al. (2004) report that the per-child cost of state pre-kindergarten or pre-school programs varied from \$772 in Maryland to \$9,966 in New Jersey, in 2006 dollars. While this seems more expensive than the national figure for Head Start cited earlier, in fact, Barnett et al. (2004) suggest that there is also considerable variation in Head Start costs across states. For example, in New Jersey, Head Start costs \$8,988 per child in 2006 dollars. It is unclear how similar the hourly costs are, given that we do not know the mean number of hours in the two types of programs. But since many Head Start centers are offering full-day programs to meet the needs of working parents, and “full-day” in a school context usually means 9 to 3, it may be that the hourly costs are actually quite similar. In any case, we lack information about the effectiveness of New Jersey’s public pre-school programs that would allow us to assess their cost-effectiveness relative to Head Start.

Gormley et al. (2005) evaluated a universal pre-school program in Oklahoma that is run through the public schools and emphasizes high quality. They compared students whose birthdays fell just days before enrollment cutoffs with those whose birthdays fell just after the cutoff and found a 52 percent gain in pre-reading skills, 27 percent gain in pre-writing skills, and a 21 percent gain in pre-math skills. They conclude that the program was effective in enhancing the school readiness of a diverse group of children. According to Barnett et al. (2004), Oklahoma’s program was quite inexpensive: \$2,536 per child, compared to \$6,262 per child for Head Start in Oklahoma. However, it is not clear that the \$2,536 figure includes all relevant costs. The cost of public education per kindergarten-to-grade12 child in Oklahoma is \$7,185. Presumably, it should cost about as much to educate a pre-school child in the public schools as it does to educate a Kindergarten child. Moreover, in New Jersey, the average cost of educating a K-12 child was \$12,441, which suggests that there are large regional differences in the cost of

public education, which must be taken into account when comparing information about program costs across jurisdictions.

Conclusions

So, to return to the question at hand: which sector does it best? Neither public nor private care is of uniformly higher quality than the other. Instead, there is considerable heterogeneity in quality in both the private and public sectors. Care provided through local grantees under the Head Start program does seem to be of more uniform quality, perhaps because there are strict quality standards for grantees.

When we compare similar types of programs, the cost of providing high-quality care seems to be higher in the public than in the private sector. Within the public sector, the cost of providing care directly through the public schools is surprisingly similar to the cost of providing it through local grantees in New Jersey. In Oklahoma, it seems to be much less expensive to provide ECE through the schools, but this may be because of unused capacity in the public school system.

The clearest message is that in both the public and private sectors, it is necessary to have strict quality standards for any child-care arrangement that receives public funding. Otherwise the potential benefits of high-quality care are unlikely to be realized no matter what the expenditure.

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BEYOND QUALITY IN EARLY CHILDHOOD EDUCATION AND CARE – LANGUAGES OF EVALUATION

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The problems which the managerial state is intended to resolve derive from contradictions and conflicts in the political, economic and social realms. But what we have seen is the managerialisation of these contradictions; they are redefined as “problems to be managed”. Terms such as “efficiency” and “effectiveness”, “performance” and “quality” depoliticise a series of social issues (whose efficiency? effectiveness for whom?) and thus displace real political and policy choices into a series of managerial imperatives. (Clarke 1998, 179)

We live in an age of quality. Every product and service must offer quality; every consumer wants to have it. In this historical context, quality has become reified, treated as if it was an essential attribute of services or products that gives them value, assumed to be natural and neutral. The problem with quality, from this perspective, is its management. How can quality be discovered, measured, assured and improved? What goals, to be achieved by technical means, will enhance performance and increase value?

Early childhood education and care has not escaped the increasing attention paid to quality; research and policy have become increasingly devoted to the subject. “Quality” is generally understood as an attribute of services for young children that ensures the efficient production of predefined, normative outcomes, typically developmental or simple learning

goals. Presence of quality is usually evaluated vis-à-vis expert-derived criteria, associated in research with achieving these outcomes. A recent report from a UK government agency, for example, commissioned a research review that identified seven factors “indicative of good quality pre-school) provision” for their impact on child development: adult-child interaction that is responsive, affectionate and readily available; well-trained staff who are committed to their work with children; facilities that are safe and sanitary and accessible to parents; ratios and group sizes that allow staff to interact appropriately with children; supervision that maintains consistency; staff development that ensures continuity, stability and the improvement of quality; and a developmentally appropriate curriculum with educational content (National Audit Office 2004, 39).

Nearly ten years ago, together with Alan Pence, we published a book, *Beyond Quality in Early Childhood Education and Care* (Dahlberg, Moss and Pence 1999), that addressed an emerging and very different problem of quality, a problem not with the management of quality but with the very concept itself. It relativised quality, arguing that it was one way of talking about and practicing evaluation, that quality was neither natural nor neutral, and was not therefore to be taken for granted. It was, to use the subtitle adopted for the Italian edition of the book and subsequently adopted for the second English-language edition (Dahlberg, Moss and Pence 2007), just one of the many possible “languages of evaluation”. In this paper, we discuss the “problem with quality” as we identified it in *Beyond Quality*, and consider “another” (not “the” other) language of evaluation, one that treats evaluation as primarily political rather than technical. In the process, we link the debate about quality to a larger debate in the early childhood field (but extending into many other areas): a debate about paradigm and the very different perspectives on early childhood education and care that different paradigms create.

The problem with quality

Particularly as of the early 1990s in the early childhood field, the concept of quality as an inherent



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attribute, some universal and knowable thing waiting “out there” to be discovered and measured by experts, was increasingly questioned (see for example, Balaguer, Mestres and Penn 1992; Dahlberg, Lundgren and Åsén 1991; European Commission Childcare Network 1996; Evans 1994; Farquhar 1993; Moss and Pence 1994; Munton, Mooney and Rowland 1995; Pascal, Bertram and Ramsden 1994; Pence 1992; Williams 1994; Woodhead 1996). How could quality take into account context and values, subjectivity and plurality? How could it accommodate multiple perspectives, with different groups in different places having different views of what quality was or different interpretations of criteria? This problem became more acute as people began to talk about the importance of the process of defining quality and how this should include a wide range of stakeholders, not only academic experts but children, parents and practitioners.

One response to this questioning was to propose the redefinition of quality as a subjective, value-based, relative and dynamic concept. But *Beyond Quality* came to a more radical conclusion. “Quality”, it argued, is a concept with a very particular meaning and inscribed with specific assumptions and values. The concept of quality assumes the possibility of deriving universal and objective norms, based on expert knowledge. ‘Quality’ is an evaluation of the conformity of a product or service to these norms. It values universality, objectivity, certainty, stability, closure; and presumes an autonomous observer able to make a decontextualised and objective statement of fact. It deploys certain methods, based on applying templates to particular settings (e.g. rating scales, check lists, standardised inspection procedures).

“Quality” is an example of what Rose (1999) terms a “human technology”, powerful and multi-purpose. It is a technology of normalisation, establishing norms against which performance should be assessed, thereby shaping policy and practice. It is a technology of distance, claiming to compare performance anywhere in the world, irrespective of context, and a technology of regulation, providing a powerful tool for management to govern at a distance through the setting and measurement of norms of performance.

“Quality”, therefore, is neither neutral nor self-evident, but saturated with values and assumptions. It is not essential, but a constructed concept. Originally developed as a part of management theory, it has been incorporated into early childhood care and other ser-

vices as part of the revolution of new public management and the growth of the “audit society” (Power 1997). It fits comfortably into an Anglo-American discourse on early childhood, which has become increasingly influential, an example of what Santos (2004) has called “hegemonic globalisation”: “the successful globalisation of a particular local and culturally-specific discourse to the point that it makes universal truth claims and ‘localises’ all rival discourses” (149).

The globalisation and dominance of this local Anglo-American discourse has arisen as a result of the spread of the English language, of American research, and of neoliberalism, whose values and assumptions it embodies. It offers a compelling narrative of how social and economic problems can be eliminated by early childhood services, delivering predetermined outcomes through early intervention with powerful technologies; of workers as competent technicians; and of children as redemptive agents, able if given the right start to rescue society from its problems. The discourse is positivistic and technical, instrumental and calculating, tempting us with a high return on public investment. It is inscribed with certain values: certainty and mastery, linear progress and *predetermined* outcomes, objectivity and universality, stability and closure. It draws heavily on certain disciplines, namely child development, management and economics.

“Quality” may be produced and prioritised through particular discourses – including those that are both more general, such as managerialism, and more specific, such as the Anglo-American narrative on early childhood. But we can step back further and understand such discourses as being, in turn, the product of a specific paradigm, a mindset for understanding the world and our position in it. In the case of quality, the progenitor paradigm is modernity – or, to be more precise, a particular paradigm of modernity, the paradigm of regulatory modernity (Hardt and Negri 2001; Santos 1995; Toulmin 1990). The concept of quality is inscribed with the values and assumptions of that paradigm, some of which have been already mentioned: for example, the value given to certainty and mastery, linearity and *predetermined* outcomes, objectivity and universality. Believing in objectivity and the ability of science to reveal the true nature of a real world, modernity cannot recognise that it is a paradigm, a particular way of understanding the world produced within a particular historical and cultural context. It is unable to see itself as offering just one perspective, one way of thinking and practicing.

Our conclusion in *Beyond Quality* is that quality is a child of its time and place, the product of particular nature and nurture. As such, the concept of quality:

cannot be conceptualized to accommodate complexity, values, diversity, subjectivity, multiple perspectives, and other features of a world understood to be both uncertain and diverse. The “problem with quality” cannot be addressed by struggling to reconstruct the concept in ways it was never intended to go (Dahlberg et al. 2007, 105).

Quality is a language of evaluation that fails to recognise a multilingual world and, in so doing, denies the possibility of other languages. And as Clarke describes in the quotation with which we begin the article, “quality” is part of a process of depoliticisation that displaces “real political and policy choices into a series of managerial imperatives” – substituting managerial methods for democratic deliberation.

Meaning making

Beyond Quality explores an other language of evaluation, meaning making, recognising that there may well be many others. The language of quality can be summed up as ending in a statement of fact: “it speaks of universal expert-derived norms and of criteria for measuring the achievement of these norms, quality being a measurement (often expressed as a number) of the extent to which services or practices conform to these norms” (Dahlberg et al. 2007, viii) Meaning making, by contrast, speaks of “evaluation as a democratic process of interpretation, a process that involves making practice visible and thus subject to reflection, dialogue and argumentation, leading to a judgement of value, contextualised and provisional because it is always subject to contestation” (Dahlberg et al. 2007, ix).

Meaning making is evaluation as a participatory process of interpretation and judgement, made within a recognised context and in relation to certain critical questions: for example, what is our image of the child? what do we want for our children? what is education and care? It values subjectivity (or rather, “rigorous subjectivity” (Lather 1991)), uncertainty, provisionality, contextuality, dialogue and democracy. It assumes a participant who makes – in relation with others – a contextualised, subjective and rigorous judgement of value. It foregrounds, therefore, democratic political practice, the exercise of collective deliberation.

Meaning making employs particular methods, suited to its democratic political practice, in particular pedagogical documentation, a tool for participatory evaluation. Pedagogical documentation has its origins in the innovative and, today, world-famous municipal early childhood services in the Northern Italian city of Reggio Emilia (for further reading on Reggio Emilia and pedagogical documentation, see Dahlberg and Moss 2005; Dahlberg et al. 2007; Giudici, Rinaldi and Krechevsky 2001; Rinaldi 2006). It requires, first of all, making practice visible through many forms of documentation: written or recorded notes, the work produced by children, photographs or videos, the possibilities are numerous. Then it requires a collective and democratic process of interpretation, critique and evaluation, involving dialogue and argumentation, listening and reflection, from which understandings are deepened and judgements co-constructed.

Its origins owe much to Loris Malaguzzi, one of the twentieth century’s great pedagogical thinkers and practitioners and the first director of Reggio’s municipal early childhood services.

Documentation represents an extraordinary tool for dialogue, for exchange, for sharing. For Malaguzzi, it means the possibility to discuss and dialogue “everything with everyone” (teachers, auxiliary staff, cooks, families, administrators and citizens)...[S]haring opinions by means of documentation presupposes being able to discuss real, concrete things – not just theories or words, about which it is possible to reach easy and naïve agreement” (Hoyuelos 2004, 7).

This concreteness of pedagogical documentation is critical. Measures of “quality” involve looking for what has been predefined, discarding what does not figure in the template; it involves the decontextualised application of abstract criteria, reducing the complexity and concreteness of environment and practice to scores or boxes to tick; it strives for agreement and the elimination of different perspectives; it assumes the autonomous and objective (adult) observer. Above all, “quality” offers consumers information about a product, for “quality” is a language of evaluation suited to a particular understanding of early childhood (or other) services: as suppliers of commodities on the market to parent consumers.

Meaning making through documentation involves contextualised interpretations of actual practices

and actual environments. It assumes that citizens participate with other citizens in the exercise of a public responsibility. This language of evaluation understands early childhood services as public forums and collective workshops, places of encounter for citizens young and old, with the potential for an infinite range of possibilities – cultural, linguistic, social, aesthetic, ethical, political and economic – some expected and predetermined, but many that are not.

“Meaning making” therefore is generated from within a different discourse about democracy in general and early childhood in particular, a discourse which has a very different understanding than that of the managerial (and neo-liberal) discourse producing “quality”. The discourse that generates meaning making also arises from a different paradigm which might be termed “postfoundationalism”, encompassing a variety of perspectives – for example, postmodernisms, poststructuralisms and postcolonialisms. This paradigm challenges the basic tenets, or foundations, of the paradigm of regulatory modernity: the possibility of objective, stable and value-free knowledge, universal laws, escaping context; the transparency and neutrality of language; linear progress ending in closure; dualistic – either/or – ways of thinking and relating to the world. It values what regulatory modernity finds problematic: complexity and multiplicity, subjectivity and context, provisionality and uncertainty. Post-foundationalism recognises that any phenomenon – early childhood education and care, for example – has multiple meanings, that any knowledge is perspectival, and that all experience is subject to interpretation.

Today, increasing numbers of scholars and practitioners in the early childhood field, across many countries, are working with postfoundational thinking and their theories and concepts have begun to influence practice and research. As the American early childhood researcher Joseph Tobin (2008) has noted, many scholars today “have drawn heavily on French social and philosophical theory (Foucault, Bourdieu, de Certeau, Althusser, Deleuze and Guattari) as well as feminist, queer, post-colonial theory to develop critical perspectives on dominant practice” (23, original English version). In the series that we edit, *Contesting Early Childhood*, books published or in preparation draw heavily not only on the work of Foucault, but also of Derrida, Levinas, Deleuze, Guattari and Bakhtin (Dahlberg and Moss 2005; MacNaughton 2006; Ermiston 2007; Borgnon

forthcoming; Lenz Taguchi in preparation). With their provocative perspectives and understandings, such work is introducing into the field of early childhood new thought, diverse forms of knowledge, and (literal and metaphorical) multilingualism.

Living in a multi-lingual world

One of the dilemmas of trying to de-naturalise the language of quality – so that “quality” can no longer be taken for granted as a neutral concept devoid of values or assumptions – and to differentiate it from another language, such as meaning making, is that the process may set up binary oppositions. The impression may be given that you must either go with quality or with meaning making, that it is a matter of either/or. But this has not been our intention; we argue for a multi-lingual world, where there is a continuing place for both – and other – languages of evaluation and, more broadly, for early childhood work to adopt different perspectives based on different paradigmatic positions.

We are more aware today than when we wrote *Beyond Quality* that the choices we make require far more than simply stating a preference. Working with the language of meaning making is difficult. It requires, or at least is greatly facilitated by, certain conditions: commitment to particular values, such as uncertainty, subjectivity, democracy; creativity, curiosity and a desire to experiment and border cross; a reflective, research-oriented and socially valued workforce; and sustained support from critical friends (for example, the *pedagogistas* or pedagogical coordinators in Reggio Emilia, who work closely and deeply with a small number of centres), networks of services, policy makers and politicians. Such conditions, we agree, are not widespread; and where they are lacking, it may be necessary to use the language of quality, which is easier to learn and speak, and requires the capacity to follow instructions and apply techniques correctly.

The decision to work with quality should, however, be viewed as a political choice made in a particular temporal and spatial context. The choice should be accompanied by the recognition that alternatives exist and by a view about future directions. Quality may be the right choice to make here and now, but is it the language of choice for 10 or 15 years hence? If yes, then what is the rationale for this stasis? And what are the dangers of staying with a language that

is so strongly related to criteria and standards, that is so powerfully normalising and regulatory, that results in exclusion and lack of diversity? If no, if the intention is to learn and speak another language over time, or to become multi-lingual, then what conditions need putting in place, how will the transition be achieved? Will it be a general top-down change or will it be led by individual centres or networks of centres choosing to take up meaning making (or some other language of evaluation)? What norms and criteria will remain, even after these changes, since we think it is likely that even in the most decentralised and experimental system there will remain some normative framework, setting down some common values, principles, objectives and entitlements?

The recognition of different perspectives and a reluctance to limit possibilities by setting up either/or choices does not mean accepting uncritical relativism. Respecting other perspectives and positions does not free any of us from our responsibility to make a choice (for a fuller discussion of this issue, see Dahlberg and Moss 2005). Thus, other perspectives and positions, the different languages of evaluation, are not a problem. What does present a problem is when others take a position as if no choice was involved, as if their position was the only one. So while we defend the right to adopt different perspectives and languages, we do so with an important proviso: that “all those engaged with early childhood and early childhood institutions recognise that there are different perspectives, that the work we do (whether as practitioners or parents or policy makers or researchers) always takes a particular perspective – and that therefore choices – or judgements of value – are always being made from which flow enormous implications in terms of theory and practice” (Dahlberg et al. 2007, 119).

Unfortunately, the acknowledgement of different perspectives is uncommon both among researchers and policy makers. Journal articles in the early childhood field frequently show no recognition of the authors’ position with respect to paradigm and discourse, and its implications for defining questions in research and evaluation, the choice of methods and the interpretation of data. Although today there is a sort of standard policy document, produced by governments and international organisations, which offers a predictable rationale and prescription for early childhood education and care and draws on the same much-quoted research, it does not provide so much as one critical question or recognition that there may be different perspectives and views.

Not only do these documents make dull and repetitive reading. They stifle democracy. Political and ethical choices are replaced by a search for technical specifications. The current expansion of early childhood education and care provides, potentially, many benefits and possibilities for children, parents and wider society. But as Foucault enjoins us to remember, “everything is dangerous, but not always bad”, and expansion brings with it major risks, not least of which is increasing regulation and normalisation, what Nikolas Rose terms “governing the soul”. If these risks are to be reduced and the potential benefits realised, societies need to put technical and managerial practice in its place, as subservient to democratic political and ethical practice, and to open themselves to diversity and experimentation.

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Box**The comparison of two curricular frameworks: the early education approach and the social pedagogy approach**

Although the investments made by governments in early childhood education and care (ECEC) have increased in recent years, it does not necessarily mean that the quality of these systems has been sufficiently considered. To ensure quality, the OECDs “Starting Strong – Early Childhood Education and Care” recommended in 2001 two complementary strategies for policy: First, the governments should define, fund and enforce basic programme standards across the board and create strong and equitable early childhood systems. Second, defining and assuring quality should be a participatory and democratic process, involving different groups including children, parents, families and professionals in this field.

Five years after these recommendations, the OECD has reported in its latest “Starting Strong II – Early Childhood Education and Care” on particular systems and recent developments in the ECEC in a comparative way.

In summary, all OECD countries already provide a preliminary health and safety check on centres or homes licensed to look after young children. Beyond this, most OECD countries use a curriculum in early childhood services based on structuring and orienting children’s experience towards educational aims. The preferred areas of knowledge include: nature and the environment; emergent literacy and numeracy; general knowledge; scientific concepts and reasoning. The exact content of the curriculum varies from country to country. The extent and manner of regulation also differ widely and may even vary within countries according to region or the type of service concerned.

In view of these differences, two curricular traditions can be identified:

- *The early education approach (so-called “readiness for school” tradition)* uses a curriculum defined by the ministry of education with special focus on cognitive development, early literacy and numeracy. The curriculum prescribes targets for children for measuring their development on a national level. It is predominantly used in France and the English-speaking countries.
- *The social pedagogy approach (so-called Nordic tradition)* provides broad guidelines for local authorities and the centres with respect of the values, purposes and processes of ECEC and goes beyond preparation for school. The programme focuses on the whole child and his/her interests. It is basically used in northern and central European countries.

The early education approach

This approach views children as malleable individuals. Children are also seen as an investment in the future of society in that they become either productive knowledge workers or compliant well-behaved citizens.

The programme focuses on learning and skills, especially in areas useful for school readiness. It is assumed that the curriculum can be “delivered” by an individual teacher in a standardised way, whatever the group or setting. Teacher-child relationships may be instrumentalised through large numbers of children per teacher and the need to reach pre-defined levels and achieve detailed curricular goals.

Generally the centre is seen as a service based on individual demands of the parents. It is viewed as a place for a balanced mix of development, learning and instruction, generally managed by each teacher. The national curriculum must be faithfully “provided”. An emphasis is placed on individual autonomy and self-regulation. The use of the centre-space is clearly defined: indoors as the primary learning space, outdoors as a recreational area.

The development of the child’s individual competence in the national language is very important, with an emphasis on emergent literacy practices. Standards may be established for language skills, pre-reading knowledge, pre-mathematical knowledge, cognitive skills and social development.

The targets and goals for the group are clearly defined and prescribed at a national level for all centres (sometimes relating to each year of age), generally pertaining to cognitive development. The assessment of the learning outcomes is often required, at least on entry into primary school, but with respect of each child to pre-defined competences.

The quality control is based on clear objectives, inspection and, frequently, on predefined learning outcomes. Standardised testing may be used – on a sample basis – in programme evaluation, but in most centres, child testing is not allowed. Assessment of skills mastery is generally ongoing and the responsibility of the head teacher. An external inspectorate may also evaluate progress, but it may be under-staffed (especially in child care) or staffed by personnel without training in ECEC pedagogy.

(Box continued)

The social pedagogy approach

In this approach the child is seen as a subject of rights (like autonomy, well-being or the right to growth on its own premises). Besides this the child is an agent of his/her own learning and a member of a caring community of peers and adults.

The focus of the approach lies on working with the whole child and his/her family. Developmental goals, learning, as well as providing exposure to democratic values are pursued. The national curriculum guides the choice of pedagogical themes and projects. Programmes are child-centred, interactivity with educators and peers encouraged and the quality of life in the institution is given high importance. Responsibility falls on the centre staff, a feeling of collegiality is encouraged together with a culture of research about what children want to learn and how they learn.

The centre is seen as a public socio-educational service in which the community interests as well as the interests of individual parents must be taken into account. Confidence is placed in the child's own learning strategies and centres of interest, that is, on learning through relationships, through play and through educator scaffolding at the appropriate moment. Indoors and outdoors have equal pedagogical importance. Young children may spend three or four hours daily out of doors. In addition the environment and its protection is an important theme.

A growing focus lies on the development of the children's competence in their national language, especially in the form of communication. In addition the children are exposed to intercultural and intergenerational language experience.

In general goals are to be striven for rather than achieved. That means a broadly-based orientation set for each child is more important than prescribed outcomes. The focus is on centre performance rather than on child assessment. Therefore multiple assessment procedures are favoured. Formal assessments are not required.

Quality control is more participatory, based on educator and team responsibility, and, depending on country, supervised by parental boards and municipalities. Documentation is used not only to mark child progress but also as research into staff pedagogical approaches. A wide range of child outcomes may be sought and assessed informally in multiple ways. External validation is undertaken by municipal pedagogical advisors and/or inspectors.

Sources: OECD (2001), *Starting Strong: Early Childhood Education and Care*, Paris.
OECD (2006), *Starting Strong II: Early Childhood Education and Care*, Paris.

INTERNATIONAL LARGE SCALE ASSESSMENT OF VOCATIONAL EDUCATION AND TRAINING (VET-LSA)

MARTIN BAETHGE* AND
LENA ARENDS**

Introduction

VET-LSA is a concept for an international comparative study of young adults' competencies developed in vocational education and training. The purpose of VET-LSA is to investigate the ways in which young adults are prepared for the world of work in different vocational tracks in Europe. The aim of the survey is to provide insights into the strengths and weaknesses of VET programmes in different occupational fields as an opportunity for different countries to learn from each other. VET-LSA will assess the level and distribution of young adults' vocational competencies in a coherent and consistent way in selected European countries. Measurement will focus on domain-specific, cross-occupational and basic competencies that are required for successful participation in economy and society in the twenty-first century. VET-LSA will also gather institutional and individual background variables that impact the development of competencies in VET.

Impacts of VET-LSA

The political and economic benefits of an international large-scale assessment of vocational education and training are obvious. In a Europe marked by rapid technological and economic development and increasing knowledge intensity in working processes,

educational processes have changed. In order to safeguard and develop competitiveness and social cohesion, Europe's citizens must continuously update their competences to perform successfully in their jobs and lead a life that satisfies them in social and cultural terms. VET systems have gained importance for providing competencies relating to occupational mobility and the independent lifestyle of young people as well as international competitiveness and innovativeness of enterprises.

The European Commission has put forward the ambitious economic and social goal of becoming "the most competitive and dynamic knowledge-based economy in the world" (March 2000). In the field of VET this aim is being pursued through the Copenhagen Process. The European Commission's proposal for a European Qualifications Framework (EQF) offers opportunities to increase mobility and enhance permeability between educational sectors. In the Helsinki Communiqué (2006), education ministers stressed that in the next few years work would focus on introducing the EQF and a credit system with a view to achieving greater mobility for trainees in Europe and, by means of closer co-operation with VET, on further developing VET systems.

From a German perspective, a particular concern refers to the preservation and expansion of VET in the dual system as an attractive option, to retain the "vocational concept" and to combine/interlink VET with higher education and further education (Sellin 2006). A VET-LSA will help to classify competencies developed in different VET systems in Europe and point out the advantages and weaknesses of the dual system.

The main benefit of a VET-LSA is to expand the knowledge for steering VET processes at different policy levels, e.g., national/international administration, public relations and educational institutions.

(1) From a political and pragmatic perspective, VET-LSA will increase valid and reliable steering knowledge:



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- to determine the relationship between individual/biographic characteristics, training forms and skill building;
- to improve transparency regarding the performance of European VET programmes;
- to link VET outcomes and institutional orders of VET systems;
- to determine the correlation between the competencies certified in final examinations and competencies actually measured;
- to reveal the strengths and weaknesses of different training forms in different countries – not from the perspective of winners and losers in a kind of vocational skill competition (e.g., WorldSkills) but as an opportunity to learn from one another;
- to classify different vocational training qualifications in international classification schemes (ISCED; EQF) in order to support the comparability of certification processes at the European level.

(2) From a scientific perspective, the results of VET-LSA will:

- improve hypotheses and research tools for measuring the performance of vocational competencies in a longitudinal and cross-sectional study;
- support statements regarding the interrelation of competence levels, training forms and context variables;
- provide findings on the interrelation between individual vocational competencies and performance at work.

Concept of VET

Recent international comparative studies, initiated by the OECD (e.g., PISA), shifted the focus of competencies to a policy context. The measurement of competencies has become an instrument for benchmarking the performance of educational systems. These studies are based on the idea that institutional factors, such as student assessment, certificates or duration of educational programmes are not sufficient criteria to compare the performance of different educational systems internationally. This is particularly important, given the heterogeneity of institutional structures in VET systems.

An international comparison of vocational education and training must be based on a common under-

standing of the goals of VET. There are three central goals, which educational systems must address at the system level:

- the development of an individual’s potential for occupational mobility, self-regulation and autonomy;
- the safeguarding of human resources in a society, and
- the warranty of social participation and equal opportunities.

These goals function as reference points for the definition of competencies, which must be developed in vocational education and training.

The first goal – individual vocational adjustment – denotes the ability of individuals to develop relationships with their environment and to create their educational pathways and life in society in a responsible and self-directed way. It includes cross-occupational competencies, such as self-management skills, problem-solving skills, communication skills or meta-cognitive skills. Individuals are considered within the context of individual aims and efforts on the one hand, and beneficial and obstructive environmental conditions on the other hand.

The second goal – safeguarding of human resources – subsumes every aspect of educational systems that facilitates individual abilities to act at work and in the labour market (individual economic user perspective) and to contribute to the workforce (social-demand perspective). It refers to the potential of VET to contribute to the development of occupational systems, conceptualised in the concept of “Mega Trends” (e.g., Achtenhagen, Nijhor and Raffe 1995; Achtenhagen and Grubb 2001; Baethge, Buss and Lanfer 2003). From a quantitative point of view, VET systems ought to supply occupational systems as best as possible, i.e., avoiding narrow professional qualifications or over-qualifications for occupations with low demand or availability. From a qualitative point of view, they should provide adequate preparation for the requirements of the labour market, which include domain-specific, cross-occupational and basic competencies.

The third goal – warranty of social participation and equal opportunities – focuses on the relationship between VET and social structures; i.e., to minimise the interdependencies between social background on educational, life and income opportunities, and to

enhance the social integration and participation of young people in processes that shape the social and political community.

Framework for measurement

VET-LSA will measure young adults' achievements in tests of basic, cross-occupational and domain-specific competencies in vocational education and training, and link the results with institutional and individual background variables. International educational research agrees on the relevance of institutional and individual background factors for the development of individual competencies. In this regard, differences in the students' competence profiles cannot be described solely with reference to individuals' learning preconditions and dispositions; the educational organisation in its social, cultural and economic context must also be taken into account (e.g., Baumert and Schümer 2001).

Competence measurement in the field of VET is more complex than in compulsory education. Whereas international large-scale assessments like TIMSS¹ and PISA are limited to assessing the mathematics and science performance of pupils in the fourth and eighth grades (TIMSS) or the literacy, numeracy, science and problem-solving performance of 15-year-olds (PISA), VET-LSA has to take into account individuals' performance in the labour market. International student assessment programmes like TIMSS and PISA are based upon well-grounded research traditions and internationally validated concepts, like a world curriculum for mathematics. A VET-LSA cannot draw on comparable concepts with regard to the structure and development of vocational expertise in different occupational fields.

International large-scale assessments of adults, such as IALS² or PIAAC,³ differ from VET-LSA in the following respects:

- VET-LSA is focused on young adults enrolled in VET programmes and shortly after entering the labour market; IALS and PIAAC are focused on adults during their entire adult life.
- VET-LSA is focused on the measurement of domain-specific competencies in selected VET

tracks and occupational fields; IALS and PIAAC are focused on generic competencies for successful participation in today's economy and society (literacy concept).

Measurement of competencies in VET

The primary aim of VET-LSA is to assess young adults' abilities to successfully apply their knowledge and experience in authentic occupational situations. Thus, vocational and occupational competence refers to individual cognitive structures and experiences as prerequisites for successful performance in the world of work.

Following a broad concept of VET, measurement of competencies includes three areas: basic competencies, cross-occupational competence and domain-specific competencies.

Basic competencies

The purpose of including basic competencies, such as reading, writing, mathematics and problem solving, in the research design is to gain insights into young adults' levels of reading, mathematics and strategies for self-regulated learning. Incorporating basic competencies into the survey design is a prerequisite for investigating the interrelationship between basic and domain-specific competencies.

Cross-occupational competencies

The objective of measuring cross-curricular vocational and occupational competencies is to determine young adults' abilities to successfully deal with the challenges of today's labour markets. Cross-occupational skills refer to aspects, such as understanding organisational structures and labour markets, being able to manage one's career development, deal with colleagues and organise one's daily work.

Domain-specific competencies

The main focus of VET-LSA refers to young adults' abilities to successfully apply their knowledge and experience to authentic occupational situations in four occupational fields (car mechatronics, electricians, business and administration, health care).

The international comparison of domain-specific competencies is new. That means that new tests for common, domain-specific competencies in several vocational areas of interest have to be developed. The proposed item format is a realistic task in a computer-simulated work environment. The main advan-

¹ Third International Mathematics and Science Study

² International Adult Literacy Survey

³ Programme for the International Assessment of Adult Competencies.

tage of this format is the short testing time (approx. 4 hours) compared to real working tasks (several days or weeks) and its validity, i.e. the test reflects professional tasks that are common in the vocational area. It ensures that the test measures the concept that is intended to be measured. Another advantage of the computer-simulated format is that students will enjoy doing the test, and this will enhance the data quality. Since the requirements for reducing measurement error are relatively low, the test length would be suitable for a large-scale assessment with reasonable time restrictions.

The test results will have to lead to an assessment of international differences in competence level in each vocational area. This implies that the same domain-specific construct has to be measured in all countries. If not, comparing the results of different countries would be like comparing apples and oranges, and it would be a meaningless exercise. In order to measure the same construct, the final goals of the educational programs in each specific vocational area have to be specified in a feasibility study. To provide a comparison between countries only the common elements of the programs can be ranked. It would be possible to develop additional national modules to cover the country-specific goals. These additional national modules could be used for national assessment purposes.

The VET-LSA feasibility study, which is currently being developed together with all countries interested in participation (Sweden, Denmark, Norway, Finland, Slovenia, Switzerland, Austria and Germany, including perhaps France, Spain and others), will provide a clear picture of those national programs that are comparable and might be included in an international comparison. This study will also provide more precise estimates of national and international costs (Baethge, Arends and Winther 2008).

The results of the study will provide the basis for countries to decide to what extent they want to participate in a VET-LSA and for the development of authentic tests in each selected field. The results will include:

- identification of test contents;
- description of test environments;
- description of situational requirements;
- presentation of range of performance;
- description of level requirements; and
- development of items, including coding.

Institutional and individual context factors

A comparison of VET can only be explained against the background of social, educational policy-related, economic and demographic conditions. In every country there are different economic, social and political context factors impacting VET and competence development. Therefore, key variables of VET relating to institutional conditions and individual background should be included in VET-LSA.

In agreement with international education experts, a multi-level approach is recommended that analyses systemic factors, the characteristics of educational institutions and instruction and their influences on the development and use of competencies for young adults while taking into consideration the interaction between individual and social factors. The framework is based on the theoretical model of the PISA survey (Scheerens 1990) with its differentiation of input, process, and output variables at different levels of analysis (Baumert et al. 2001; OECD 2003; Baethge et al. 2003).

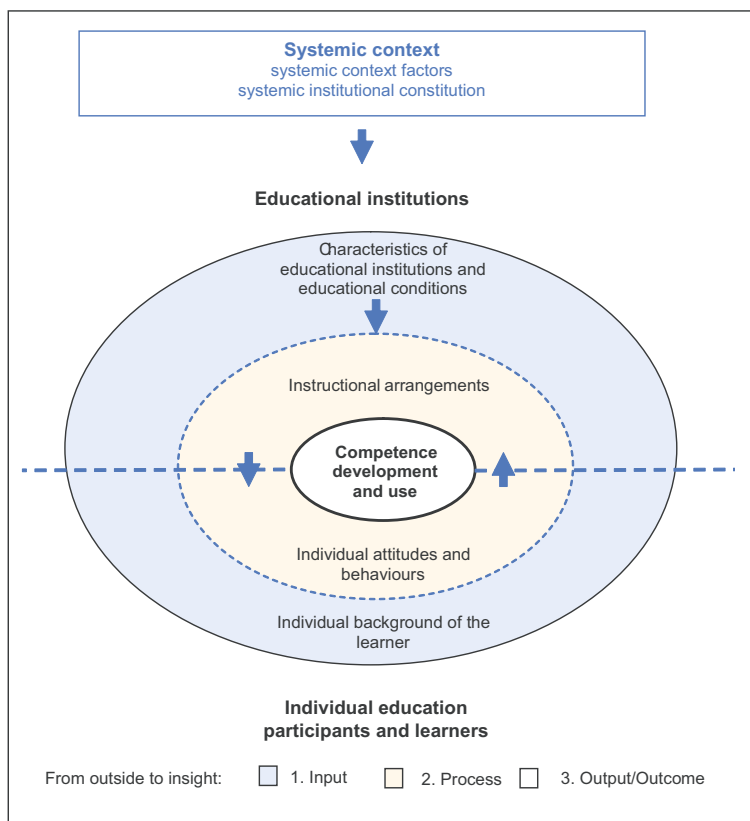
In the concept for VET-LSA, four aspects have been defined (Baethge, Achtenhagen, Arends, Babic, Baethge-Kinsky and Weber 2006; Baethge, Achtenhagen, Nickolaus, Arends and Winther 2007):

- institutional conditions and requirements of the educational systems (context);
- context factors and requirements at the level of educational institutions and individual background variables of learners (input);
- processes of institutionalised education relating to the level of operationalising material, personal and symbolic resources in didactical settings (process); and
- output of educational processes at the level of certificates and their use in the labour market and individual biography (output).

The interplay between institutional and individual conditions and the development and use of vocational competencies can be illustrated as in the Figure.

At a macro-level of the educational and employment systems (systemic context), we distinguish between systemic context factors (e.g., social, cultural, economic and political conditions) and systemic institutional constitutions (coordinating and steering, standards and norms, and financing of VET systems).

Figure



At the (meso and micro) level of educational institutions, indicators relating to the structural and organisational conditions of schools and firms play a crucial role as they mould the learning and teaching processes (Kunter and Stanat 2002). At the input level this refers to the characteristics and organisation of educational institutions, and to the providers of educational services (utilisation of resources, cooperation of educational service providers, quality control). At the process level this involves the instructional setting and the learning environment (learning conditions and instructional setting, such as self-directed learning or teamwork in schools and workplaces, learning climate).

At the level of educational participants and learners, we look into individual living and learning conditions (input), attitudes and behaviours (process) and the quality of individual learning results (outcome). At the input level we distinguish between learners' living and learning conditions (socio-economic status of the family, cultural capital of the family, educational and occupational career), at the process level we consider aspects of educational aspiration and behaviour (information behaviour and learning time, educational aspiration), and at the output/outcome level we include the acquisition

and utilisation of competencies (qualification level, transition to an adequate job, occupational mobility).

Selection of VET tracks

There is agreement in the international scientific community that the main focus of VET-LSA has to be the measurement of domain-specific vocational and occupational competencies in a limited number of occupational fields. In contrast to PISA, these competencies are only characteristic for large occupational fields and not for the entire population. Due to this special feature of vocational education the sample design is based on the (quantitatively) most relevant occupations from the major occupational fields in the sample:

- industrial/technical occupations in industry and trade;
- commercial and commercial/administrative occupations in commerce and other services; and
- healthcare occupations in the field of individual-related services.

The current discussion focuses on the following VET tracks and corresponding occupational fields:

- car mechatronics;
- electricians;
- business and administration; and
- health care.

Vertical and horizontal comparability of VET

A comparison of competencies in VET is more complex than in compulsory education. The complexity can be characterised as a two-fold problem of comparison:

- Vertical comparability refers to the educational level and can be determined by institution (e.g., tertiary level (academic track), secondary level or by duration (number of years) and/or age.

- Horizontal comparability refers to differences in curricula and occupational fields and to the problem of defining comparable vocational tracks.

Both aspects have to be analysed in detail to know what can be compared in a VET-LSA. The aim of a VET-LSA feasibility study is to identify common elements in selected educational programs and working tasks in corresponding occupations in each participating country and to develop a common framework that is valid internationally and could be used as a blue print for test development and sample construction based on the concept for VET-LSA. Countries interested in participation will compare their VET programmes and corresponding occupations in the four selected fields in a detailed analysis (Baethge et al. 2008).

Vertical comparability

There are very few publications at the European level that might be useful for comparing the level of different VET programmes. The most useful sources for identifying quantitatively relevant VET programmes are published by EUROSTAT and CEDEFOP (handbook of different educational programmes in different European countries-based on data from 1995–96 and updated in 2000). They offer short descriptions of different VET programmes, including the type of programme (vocational preparation, general education, vocational education and training), ISCED level, typical entrance age, type of labour market qualification (generic, subject specific) and number of students. Abstracts are only available for some countries.

In the feasibility study for VET-LSA, vertical comparability will be analysed in terms of ISCED classification, entry requirements, access to the next educational level, typical educational contents and exam tasks.

Horizontal comparability

The problem of horizontal comparability refers to identifying comparable occupational fields and educational tracks in different countries. At the international level, an occupational classification for discrete fields of training has been developed on behalf of CEDEFOP (Andersson and Olsson 1999) alongside ISCO. However, neither of the two classifications has been accepted as part of the ongoing reporting at the European level.

In the feasibility study for VET-LSA, horizontal comparability will be analysed in terms of classification systems (ISCO, O*NET) and interviews with supervisors and VET trainers at the workplace.

Sample

A real panel study with three measurements, one at the beginning and one at the end of a VET programme and a third measurement four years after entering the labour market, can be considered the gold standard for VET-LSA. It would allow for the measurement of young adults' competence development during VET as well as the outcomes of VET in the world of work. However, implementing a longitudinal study for one country is very complex and time-consuming; it is even more complex if a number of countries are involved (e.g., a stable international expert group must be established for approximately 8–10 years).

A cohort-based, cross-sectional study with two or three age-graded samples can be considered more than a pragmatic, temporary solution. The main sample should comprise young adults shortly before leaving their VET programme. On a national basis, every country has the possibility of adding one or two additional cohorts for every occupational field at the beginning of a VET programme and/or four years after entering the labour market.

From a pragmatic and methodological point of view, a stratified sample is recommended, consisting of a relevant (i.e., important employability segments and institutional arrangements) and comparable extract of young adults, e.g., medium level of proficiency, similar educational contents, in VET and shortly after entering the labour market. Measurement will be conducted in quantitatively relevant occupational fields to assess the major tracks of competence development.

The main focus of VET-LSA should be the measurement of domain-specific competencies in the fields of car mechatronics, electricians, business and administration, and health care.

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TRADING UNCERTAINTIES: THE TRANSATLANTIC DIVIDE IN REGULATING BIOTECHNOLOGY

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Introduction

On 13 May 2003, the US Trade Representative's office announced that the United States and several cooperating countries had filed a case at the World Trade Organization (WTO) against the European Union's "illegal, non-science based moratorium" on biotech food and crops, which was "harmful to agriculture and the developing world" (Office of the US Trade Representative 2003a and 2003b). Elaborating on that message, Robert B. Zoellick, the US Trade Representative, wrote, "As we have waited patiently for European leaders to step forward to deploy reason and science, the EU moratorium has sent a devastating signal to developing countries that stand to benefit most from innovative agricultural technologies (Zoellick 2003)." In July of the same year the EU drew up new regulations on the labeling and traceability of foods containing genetically modified ingredients, claiming that European consumers now had a reliable means of choosing between GM and non-GM food. Nevertheless, in August the United States called for a WTO dispute settlement panel to address the issue of genetically modified organisms (GMOs). David Byrne, the EU Commissioner for Health and Consumer Protection deplored the US action, stating, "Only a month ago we updated our regulatory system on GMOs in line with the latest scientific and international developments. Clear labelling and traceability rules are essential to help restore consumer confidence in GMOs in Europe (EU Institutions Press Releases 2003)." On 7 Fe-

bruary 2006, the WTO panel issued a 1,050 page interim report holding that the EU had indeed maintained an unlawful de facto general moratorium on biotech products from 1999 to 2003. Further, the panel found that several member states had prohibited products already approved by the EU without scientific evidence and without the risk assessment required by the WTO treaty. A final ruling on 11 May 2006 affirmed these conclusions.

Few starker reminders could be found that the seemingly unstoppable global march of biotechnology had not brought policy harmonization in its wake. Indeed, what occurred in this case struck some observers as regulatory polarization rather than the convergence that producers and their state sponsors had hoped for (Bernauer 2003). Here were two of the world's economic superpowers disagreeing not only about whether and how to promote biotechnology in agriculture, but, even more astoundingly, about what counts as science for regulatory purposes and how science should be used in controlling the fruits of genetic manipulation. Zoellick's May 2003 statements implied that Europe's actions were not merely unreasonable but unreasoned – displaying blatant disregard for science, as well as indifference toward food shortages and nutritional deficiencies in the developing world. Opposition to biotechnology, in the official US view, amounted to a repudiation of progress and humanitarian responsibility.

On its face, the charge that several of the world's most advanced industrial nations had abandoned reason and compassion, not to mention technological progress, seems implausible. Can we, as social analysts, find explanations that make more sense? The need for better understanding of regulatory differences only grows more urgent if we differentiate the concepts of "Europe" and "biotechnology". Regulatory policies for biotechnology, after all, varied not only across the Atlantic but also among European countries and across different technological sectors. Of Europe's leading scientific and economic powers, Germany proved perhaps most cautious with respect to the adoption of both agricultural (green) and biomedical (red) biotechnologies.

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British policy was most permissive toward cloning and embryo research, but hostility toward GM crops was more pronounced in Britain than elsewhere in Europe. Italy paralleled Germany in high skepticism toward both biotechnological sectors, whereas France patterned with Britain in its relatively more lenient attitude toward biomedical research than toward the introduction of novel GM crops and foods.

In each of these countries, moreover, the alignment between public policy and popular response was far from perfect; the most notable example of divergence was the UK public's massive rejection of GM agriculture despite the government's firm support for this technology. Across the board, it may be fair to say that greater caution accompanied the introduction of biotechnology on the European than the American side of the Atlantic. Yet variations within Europe suggest that domestic politics significantly shaped the course of national biotechnology regulation. The US picture too becomes more complicated when one contrasts the rapid and largely uncontested introduction of GM crops with the long-drawn controversies over cloning and stem cell research.

Clearly, no single master narrative – not protectionism, nor economic interests, nor public misunderstanding of science – can do justice to the cross-national differences we see in regulatory policies for biotechnology, nor to the splits that have appeared in almost every nation between official enthusiasm and public hesitation. Instead, comparative analysis suggests that regulation takes its cue from enduring connections between institutional features of governance and public perceptions of risk and benefit. Accordingly, we find in national histories of regulation neither blind technological determinism nor rigid path dependency, but a complex interplay between people's desire for technoscientific change and their expectations concerning the right way to apportion responsibility for risks and uncertainties among the state, the market and citizens.

These expectations are foundational enough to each nation's political culture to function as a kind of unwritten constitution. Three elements of that constitution are especially determinative of regulatory outcomes: first, the balance between collective responsibility and private risk-taking or, put simply, between state and market with respect to innovations; second, the manner of providing expert advice to governments; and third, the assumptions of citi-

zens concerning the legitimacy of the state's knowledge and reasoning, in other words, a nation's "civic epistemology".¹ All three elements, as we see below, came actively into play when Western states attempted to regulate the new biotechnologies. At these moments of flux, prior understandings of life and nature were significantly disrupted, giving rise to uncertainties about the future. Not surprisingly, nation states and their citizens fell back on institutionalized patterns of coping with the unknowns that confronted them. The resulting policy disparities should be seen as windows onto alternative modes of managing innovation and as opportunities for cross-cultural learning rather than as grounds for transnational blaming, trade wars or other retaliatory actions.

Regulating risk: between market and state

How nations characterized, or framed, the risks of biotechnology reflected differences in the respective roles of the state and the market as regulators of uncertainty. In the United States, Britain and Germany, for example, three different framings of biotechnology emerged – as product, process, and program – each resting on distinctive assumptions about how to manage the consequences of innovation (Jasanoff 1995). The product-based approach particularly took hold in the United States, where it went hand-in-hand with the view that genetic engineering consists of highly specific interventions, entailing predictable and mostly negligible consequences for human health and the environment. European countries including Britain, by contrast, adopted a process-based approach that took into account the context as well as the products of genetic modification, admitted more uncertainty, and called for a precautionary approach to regulation. Partly under pressure from the Green Party, Germany took caution yet a step further by highlighting the political and ethical as well as the environmental risks of biotechnology – in particular, the possibility of a programmatic alliance between science, industry and the state that might lead to abuses of power unless biotechnology was strictly regulated.

The US framing of biotechnology as a stream of commercial products was consistent with a liberal democratic tradition in which the market frequently out-competes the state as the more powerful model

¹ For an extended discussion of this concept, see Jasanoff (2005).

of political legitimacy. Pro-market and anti-regulatory tendencies manifested themselves across the entire range of governmental responses to biotechnology, from the failure to enact comprehensive federal legislation in the late 1970s to the decision to adopt an explicitly product-based regulatory approach in the 1980s; and from the remarkably expansive decision on patenting life in *Diamond v. Chakrabarty* (447 US 303; 1980) to the active encouragement of university-industry technology transfer through the 1980 Bayh-Dole Act. The preference for market solutions grew during the 1980s, as the administration of President Ronald Reagan imported its deregulatory fervor into all areas of federal administrative practice. With the downfall of communism and the “end of history” proclaimed by the political analyst Francis Fukuyama (1992), the ideology of the market gained additional force. The resulting *laissez faire* policies expressed the American state’s chronic aversion toward incurring opportunity costs by forgoing innovation and its preference for devolving risk-taking to private actors.² Strikingly, this policy framework survived several episodes of unplanned contamination by GM products that carried enormous price tags for crop growers, food producers and the state, and eventually led to stricter controls (Winickoff et al. 2005).

The framing of biotechnology as products reflected and reinforced America’s history of seeing technological innovation as an instrument of progress and nature as ripe for appropriation through human ingenuity (see, for instance, Smith and Marx 1994). In this framing, citizens are seen as eager consumers of technology, constantly on the lookout for new goods and services to meet an ever-expanding array of desires and needs. Courts and ethics commissions, as well as Congress and regulatory agencies, all presume that their job is to set free the forces of innovation to serve these willing consumer-citizens. Thus, *Chakrabarty*’s elimination of the distinction between living and non-living “compositions of matter” expanded the domain of intellectual property rights for life science entrepreneurs and reduced uncertainties about the ownership of biotechnological innovations. A preference for utilitarian logics consistent with market values even characterized the pronouncements of some bioethics bodies. In the Clinton era, a presidential bioethics commission repudiated human cloning mainly on grounds of probable risks to the clone.

² Consider, for example, the crucial role of venture capital in the early growth of biotechnology in the United States (Office of Technology Assessment, US Congress 1984).

In Britain, the Tories under John Major also adopted a proactive state policy toward biotechnology, later enthusiastically embraced by Tony Blair’s Labour government. Nonetheless, regulatory developments in Britain framed biotechnology as a process meriting special public concern, the very position that US authorities had rejected as unnecessarily restrictive. Part of the reason for this discrepancy lies in a division of labor between state and market that is unique to Britain. While the state supports and even celebrates science for introducing productive innovations into the market, the adversities of life – ill health and aging for instance – remain very much the state’s responsibility. Despite periodic challenges, Britain is still importantly the state of the National Health Service, committed to taking care of those who are injured by innovations that fail. Accordingly, unlike the US government, the British state cannot absolve itself of responsibility for risk-taking gone wrong. In turn, that position of ultimate responsibility influences the state’s relatively cautious framing of technological risks; even potential medical benefits, such as cancer tests and treatments, are seen as carrying costs for a state that is required to pay for medicines.

Germany, too, adopted the process frame along with Britain and the European Commission, acknowledging that genetic modification calls for special oversight in all of its domains of application. But taming the risks of biotechnology in Germany proceeded in tandem with taming recalcitrant memories of past abuses of science, before and after the fall of communism in 1989 and the reunification of the divided state in 1990.³ Key to resolving the early political debates around biotechnology was the reaffirmation of Germany as a *Rechtsstaat*, a place where the rule of law enjoys supreme respect. In turn, this construction of the German state demanded principled behavior and strict adherence to basic constitutional norms, such as respect for human dignity and the state’s duty to protect its citizens against unreasonable risks.

Regulatory framings of biotechnological problems in Germany were designed to foster legal and moral stability. Difficult problems were avoided altogether or permitted only as limited, well-defined exceptions to a general prohibition. Not surprisingly perhaps, German legislative and regulatory enactments con-

³ On Germany’s wider struggles with historical memory in this period, see Maier 1990 and Buruma 1995.

cerning biotechnology in the 1990s sought to prevent some conceptually ambiguous entities, such as frozen embryos and stem cell lines, from coming into being. Thus, surrogacy was forbidden by a 1990 law, as was the creation of spare embryos for any purpose. Embryonic stem cells are not as yet permitted to be made in Germany. They can be imported, but only if they were created before a date clearly stipulated by law. Without such firm lines, it seems that the state sees itself as always in danger of a *Dammbrech* – a breaking down of normative high dams, with uncertain consequences for public morality, law and order. The result, especially by contrast with the United States, is a regulatory environment that seems hesitant to experiment with new forms of life, whether in nature or in culture. Innovation is managed, in effect, so as to limit uncertainty, not only uncertainties about the health and safety of German citizens but about the legitimacy of the state itself.

Experts and the state

A second feature of national politics that affects regulatory policies for science and technology is the relationship between experts and the state. Expertise figures in the integration of science and politics in three separate, but related, ways: through the bodies of knowledge and skill that experts represent (“good science”); through the experienced and impartial bodies of the experts themselves (independent experts); and through the collective bodies, or groups, that typically offer judgment in complex policy domains (expert advisory committees). Cross-national comparison suggests that national political systems depend to differing degrees on these three dimensions of expert legitimation and that these differences were consequential for the regulation of biotechnology.

The expert’s professional skills and standing count for more in the United States than the tacit knowledge and intangible sense of the public good gained through experience or the validation conferred by well-orchestrated group judgments. In a meritocracy that prides itself on individualism and on objective markers of intellectual merit (Carson 2004), the surest way to becoming an acknowledged expert is by climbing the ladder of professional recognition. What an expert achieves beyond the sphere of technical competence is of lesser consequence. To be sure, the capacity to work in the public interest plays a part in the nomination and selection of experts for

US advisory positions, and the law governing federal advisory committees explicitly requires a balance of perspectives, but in assuring the credibility of expert opinion, the expert’s knowledge credentials count for more than virtually any other factor. Group assessments, too, are validated first and foremost by peer review, on the basis of presumptively impartial criteria of intellectual merit.

Against this backdrop, it is significant that the early framers of the risks of biotechnology in the United States were leaders in the science that, more than any other, made genetic engineering possible: molecular biology. Nobel laureates and other scientific leaders, and eventually the US National Academy of Sciences, threw their authority behind a representation of the new technology that stressed precision and predictability at the expense of uncertainties arising from biotechnology’s environmental and social contexts. The conviction that genetic engineering could be precisely targeted and controlled did much to validate the conclusion that it was not the GM process that needed to be addressed, but only its products. At this formative moment, the predisposition of elite scientists converged with and strengthened a policy outcome that favored rapid introduction and a sorting out of consumer preferences through the market.

The politics of green and red biotechnology in Britain also reflected the role of experts in that nation’s political culture. Expert trustworthiness and reliability are powerful sources of legitimation for the British state, especially because there are few administrative channels by which citizens can question the reasoning of state agencies. In Britain, early state responses to biotechnology were informed and assisted by a consensual, elitist tradition of government that draws trusted voices to the policy table. This inclusiveness encompassed ecologists and environmentalists, who succeeded during the 1990s in canvassing a wider range of uncertainties associated with the dissemination of agriculture biotechnology than were seen as relevant in US assessments. Even before BSE (“mad cow”) disease became a household term, British scientists and policymakers favored a more precautionary approach to regulating biotechnology than their American counterparts, and the idea of regulating only the products of genetic technologies never took hold.

Expert credibility, however, took a body blow in the aftermath of the mad cow crisis, when official asser-

tions that the disease posed no threat to humans proved to be mistaken. British policymakers had to reinvent their advisory bodies, with visibly trustworthy leadership. The creation of the new Food Standards Agency (FSA) in 2000, headed by an administratively seasoned scientist and a consumer representative, exemplified the government's attempt to restore confidence with the aid of tried and true individuals.⁴ The government also attempted to widen the range of views concerned with GM crops through the creation of the Agriculture and Environment Biotechnology Commission (AEBC), a body that recommended the conduct of farm-scale trials and nationwide consultation on GM crops as necessary measures for rebuilding confidence. These activities, among others, broadened the range of inputs and kept alive a greater awareness of the uncertainties of agricultural biotechnology than in the United States.

In the context of embryo research, where the risks are more likely ethical and moral than environmental, trustworthy experts were able to carve out a protected space for British reproductive science and its biomedical offshoots. In part, this success can be attributed to the personal credibility of certain key experts, such as the philosopher Baroness Mary Warnock, who headed the committee that laid down the ethical foundations of Britain's 1990 law on embryo research. From the standpoint of British officialdom, Warnock proved her ability to serve the state when she shepherded her committee through to a satisfactory consensus with respect to a potentially divisive issue: when and to what extent it is permissible to experiment with incipient human life? Warnock proved her worth again when she contributed, along with other leaders of church and state, to a debate in the House of Lords that led to the ratification of the embryology bill. Her committee, as we see below, drew its legitimacy not only from a trusted and diplomatic leader, but also because it eschewed abstractions and appealed to common-sense notions of when human life begins.

The German state also legitimates its discretionary power through a network of largely anonymous expert committees, such as the Central Commission for Biological Safety. Unlike in Britain, these bodies

seldom rely on prominent individuals for legitimacy. German expert bodies pride themselves on making principled, apolitical, administrative decisions within the parameters of the law. The appearance of impartiality within expert bodies is achieved not through transparency and openness to legal and political challenge, as in the United States, but through a process of inclusion that draws politics into the insides of expert committees. Political judgments in this way are subsumed into expert reasoning; in practice, expert bodies help maintain sharp boundaries between technical and political decision-making. Expert judgments are seldom publicly contested in Germany, but this is because those who might dissent would, in the ideal case, have already had their say within the institutional framework of expert deliberations.

Such inclusive practices may tend to err on the side of caution, but they may also accommodate change without corrosive conflict. It was with the support of expert advisers, for example, that Gerhard Schröder's government was able substantially to reprogram the relations between the life sciences and the state. Compromises were made on many fronts so as to facilitate the growth of biotechnology: in the move away from a categorically prohibitive attitude to agricultural biotechnology under Renate Künast, Green minister for agriculture and consumer affairs; in the approval of GM foods and crops following the adoption of EU labeling and traceability rules; in the appointment of a separate bioethics council by the executive branch to liberalize policy for research with embryonic stem cells; and in the active sponsorship of bioregions to promote university-industry technology transfer.

Yet although these steps indicated a moderation of older policy hard lines, they left intact the state's central responsibility to regulate the ethical, economic and environmental risks of biotechnology and its commitment to precaution. Künast's opening the door to GM crops was counterbalanced by the promise of large public subsidies to organic agriculture. Even the creation of new public-private linkages in the bioregions remained, at bottom, a state-run effort to generate competition, with the state serving in effect as venture capitalist for new industrial formations. Put differently, the programmatic relations between science, technology and the state in Germany persisted into the new century with one salient difference: the politics of high moral anxiety of the 1990s, fearful of innovation in the industrialized

⁴ Sir John Krebs, the first FSA head, had successfully served as the head of the Natural Environment Research Council, one of the UK government's research funding agencies. His deputy, Suzi Leather, later became head of another important agency, the Human Fertilisation and Embryology Authority that regulates research on human embryos.

life sciences, was gradually supplanted by a more traditional German politics aiming at consensus-based management of the inventive process, with incremental accommodation of risks as they became apparent.

Civic epistemologies

The third element of domestic politics that helps explain convergences and divergences among national biotechnology policies is the nature of proofs and justifications demanded from a state by its citizenry. These tacit assumptions regarding the appropriate forms of public reasoning, or civic epistemologies, constitute an important part of a nation's political culture (Jasanoff 2005). Institutionalized in administrative processes, and reinforced through repeated performances by state actors, these disparate ways of knowing and reasoning by public authorities support potentially quite different approaches to regulating the hazards and uncertainties of technological advances. Examples from US, UK and German policies for biotechnology illustrate this point.

Central to US practices of validating knowledge for public use is the possibility of questioning expert opinion in adversarial settings. Both the commitment to pluralistic politics and the reliance on law to resolve political conflicts favor the public testing of expert claims. Indeed, it has long been an assumption of the common law that truth, or its closest approximation, is best attained when parties with opposing interests are allowed to take issue with each other's claims. These US cultural commitments lead to a preference for policy justifications that rest on the seemingly impartial authority of science and, where possible, on quantified calculations of risk and benefit.⁵ As already noted, it was important for the stabilization of the product-based regulatory framework that leading scientists called attention to the threats of recombinant DNA research and proposed the conceptual foundations for regulation. Propelled by genuine concerns for public welfare, American molecular biologists crafted narratives that influenced US policy for years to come but at the same time also reinforced their field's authority: narratives of scientific self-regulation and the responsibility of science; of genetic modification as a set of precise interventions; of health risk as the issue of largest concern;

and of physical and biological containment as the primary means of risk control.

Skepticism toward biotechnology erupted in the United States mainly in contexts that were already scripted for political conflict. Thus, the organic farming lobby successfully played on entrenched opposition to industrial agriculture to ensure that the label "organic" would not attach to GM products. Similarly, the politics of research with human embryonic stem cells built on the long-standing deep polarization between Christian fundamentalists and secular liberals. In more neutral territory, the authority of science prevailed, especially when the public was persuaded that the basis for policy had been and would continue to be openly debated.

In Britain, too, practices of political authorization worked in harmony with an important feature of British civic epistemology: the preference for empirical demonstrations that are credible to all citizens. In the contexts of both embryo research and agricultural biotechnology, repeated public appeals were made to proofs that ordinary people could see and understand. By the same token, failure to meet the demand for empirical justification generated uneasiness about the safety of GM crops even before the outbreak of the BSE crisis. British policymakers were notably reluctant to embrace the US position that most GM products are substantially equivalent to their unaltered counterparts, and hence safe. With the creation of the AEBC, additional skeptical voices from academia and environmental groups joined the UK policy debate, but this effort to build a stronger consensus in support of agricultural biotechnology led to a more extensive discussion of scientific unknowns than in the United States. Farm scale trials of GM crops and GM Nation?, the national consultation on approving them, were two of the more noteworthy results.

By contrast, a mutually reinforcing alliance of ethical and scientific authority drew a workable distinction between the less than fourteen-day-old "pre-embryo" and the embryo proper, allowing the former to be treated as an object of research. That line of demarcation had to be made publicly credible, however, and this in turn meant that key actors, such as the Warnock committee, had to construct a reality that citizens would accept. Here, the resources of British civic epistemology were successfully mobilized, in particular the insistence that policy-relevant distinctions must be witnessed in common in order to be

⁵ Brickman, Jasanoff and Ilgen (1985); for a historical account of the same tendencies, see Porter (1995).

considered authoritative. It was important to the Warnock committee, for example, that the primitive streak, precursor to the central nervous system, develops in the human embryo at around fourteen days. This was an observable and readily understandable line that almost all concerned parties – philosophers, scientists, politicians, and ordinary laypeople – proved prepared to accept for regulatory purposes, even though it went against the argument of most biologists that embryonic development is a continuous process with no bright lines separating its stages.

Civic epistemology came into play in the German context as well, but in a different guise. In postwar Germany, much energy has been devoted to ensuring the inclusion of society as a whole in the production and display of public reason. The state needs to show that it has consulted with all relevant parties and constructed forms of policy justification that address, and if possible incorporate, every relevant standpoint. This urge toward inclusion is reflected in the design of policy institutions, from the distinctively German parliamentary inquiry commission (*Enquetekommission*), which ordinarily includes both political representatives and experts of divergent viewpoints, to key advisory bodies, such as the commission that advises the government on the approval of GMOs. Bodies such as these maintain their legitimacy not through appeals to science or common sense, as in the United States and Britain, but through the demonstration that they have left out no important positions or arguments. As noted above, this commitment to inclusivity may account for Germany's particular brand of policy caution, but perhaps also for Germany's ability to accommodate sometimes quite radical change.

Regulatory divergence and democratic politics

Regulating biotechnology was not, on either side of the Atlantic, simply a matter of applying existing policy principles to new agenda items; nor was it a case of unwieldy political institutions trying with difficulty to catch up with rapid developments in science and technology. Still less – contrary to the pronouncements of the US Trade Representative in the WTO GMO case – did the ensuing policy differences reflect simple binary oppositions between Europe and the United States with respect to the pace of innovation, economic self-interest, concern for developing nations or public understanding of the life sciences. Rather, through their attempts to regulate biotechnology,

democratic nations on both sides of the Atlantic tested, and to some extent reaffirmed, their fundamental beliefs about who should be responsible for the risks and costs of technological change. Citizens trusted the state's expert judgments when they addressed uncertainties in a manner consistent with established civic epistemologies; policies that failed to meet such expectations were rejected as unconvincing. In this way, the politics of biotechnology reproduced key aspects of national political culture.

What lessons can be drawn from these histories for the future of biotechnology policy in a globalizing world? It seems clear, first of all, that informed citizens of democratic societies want more from regulation than simply the assurances of experts that no one will suffer physical or environmental harm. As important, if not more so, is the reassurance that the unintended consequences of innovation will be dealt with fairly, and that, if things go wrong, those harmed by technological change – economically, socially, or physically – will not be left without relief. It is clear as well that domestic politics matter profoundly in determining the forms of policy justification and action that citizens consider legitimate. All this implies that universal arguments in favor of biotechnology are less likely to gain acceptance in democratic societies than specific arguments addressing localized concerns arising within well-understood patterns of political responsibility.

The early history of biotechnology regulation reinforces a point long known to students of technology in society. Innovation succeeds only when novel artifacts can be seamlessly integrated into the ways in which people want to lead their lives. Regulatory policies in turn can only be effective if they confront the uncertainties that threaten to destabilize settled forms of life. It should be no surprise, then, that different cultures want to regulate novel technologies in different ways. This, too, is a valuable form of cultural experimentation, and it should be welcomed accordingly. It would impoverish the world if our experiments with remaking life itself were to produce too early and too ill-considered policy uniformity.

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GENDER BUDGETING IN AUSTRIA*

MARGIT SCHRATZENSTALLER**

Introduction

Austria will include gender equality as one fundamental aim of public sector budgeting and accounting (besides the achievement of macroeconomic stability and of the sustainability of public finances) in the Austrian Federal Constitution within the framework of a comprehensive budget reform as of 2009. In addition, gender budgeting will be one element in the performance orientation of public funds allocation, which will be codified as one fundamental budgetary principle (besides transparency, efficiency, and a true and fair view of the budgetary situation) in the new federal budget law (*Bundeshaushaltsgesetz*; Steger 2006) within the budget reform.¹ Viewed internationally, the introduction of a binding legal framework and requirements to implement gender budgeting in the public sector reflects a strong political commitment on the part of Austria.

Gender budgeting: what, why and how?

Basic definitions and concepts

The main goal of gender budgeting is to achieve gender equality – either as an aim in itself or as an intermediate objective to realise other economic final aims. The use of gender budgeting to further effective gender equality within and via public budgets is rooted in several supranational agreements and commitments. At the United Nations' (UN) World Conference on Women in Beijing in 1995, the governments of the 189 participating countries commit-

ted themselves to implement gender budgeting at all levels of the state. The UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), which was adopted in 1979 by the UN General Assembly, also obliges governments to avoid discrimination against women by means of budgetary provisions (Elson 2006). All member states of the European Union (EU) are state parties of the UN Convention and its protocol. Moreover, they committed themselves to the principle of gender mainstreaming in 1995, which was codified in 1997 in the Treaty of Amsterdam (Articles 2 and 3). In 1999, the European Commission adopted gender budgeting as one important gender mainstreaming instrument with respect to public budgets and since then has been working on its implementation in the EU and in member states' budgets. Moreover, in 2003 the European Parliament called upon the European Commission to develop an action strategy for the EU and its member states for the introduction of gender budgeting.

Gender mainstreaming can be defined as follows: "Gender mainstreaming is the (re)organisation, improvement, development and evaluation of policy processes, so that a gender equality perspective is incorporated in all policies at all levels and all stages, by the actors normally involved in policy making" (Council of Europe 1998). Within the public sector, gender budgeting represents a crucial element of a gender mainstreaming strategy, or to put it differently: gender budgeting can be interpreted as gender mainstreaming in the area of public finances.

The focus of gender budgeting is twofold. In a first step it concentrates on the analysis of gender-disaggregated effects of public revenues and expenditures. Based on the results of this analysis, gender budgeting aims to modify budget structures and processes in a second step so as to foster gender equality. It should be noted that gender budgeting does not exclusively aim at programs specifically targeted to women and that it does not aim at producing a separate "women's budget" either. Gender budgeting rather intends to analyse the impact of all government programs and policies on the expendi-

* This article draws heavily on Mayrhober et al. (2007A and 2007B).

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¹ For a short overview of the Austrian budget reforms, see OECD (2007).

ture as well as on the revenue side of the budget with respect to the situation of men and women.

The (economic) case for gender budgeting

The importance of gender budgeting as one pillar of a gender mainstreaming strategy rests upon the large share of public sectors and public budgets in the economies, particularly of modern welfare states, which entails a considerable allocative and distributive impact of public revenues and expenditures. Gender-responsive budgeting is guided by the basic assumption that the structures of public budgets not only influence the distribution of financial and material resources but of immaterial ones as well, and of these, particularly time. To illustrate this by a simple example: publicly-funded child-care facilities reduce the time parents (and particularly mothers) have to spend minding their children and thus create the necessary preconditions to dedicate (more) time to paid employment (or to leisure activities).

Due to their differing socio-economic situations, which are associated with differing individual needs and preferences, men and women are affected differently by budgetary policies. Therefore the concept of a gender-neutral individual as the target of budgetary provisions is misleading for policy-makers trying to devise effective and efficient budgetary policies (Budlender et al. 1998).

The impact the structures of public budgets may exert on men and women, and on gender equality can be direct or indirect. Moreover, the population's socio-economic situation is not only influenced by public goods and services themselves but by the resulting substitutive or complementary relationships between publicly provided goods and services and those provided in private households (for example, long-time care). Gender budgeting therefore tries to capture the interrelations between the so-called "care economy" on the one hand, which comprises all kinds of unpaid work done in private households (e.g., housework, care work, etc.), and budgetary policies on the other hand. It thus aims at making visible the parts of the economy outside the state or the market sector or the remunerated part of the non-profit sector (Himmelweit 2002) with the final goal being to achieve a more equal distribution of material and immaterial resources (income, wealth, time) among men and women and to grant equal access to the economic, political and social sphere to both men and women. According to this

strand of the theoretical and political discussion, gender equality is pursued as an aim in itself, which finds its justification in fundamental normative equity considerations.

More recently, there is another line of research and economic policy increasingly interested in gender budgeting, which can be subsumed under the heading "new public management". Very broadly speaking, new public management aims at the modernisation of public administrations in general and of the budget process in particular. Especially in the context of efforts to complement the traditional input-oriented view of public budgets with an output perspective (so-called "performance-oriented budgeting"), gender budgeting has been receiving increasing attention.

Performance-oriented budgeting is one element in the catalogue of tools for budgetary institutions, which are advocated as levers to use public means more effectively and efficiently according to identified strategic priorities – and thus to improve the "quality of public finances", as the European Commission puts it.² The OECD also recommends performance-oriented budgeting as one central approach to effectively control public expenditures (Blondal 2003). From this perspective, gender budgeting may be perceived as one particular element of performance-oriented budgeting which concentrates specifically on the effects of budgetary policies on gender equality. It may thus increase the overall transparency of governmental activities, as it does not only focus on their costs but on their benefits as well. Gender budgeting may thus contribute to a more effective and efficient use of public money by explicitly taking into account the specific needs and preferences of citizens, which may differ between men and women.

From this perspective the purpose of gender budgeting goes beyond realising gender equality as a goal in itself. Gender budgeting is rather seen as one vehicle through which the achievement of "pure economic" goals may be fostered. These include modernising the public sector and making the budget process more effective and efficient, and increasing an economy's overall productivity, growth and employment

² The European Commission put forward its concept of the quality of public finances for the first time in 2001 (European Commission 2001). Under this term it discusses the contribution of the public sector to increase growth and employment and thus to support the Lisbon Strategy of the European Union, which aims at making the EU the world's most competitive economic region by 2010.

by, e.g., supporting policies that aim at integrating women more firmly into the “official” economy and the “official” labour market so as to utilise their human capital and their specific capabilities more efficiently.

This type of economic reasoning can be found in both modern welfare states and developing countries. For the developed countries the economic case to promote equal opportunities for women is made against the backdrop of a possible future shortage of the supply of (qualified) labour due to the long-term demographic change practically all modern welfare states are experiencing. A prominent proponent of this line of reasoning is the OECD (see, e.g., the OECD’s series “Babies and Bosses”). For the poor countries there is accumulating empirical evidence that improving the socio-economic status of women and their access to economic opportunities is positively related to economic growth (e.g., Klasen 2007). For example, women spend a larger share of household income on the education of their children when they have more control over their households’ expenditures. In very poor countries where agriculture represents the main economic activity, e.g., in sub-Saharan Africa, women’s lack of education, health and employment opportunities hinders them from taking full advantage of development programs, which in turn results in disappointing growth effects (e.g., Stotsky 2007).

The scope of gender budgeting: public expenditures and revenues

With respect to public expenditures gender budgeting tries to analyse the gender-disaggregated output (the direct results of a monetary transfer or a publicly provided good or service, i.e., the gender-disaggregated use) as well as the outcome (the indirect results of public expenditures for men and women). The impact of public expenditures on work outside the state and the market sector (i.e., unpaid care work in the private household, voluntary work and unofficial work in the shadow economy) and on the distribution of work and time among men and women are outcome dimensions of particular relevance. Moreover, a gender-sensitive budget analysis is interested in the input side too: in addition to the total amount appropriated to a specific purpose and its relative weight within total expenditures, the employment and income effects in the public sector associated with the public provision of goods and services are examined from a gender perspective.

Up to now, gender budgeting initiatives have mainly concentrated on the expenditure side of public budgets, although it is plausible to assume that public revenues in general and taxes (as governments’ most important revenue source) in particular exert non-negligible differing allocative and distributive effects on both men and women (de Villota and Ferrari 2001).³ Nonetheless, practical empirical work on gender-relevant taxation issues is still scarce for several reasons (Philipps 2006) – for example, because of methodological problems and data restrictions (e.g., disaggregated data on the gender-disaggregated distribution of the revenues from a certain tax) or the fact that a gender-sensitive analysis of government revenues may be politically more sensitive compared to examining government expenditures. Thus gender-related considerations of public revenues often remain at a very general and not rarely even at a (too) simplistic level.

Some methodological basics

There is no single, uniform methodology for doing gender budgeting. The analytical-methodological approach as well as the tools and instruments applied in a specific gender budgeting exercise depend on several factors:

- the side of the budget to be examined (expenditures or revenues),
- the budget item to be analysed,
- the time horizon (analysis of a certain point of time or of long-term developments),
- the gender-related aspects of interest,
- the concrete question guiding the gender-sensitive analysis (examination of existing budgetary provisions and structures or analysis of discretionary past or future changes, i.e., increase or reduction of public expenditures or revenues).

Examples for the analytical approach and methods are (see, e.g., Budlender et al. 1998, Budlender et al. 2002):

- descriptive analysis of the situation of men and women based on existing data,
- assessment of publicly provided goods and services via surveys among (potential) users,
- gender-disaggregated incidence analysis of public expenditures and revenues,

³ For a very instructive example of a thorough and meaningful gender-sensitive analysis of a specific tax, namely the Austrian income tax, see Einhaus et al. (2006).

- analysis of gender-disaggregated employment and income effects of public expenditures and revenues,
- analysis of the gender-disaggregated allocation of time to paid and unpaid work,
- analysis of gender-disaggregated behavioural effects of public expenditures and revenues (i.e., indirect effects on the labour supply, for example, which may be captured by empirical econometric methods),
- gender-disaggregated analysis of the impact of the public budget on time use, based on household time use surveys.

Gender-sensitive analysis of the budget of an Austrian state (Land): the example Upper Austria

This section presents selected results of a pilot study commissioned by the government of Upper Austria (one of nine Austrian states).⁴ The pilot study attempted to determine the gender-disaggregated effects of the expenditures (according to the budget outturn of the year 2003 and the draft budget for 2004) in three budget areas, which together account for more than one third of Upper Austria's total expenditures: health, education, and sports. Thus it is the most comprehensive gender budget exercise undertaken in Austria up to now.

The study focused on the analysis of the state budget's gender effects, i.e., on the first step of gender-responsive budgeting. The development of recommendations on how to eliminate or at least decrease existing deficits with respect to gender equality was not a mandate of the study. Nor was the examination of state revenues, as Austrian states dispose of very limited revenue autonomy only. Their budgets are mainly financed by shares in federal taxes and by intragovernmental transfers from the central level and the municipalities; the intake from their own state taxes is negligible.

The gender budget analysis for Upper Austria exemplarily used several of the above-mentioned analytical approaches and methods. The determination of gender-disaggregated income and employment effects of public expenditures (the input side) and of their gender-disaggregated incidence (the output side) played an important role in the study. Moreover the study attempted to establish a connec-

tion between public expenditures and voluntary work as one outcome dimension with regard to the gender-disaggregated distribution of unpaid work.

The input side of public expenditures: gender-sensitive analysis of employment and incomes in the education sector

Public expenditures directly and indirectly impact on quantity and quality of employment and income chances for men and women. The extent and the gender-disaggregated structure of these effects were identified for Upper Austria's public expenditures for education. The analysis accounted both for employment contracts with the state as employer (e.g., state teachers, state civil servants) and for jobs in institutions which are (co-)financed by funds from the state budget (e.g., universities for applied sciences and kindergartens).

Overall, more than 29,200 persons were employed on a full-time basis or in additional occupation in Upper Austria's educational institutions in 2003. About 14,300 employees were state teachers, among them about three-quarters were women. Institutions cofinanced by the state employed another 14,900 individuals, with a female share of about three-quarters, too. Educational institutions (co-)financed by the state are therefore important employers for women.

Most interestingly, however, women's share in the total number of employees falls with the increasing age of the educational institutions' target group (see Table 1). Whereas in kindergartens 99.5 percent of employees are female, in day nurseries (Horte) it is 96.7 percent and in primary schools (Volksschulen) 88.7 percent of employees, decreasing to 68.5 percent in lower secondary schools (Hauptschulen), to 30.6 percent in vocational schools for apprentices (Berufsschulen), and to 23.3 percent of the teaching staff in universities for applied sciences (Fachhochschulen). At 59 percent, the share of female employees is comparatively high in the field of adult education. Their share of 85 percent in library staff is difficult to interpret, as it also comprises volunteers.

These findings are relevant from a gender perspective mainly for three reasons. Firstly, income and career opportunities are rather limited in child-care facilities (kindergartens and day nurseries) compared to other educational institutions. Secondly, the quality of jobs differs between the individual seg-

⁴ For details see Mayrhuber et al. (2006 and 2007B).

Table 1
Employees in the education sector in Upper Austria by gender

	Number of employees		Shares in %	
	Men	Women	Men	Women
Kindergartens ^{a)}	24	4,718	0.5	99.5
Day nurseries ^{a)}	31	911	3.3	96.7
Primary schools ^{b)}	646	5,061	11.3	88.7
Special schools ^{b)}	108	583	15.6	84.4
Lower secondary schools ^{b)}	2,073	4,504	31.5	68.5
Pre-vocational year ^{b)}	198	198	50.0	50.0
Vocational schools ^{b)}	624	275	69.4	30.6
Universities for applied sciences ^{a)}				
Teaching staff	676	206	76.6	23.3
Administration	43	72	37.4	62.6
Libraries ^{c)}	.	.	15.0	85.0
Adult education ^{d)}	3,384	4,834	41.2	58.8
Public employees	3,649	10,621	25.6	74.4
Employees in publicly-cofinanced institutions ^{e)}	4,158	10,741	27.9	72.1
Total number of employees ^{e)}	7,807	21,362	26.8	73.2

^{a)} Working year 2003/04. – ^{b)} Average of calendar year 2004, public employees. – ^{c)} According to library survey 2001. – ^{d)} Average of calendar year 2003, trainers in full-time and additional occupation. – ^{e)} Excluding employees in publicly-subsidised libraries.

Source: WIFO calculations.

ments of the education sector. For example, jobs in the field of adult education, in which an over-proportionate share of female employees can be found, are mainly designed as an additional occupation; only eight percent of all female employees and ten percent of all male employees are employed in full-time jobs. Part-time jobs, too, are more wide-spread in the educational institutions for the lower age

Table 2
Total employment and leading positions by gender

	Employees		Persons in leading positions		Difference in share of women
	Men	Women	Men	Women	
	Shares in %				Percentage points ^{a)}
Kindergartens	0.5	99.5	0.3	99.7	+ 0.2
Day nurseries	3.3	96.7	2.5	97.5	+ 0.8
Primary schools	11.3	88.7	38	62	- 26.7
Special schools	15.6	84.4	55	45	- 39.4
Lower secondary schools	31.5	68.5	83	17	- 51.5
Pre-vocational schools	50.0	50	87	13	- 37
Vocational schools	69.4	30.6	74	26	- 4.6
Universities for applied sciences	76.6	23.3	88	12	- 11.3
Libraries	15.0	85	.	.	.
Adult education	37.5	62.5	.	.	.

^{a)} Difference between share of women in employees and in persons in leading positions. – = under-representation of women, + = over-representation of women.

Source: WIFO calculations.

groups: 49 percent of women working in kindergartens and 45 percent of women employed in day nurseries hold part-time jobs, compared to 42 percent of female and 16 percent of male teachers in higher general secondary schools and 32 percent of female and 13 percent of male teachers in vocational schools. Thirdly, and somewhat beyond pure economic considerations, small children in kindergartens and primary schools are almost exclusively or at least primarily educated and taught by females, and thus lack the opportunity to encounter male role models, particularly in the early years of their lives.

A comparison of women's shares in leading positions and in the total number of employees shows

that women are under-represented in almost all segments of the education sector (see Table 2). Women's under-representation is least in vocational schools (30.6 percent of jobs and 26 percent of leading positions are held by women) and universities for applied sciences (23.3 percent of jobs and 12 percent of leading positions – i.e., heads of study programs – are occupied by women). The discrepancy between women's share in the total number of jobs and in leading positions is largest in lower secondary schools (69 percent versus 17 percent) and in the pre-vocational year (Polytechnische Schulen; 50 percent versus 13 percent).

The analysis of gender-disaggregated employment and income effects of public expenditures as it was conducted for Upper Austria is only the first step of a gender-responsive budget analysis. In a next step the reasons for differing employment and income chances for men and women should be examined in detail – to find out, for example, whether they root in voluntary

Table 3

Gender-disaggregated health expenditure incidence analysis for Upper Austria, 2003

	Basis for allocation key	Total expenditures	Average expenditures ^{a)}	Allocation key		Expenditure incidence	
				Men	Women	Men	Women
				in %		1,000 €	
Hospitals	Patient days	382,059.4	153.16	44.4	55.6	169,634.4	212,425.0
Sick transports	Transported persons	10,195.0	24.06	46.1	53.9	4,699.9	5,495.1
Mother-child-subsidy	Claimants	1,752.9	185 ^{b)}	5.0	95.0	87.6	1,665.2
Medical on-call duty	Total population	1,509.7	1.09	48.9	51.1	738.2	771.5
Vaccinations	Population age 0 to 15	1,357.1	8 ^{c)}	51.3	48.7	696.2	660.9
Fighting alcohol, nicotine and drug abuse	Persons attended on in help and information centers ^{d)}	1,090.8	634.90	80.0	20.0	872.6	218.2
Health service for schools	Population age 6 to 14	593.5	3.74	51.2	48.8	303.9	289.6
Mother-child consulting service	Living births	188.9	14	51.1	48.9	96.5	92.4
Network "Healthy Municipality"	Total population	175.0	0.13	48.9	51.1	85.6	89.4
Sum		398,922.2		44.4	55.6	177,214.9	221,707.3

^{a)} Total expenditures divided by basis for allocation keys. – ^{b)} Fixed amount. – ^{c)} Total expenditures/number of vaccinations. – ^{d)} Help and information centers for alcohol abuse: all persons attended on, help and information centers for drug abuse: new entrants and persons in substitution treatment.

Sources: Budget outturn 2003; WIFO calculations.

or involuntary individual decisions (possibly due to an insufficient child care infrastructure), discrimination, qualification differences, etc.

The output side of public expenditures: gender-disaggregated expenditure incidence analysis for the health sector

The direct gender-disaggregated output effects of health expenditures were captured by an expenditure incidence analysis. Expenditure incidence analyses try to determine who benefits from monetary and real transfers from the public budget, i.e., they aim at allocating government expenditures for publicly provided goods and services to the users based on allocation keys. In this case they quantify the direct benefit for users and thus are guided by the question to what extent public expenditures are made directly to men and women.

Table 3 presents the results of a gender-disaggregated incidence analysis for the Upper Austrian health expenditures, which can be divided into nine functional areas. For each expenditure item (e.g., hospitals), Table 3 contains the basis for the determination of the allocation keys (e.g., total number of patient days in hospitals); total expenditures; average expenditures, i.e., total expenditures related to the basis for the allocation keys (e.g., total expenditures for hospitals divided by total patient days); the gender-dis-

aggregated allocation keys (e.g., share of men and women in total patient days) and the resulting gender-disaggregated expenditure incidence (i.e., share of total expenditures attributable to women and men, respectively). For those areas in which the respective data and information are available, most allocation keys are based on the gender-disaggregated structure of the whole user group. Should such data and information not exist, expenditures are allocated on the basis of the gender-disaggregated structure of the overall population (e.g., medical on-call duty) or of the relevant sub-group (e.g., health service for schools).

According to the gender-disaggregated expenditure incidence analysis, 55.6 percent of health expenditures from the 2003 Upper Austrian state budget can be directly attributed to women and 44.4 percent to men. By contrasting these shares with the gender-disaggregated structure of the overall population (51.1 percent are women, 48.9 percent are men), it can be concluded that the state Upper Austria spends an over-proportionate share of its total health expenditures on women.

However, this finding requires qualification in several respects. First of all, the above analysis implicitly assumes uniform average expenditures for the individual spending items, an assumption which leads to an over-simplification in expenditure areas with het-

Table 4
Volunteers by gender in selected expenditure areas

	Employees			Volunteers		
	Number		Share of women in %	Number		Share of women in %
	Men	Women		Men	Women	
Adult education	3,386	4,832	58.8	82	953	92.1
Sick transports	271	20	6.9	4,277	2,688	38.6
Network "Healthy Municipality"	0	0	.	117	237	66.7
Sport ^{a)}	15	13	46.4	235	11	4.5
Total	3,672	4,865	57.0	4,711	3,889	45.2

^{a)} Umbrella associations and Upper Austrian Soccer Federation.

Source: WIFO calculations.

erogeneous output. For example, the average costs of a patient day in a hospital differs according to diagnosis and medical treatment, and probably also with respect to hospital size. Additionally, the services provided are probably used with differing intensity (e.g., help and information centers for alcohol and drug abuse). Moreover, the attribution of total expenditures to men and women is based exclusively on direct use, which may lead to a distorted and incomplete result for two reasons. Firstly, public expenditures are not necessarily attributed to those who actually caused them (e.g., medical treatment after domestic violence or expenditures related to pregnancy and maternity⁵). Secondly, indirect effects are completely neglected. Therefore over-proportionate health expenditures for women need not benefit women over-proportionately if they have a positive outcome (positive externalities) for other individuals, groups, or the whole society.

*The outcome side of public expenditures:
gender aspects of voluntary work*

An important aspect of gender-responsive budgeting is the identification of interrelations between unpaid work and individual policy areas in which the public sector intervenes by means of expenditures. The data on unpaid work (care work within households, voluntary work and unofficial work) are incomplete and fragmentary; in some cases aggregated data are available for Austria as a whole, but not for the single states.

The pilot study for Upper Austria examined exemplarily the significance of voluntary work in selected expenditure areas for which data were available:

⁵ Medical services related to pregnancy and maternity are one important factor causing over-proportionate health expenditures for women.

adult education, sick transports, the network “Healthy Municipalities” and the promotion of sport via umbrella sport associations and the Upper Austrian Soccer Federation. In these expenditure areas overall public service provision crucially depends (in the case of the network “Healthy Municipalities”, exclusively) on voluntary work. Without voluntary work the extent of service provision would have to be reduced considerably or the use of the services provided

would be more expensive if volunteers had to be replaced by regular employees.

The relation between regular employees and volunteers amounts to 22.5 for sick transports, to 8.8 for the promotion of sport and to 0.2 for adult education. The distribution of paid jobs and unpaid voluntary work between men and women differs remarkably amongst the examined expenditure areas (see Table 4). While the share of female employees compared to volunteers is smaller for adult education (58.8 percent versus 92.1 percent) and sick transports (6.9 percent versus 38.6 percent), it is larger for sport promotion (46.4 percent versus 4.5). It is also striking (if not really surprising) that female volunteers engage least in sport promotion and most intensely in adult education.

Again, starting from these results an in-depth analysis of the reasons for differing gender-disaggregated employment opportunities and voluntary engagement in individual areas is needed.

Practical problems and conclusions

Gender-responsive budgeting is confronted with a number of conceptual and practical questions and problems. Some are similar to those encountering efforts to strengthen the performance-orientation of public budgeting (e.g., Joumard et al. 2004): the choice of suitable performance indicators or the measurement particularly of qualitative and of indirect effects (outcomes). Moreover performance goals should be specific, measurable, attainable, relevant and specified with respect to the point of time at which they are to be achieved. Equally important are incentive mechanisms which induce the public

administration to strive for the determined outcomes. Another crucial aspect is the translation of the abstract political target to attain gender equality into concrete and specific sub-goals for individual budget areas. This requires decisions on the number as well as on the differentiation of sub-goals and – in case of conflict – on the prioritisation of sub-goals. Particularly in federal states the co-ordination of gender budget initiatives among the levels of government is of great importance so as to prevent budgetary measures designed to further gender equality at one governmental level from being counteracted at other governmental levels. Finally, gender budget initiatives should be integrated into and co-ordinated with existing reforms in the public sector, as is the case in Austria. In the future gender-responsive budgeting at the federal level will no longer be a separate undertaking without particular political relevance but will form an integral part of efforts to increase the quality of public finances.

Despite the existing practical and conceptual problems, gender-responsive budgeting is an important approach to improve gender equality within public budgets and the budget process and can contribute significantly to efforts to make budgetary policies more transparent and effective with regard to the actual needs of men and women.

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TYPOLGY OF CHILDCARE AND EARLY EDUCATION SERVICES

In many OECD countries childcare policies have recently become part of the discussions focussed on policies affecting parents with young children. One of the reasons is that working families have to face various decisions when ensuring the well-being of their children and the family as a whole. That includes the choice of the care type for their children. The interest in the use of childcare has grown as more women are working today than in the past. Childcare policies include promoting child development and well-being, supporting parenthood, reducing gender inequities, improving incomes of disadvantaged or large families or reducing their expenditures and removing barriers to female employment.

The OECD (2007) has collected information on different types of childcare arrangements and the

enrolment rates in childcare and early education. The choice of childcare arrangement (e.g. parental, professional and/or informal care) is influenced by the availability and cost of each type of care. Table 1 shows the enrolment rates in registered childcare and early education for children under six in different OECD countries. Registered care includes licensed centre-based care in all countries; it also includes accredited family daycare (childminders/residential care), where this exists.

The share of children in registered childcare varies across countries. The spread of the enrolment rates for children under the age of three varies from 2 percent in Poland up to 61.7 percent in Denmark. It must be pointed out that the enrolment rates in several central (e.g. Germany and Austria), eastern and southern European countries are lower than in Nordic and most English-speaking countries as well as in Belgium, France and the Netherlands. The discrepancies in the enrolment rates between the countries decrease as children grow older. The enrolment rates for children of five years of age converge in several countries (e.g.

France, Ireland, Italy, Spain and New Zealand) at 100 percent. It should be noted that in Finland and Poland only about 50 percent of children are in a childcare arrangement. France is noteworthy too, because children in France are already to 100 percent in a registered childcare centre at the age of three years.

The data in Table 1 do not account for the number of hours a child typically spends in care establishments. This fact could lead to larger discrepancies between the countries.

The differences in childcare use between OECD countries are based on incomplete information and on the large number of factors influencing childcare arrangements (e.g. demographic and labour market characteristics, institutional factors such as tax-benefit systems or different family policies).

Table 1
Enrolment rates in childcare and early education for children under six, 2004 or as noted (in %)

	Under three years	Three years	Four years	Five years
Austria	4.1	45.9	82.1	93.1
Belgium	38.5	99.3	99.9	99.7
Czech Republic	3.0	68.0	91.2	96.7
Denmark (2005)	61.7	81.8	93.4	93.9
Finland (2003)	35.0	37.7	46.1	54.6
France	26.0	100.0	100.0	100.0
Germany (2001)	9.0	69.5	84.3	86.7
Greece (2003)	7.0	n.a.	57.2	84.1
Hungary	6.9	71.0	92.3	97.8
Ireland (2000)	15.0	48.0	46.6	100.0
Italy (2000)	6.3	98.7	100.0	100.0
Luxembourg (2003)	14.0	37.9	83.5	96.9
Netherlands	29.5	32.3	74.0	98.4
Poland (2001)	2.0	26.1	35.7	46.2
Portugal	23.5	63.9	79.9	90.2
Slovak Republic	17.7	60.3	71.7	84.7
Spain	20.7	95.9	100.0	100.0
Sweden	39.5	82.5	87.7	89.7
United Kingdom	25.8	50.2	92.0	98.2
Norway (2003)	43.7	79.4	86.9	89.0
Switzerland	n.a.	7.2	34.4	89.7
Turkey	n.a.	1.7	3.4	26.2
Australia (2005)	29.0	55.0	64.6	90.9
Canada (2001)	19.0	n.a.	n.a.	n.a.
Japan	15.2	67.3	95.2	96.6
New Zealand	32.1	82.1	95.1	100.0
United States (2005)	29.5	41.8	64.1	77.0

Figures include both full-time and part-time care. Registered care includes licensed centre-based care in all countries; it also includes accredited family daycare (childminders/residential care), where this exists. For age group 3–5, all children enrolled in daycare facilities and pre-schools are included, regardless of whether these institutions are considered part of the formal education set-up in countries.

Source: OECD (2007), Benefits and Wages: OECD Indicators, Paris, p. 122.

Table 2

Childcare typology, 2007

Age	Centre-based care		Family daycare		Pre-school		Compulsory school	
	0	1	2	3	4	5	6	7
Austria	<i>Tagesmutter</i> (FDC) and <i>Krippen</i> (centre-based). Part-time (25 hrs)		<i>Kindergarten</i> (part-time, 25 hrs). Out of school care provision under development.				Compulsory schooling	
Belgium	<i>Kinderdagverblijf</i> (centre-based crèches) and FDC; <i>Crèche</i> (centre-based) and <i>gardiennes encadrées</i> (FDC)		<i>Kinderdagverblijf</i> (centre-based crèches) and FDC; <i>Crèche</i> (centre-based) and <i>gardiennes encadrées</i> (FDC)				Compulsory schooling	
Czech Republic	<i>Crèche</i> (centre-based care), FT		<i>Materska skola</i> (state kindergarten)				Compulsory schooling	
Denmark	<i>Dagpleje</i> (FDC) and <i>Vuggestuer</i> (crèche) full-time (> 32 hrs)		<i>Børnehaver</i> (kindergarten) full-time (> 32 hrs)				Compulsory schooling	
	<i>Adlersintegrer</i> (age-integrated facility) full-time (> 32 hrs)				<i>Børnehaver</i> (> 32 hrs)			
Finland	<i>Perhepäivähöito</i> (FDC) and <i>Paivakoti</i> (municipal early development centres), full-time (< 50 hrs)				<i>Esiopetus</i> pre-school		Compulsory schooling	
France	<i>Crèche</i> (centre-based care) and <i>Assistant maternelles</i> (FDC), FT		<i>École maternelle</i> (pre-school)			Compulsory schooling		
Germany	<i>Krippen</i> (centre-based crèche)		Kindergarten (pre-school)			Compulsory schooling		
Greece	<i>Vrefonipiaki stahmi</i> (crèche for children < 2.5 and nursery school for > 2.5)				Compulsory schooling			
					<i>Nipiagogeia</i> (kindergarten)			
Hungary	<i>Bölcsöde</i> (creches), full-time (40 hrs)		<i>Ovoda</i> (kindergarten)		Compulsory schooling			
Ireland	Regulated FDC and nurseries (centre-based)				Early Start and Infant school (pre-school), with primary school		Compulsory schooling	
					Pre-school playgroups			
Italy	<i>Asili nidi</i> (creches) part-time (20 hrs) and full-time (< 50 hrs)		<i>Scuola dell'infanzia</i> (pre-school)			Compulsory schooling		
Luxembourg	<i>Crèche</i> (centre-based care) and <i>Tagemutter</i> (FDC)		<i>Enseignement pre-scolaire</i> (pre-school)			Compulsory schooling		
Netherlands	<i>Gastouderopvang</i> (FDC), <i>Kinderopvang</i> (childcare centres) and playgroups			Group 1, with primary school		Compulsory schooling (Group 2 onwards)		
Poland	Nurseries		Pre-school/Nursery schools				Compulsory schooling	
Portugal	<i>Creche familiare</i> (FDC) and centre-based creches		<i>Jardins de infancia</i> (pre-school)			Compulsory schooling		
Slovak Republic	Nursery schools		Kindergarten			Compulsory schooling		
Spain	Educación Pre-scolar (Centre-based)		Education infantil (pre-school), with primary school			Compulsory schooling		
Sweden	<i>Forskola</i> (pre-school) full-time, 30 hrs, some <i>Familiedaghem</i> (FDC) particularly in rural areas.				<i>Forskoleklass</i> (pre-school, PT)		Compulsory schooling	
United Kingdom	Nurseries, childminders and playgroups		Playgroups and nurseries, PT	Reception class, with primary school	Compulsory schooling			
Norway	<i>Børnehage</i> , including rural familiebarnehager, full-time (40 hrs)						Compulsory schooling	
Switzerland	<i>Crèche</i> . <i>Krippen</i> , varies across cantons (centre-based)		Pre-school, mandatory in some cantons.			Compulsory schooling		
Turkey	<i>Crèche</i>		<i>Ana Okullari</i> (kindergartens)			Compulsory schooling		
Australia	Accredited centres and family daycare available part-time (20 hrs) or full-time (up to 50 hrs)				Reception/pre-school classes, with primary school (full-time, out-of-school-hours care also provided).		Compulsory schooling	

(Table 2 continued)

Age	Centre-based care		Family daycare		Pre-school		Compulsory school	
	0	1	2	3	4	5	6	7
Canada	Centre-based and family daycare				Junior kindergarten Ontario	Kindergarten/Maternelles in Québec	Compulsory schooling	
Japan	Centre-based care					Compulsory schooling		
	Family daycare			Kindergartens				
New Zealand	Childcare centres and some home-based services (FDC)			Community-based kindergarten, Play centres		Compulsory schooling		
United States	Childcare centres and FDC			Educational programmes, incl. pre-k, private kindergartens, Head Start (state kindergartens)			Compulsory schooling	
<p>Public childcare (largely publicly funded and managed).</p> <p>Private childcare (largely managed by private stakeholders – both for-profit and non-profit providers – and is publicly and privately financed).</p> <p>FDC: Family daycare. – FT: Full-time. – PT: Part-time.</p>								

Source: OECD (2007), *Benefits and Wages*, Paris, pp. 145–46.

Table 2 gives an overview of the childcare typology of the year 2007 in the different countries, presents miscellaneous categories and shows whether they are publicly or privately provided.

Childcare and early education services for children not yet of school age can be categorized in three parts:

- *Centre-based care*: means childcare which is provided in licensed centres. The services include full and part-time care and are most commonly referred to as nurseries, day care centres, crèches, playschools and parent-run groups. In general, these services are provided to children not yet four years of age.

In many European countries childcare is provided by the government. But in some countries (e.g. Australia, Canada, Ireland, New Zealand, the Netherlands, Switzerland, the United Kingdom and the United States) childcare is privately provided. According to OECD (2008) these were established by groups of parents (sometimes with informal beginnings) but have moved on to acquire accreditation and subsidies from the state.

- *Family daycare (FDC)*: in this category a qualified or registered childminder looks after the child in a home setting. Usually three or four children can be cared for in this manner. The service is provided for children prior to pre-school i.e.

those aged up to three. Parents choose this type of care because the availability of places in crèches/nurseries is too limited or they prefer a home environment.

- *Pre-school early education programmes*: encompass centre-based (or school-based) programmes designed to meet the needs of children preparing to enter primary (compulsory) education. These programmes comprise a 50 percent educational content and are supervised by qualified staff. In some countries, these programmes are run on a full-time basis and offer out-of-school hours care on the same premises. Some countries, however, have traditionally provided kindergarten programmes as part-time and are now reforming these programmes (Table 2). Others have effectively extended primary school programmes by including one or two years of pre-school, for example, the “prep” year in Queensland, Australia, “infant classes” in Ireland, group 1 (the first year in the former “kleuterschool”) in the Netherlands, the “education infantile” in Spain, and “reception classes” in the UK.

A.R.

References

OECD (2007), *Benefits and Wages: OECD Indicators*, Paris, 119–46.

OECD (2008), Family Database, Social Policy Division – Directorate of Employment, Labour and Social Affairs, <http://www.oecd.org/dataoecd/45/28/37864525.pdf> (accessed 19/2/2008).

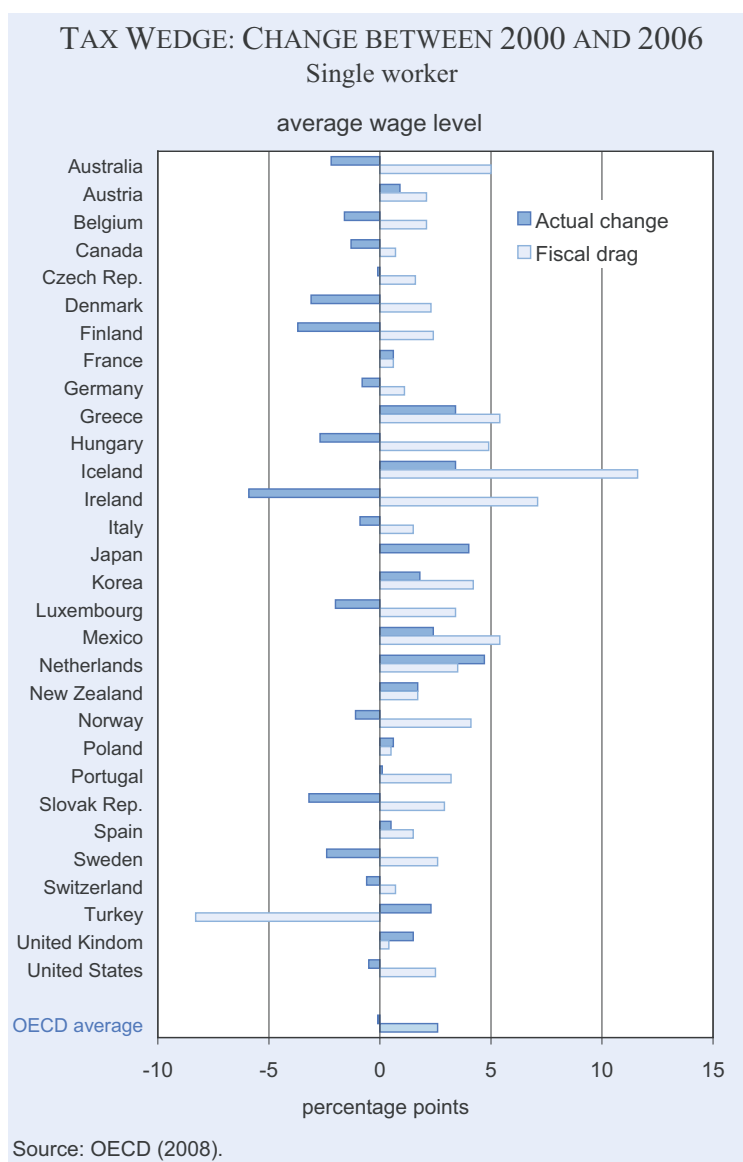
ADJUSTMENTS TO PREVENT FISCAL DRAG

In a progressive tax system, rising earnings levels result in higher tax burdens, a mechanism often referred to as fiscal drag. Studies looking at the effects of fiscal drag have mainly focused on the role of inflation. The mechanisms are, however, the same regardless of whether rising earnings levels are due to inflation or real-earnings growth. Yet, tax increases as a result of inflation are likely to be of greater concern as they may occur in the context of largely unchanged real earnings so that real after-tax incomes may decline when tax burdens go up. Inflation reduces the real value of tax band limits. In a progressive income tax this pushes taxpayers with unchanged real incomes further up the tax schedule into higher marginal rates.

Inflation and real earnings growth increase the tax-burden, which very often is measured by the tax wedge. This denotes the difference between labour cost to the employer and after-tax (or take-home) pay by the employee. The Figure shows that inflation and real earnings growth would have increased tax wedges by 2.6 percentage points on average in OECD countries between 2000 and 2006. In Iceland, Ireland, Mexico and Greece the fiscal drag amounted to more than five percentage points.

The size of potential fiscal drag effects is to a large extent determined by the magnitude of changes in wage levels. During the 2000–06 period, average wages increased by more than 40 percent in 9 countries. In about half of them, inflation was the main driving factor of higher nominal wages.

In most countries that saw rising tax burdens, increases tended to fall short of the fiscal drag effect,



i.e., the fiscal drag was partly, but not fully, offset by automatic or discretionary tax policy adjustments. To avoid inflation-induced tax increases, many OECD countries operate automatic inflation adjustments (“indexing”; see Table). The scope of these measures varies, however, and they generally fall short of adjusting all tax-relevant amounts, thresholds and limits. In addition, adjustments can operate with significant time lags and may be suppressed if inflation remains below a certain thresholds. Only three OECD countries report that income tax schedules are regularly adjusted to changes in real earnings.

The counter-balancing measures were able to offset the fiscal drag by 2.7 percentage points on average in the OECD countries (Figure).

W.O.

**Automatic and discretionary adjustments to prevent fiscal drag
in OECD countries**

	Income tax: adjustments for inflation	Income tax: adjustments for real earn- ings growth	Family benefits	Social con- tributions
Australia	No ^{a)}	No	Yes	n.a.
Austria	No	No	No	Yes
Belgium	Yes	No	Yes	No
Canada	Yes	No	Yes	Partly
Czech Republic	–	No	Yes	n.a.
Denmark	Yes	Yes	Yes	Yes
Finland	Yes	–	–	n.a.
France	Yes	No	–	Yes
Germany	No	No	No	Partly ^{b)}
Greece	No	No	n.a.	Yes
Hungary	Yes	No	Yes	Yes
Iceland	Yes	–	Yes	Yes
Ireland	No	No	Yes	Yes
Italy	No	No	No	Yes
Japan	No	No	No	–
Korea	No	No	No	n.a.
Luxembourg	No	No	Yes	Yes
Mexico	Partly ^{c)}	No	n.a.	Yes
Netherlands	Yes	No	Yes	Yes
New Zealand	No	No	No	n.a.
Norway	Yes	Yes	No	Yes
Poland	No	No	Yes	Yes
Portugal	Yes	No	Yes	n.a.
Slovak Republic	Yes ^{d)}	No	Yes ^{d)}	Yes ^{d)}
Spain	Yes	No	n.a.	Yes
Sweden	Yes	Yes ^{e)}	No	Yes
Switzerland	Yes	–	Yes	–
Turkey	Yes	–	n.a.	Yes
United Kingdom	Yes	No	Yes	Yes
United States	Yes	No	Yes	Yes

Note: “–” indicates that information is not available. Both automatic and commonly applied discretionary adjustments are taken into account. “Yes” does not mean that adjustments are complete or immediate. In most countries, some policy parameters are only adjusted infrequently. Also, due to measurement technicalities, time-lags between price or earnings increases and changes of the relevant policy parameters can be considerable, sometimes more than two years.

^{a)} Except for some rebates that are not accounted for in *Taxing Wages*. –

^{b)} Thresholds are not adjusted. – ^{c)} Subject to a minimum threshold (10%) for accumulated price increases since the last adjustment took place. –

^{d)} Starting in 2004. – ^{e)} Tax parameters are adjusted by the rate of inflation plus 2 %.

Source: Delegates to OECD Working Party on Tax Policy Analysis and Tax Statistics.

Reference

OECD (2008), *Taxing Wages 2006–2007*, Special Feature: Tax Reforms and Tax Burdens 2000–2006.

JOBS IN OECD COUNTRIES NOT RUNNING OUT

The argument is often voiced that highly developed economies are running out of jobs due to progress in labour-saving technologies and the shift of jobs to low-wage countries. Does this hold true for the recent past?

Employment performance can be measured by various indicators, an important one of which is the number of gainfully employed. In all nineteen countries examined, this number has increased by 26 percent since 1983, i.e., a considerable number of new jobs have been created (Figure 1). The increase in the number of employed clearly differs from country to country. Nearly half of the examined countries have experienced an employment growth of more than 20 percent. The highest growth rate is 95 percent in Luxembourg and more than 50 percent in Ireland, Spain, Netherlands and Australia. The lowest was reported in Finland, Sweden, Italy, Japan and Germany (Figure 2).

One could argue that the number of gainfully employed is an inaccurate measure of how much work was performed. With a shortening of weekly working hours and the expansion of part-time work, the number of gainfully employed can increase without more hours having been worked. It is thus necessary to multiply the gainfully employed (including part-time workers) by the average annual working hours to determine the volume of work (total number of man-hours worked). Even taking into consideration that, with the exception of Sweden, average annual working hours have

decreased, the 19 countries still show a positive development in the volume of work, on average. Between 1983 and 2005, the volume of work

Figure 1

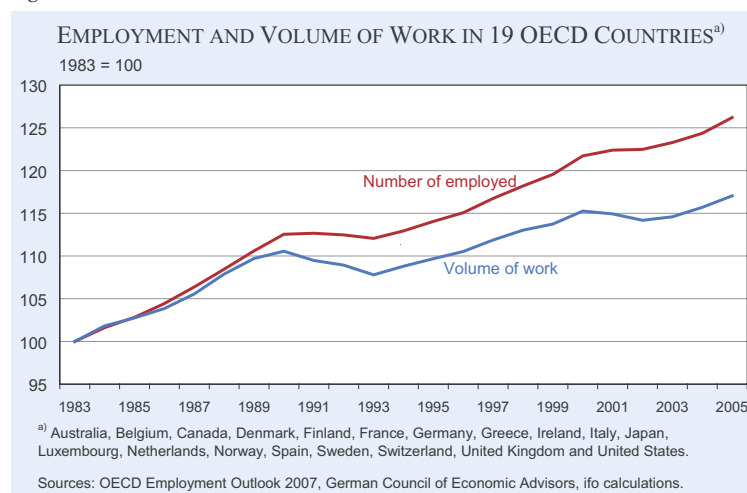


Figure 2

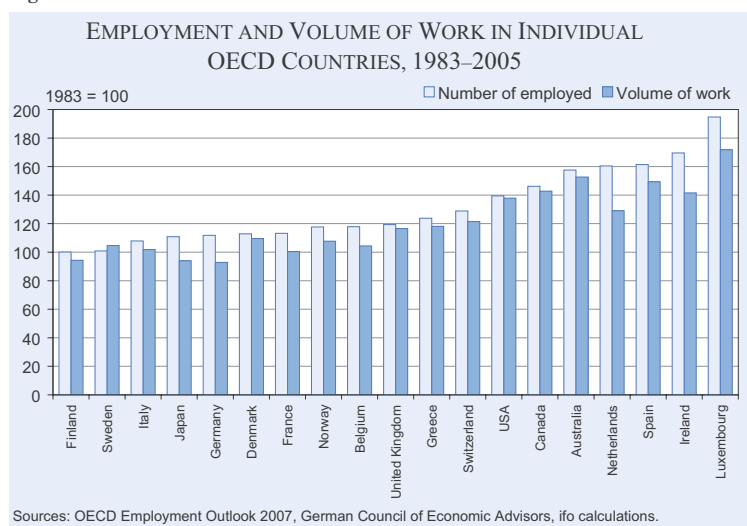


Figure 3

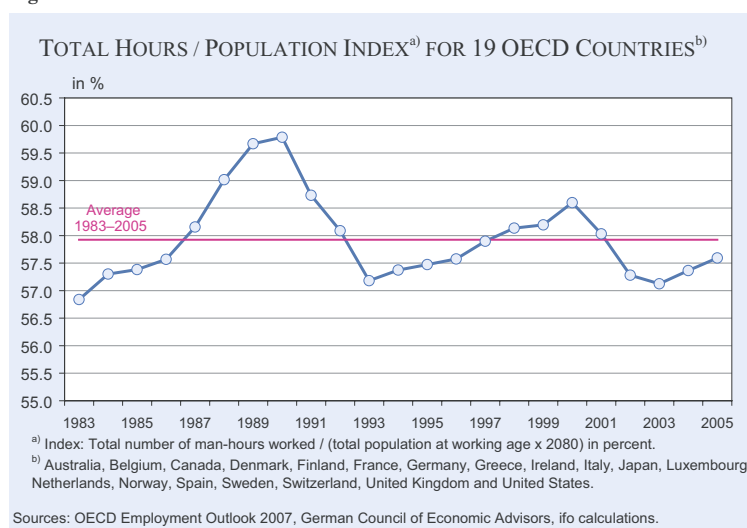
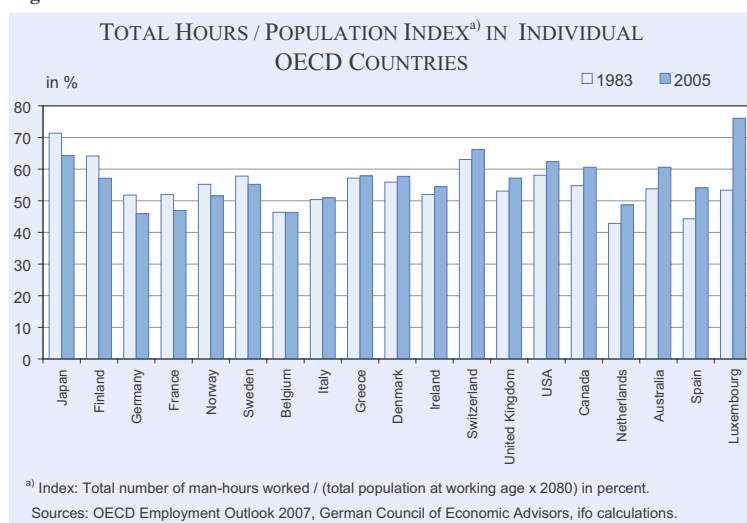


Figure 4



increased by 17 percent, with the strongest increases occurring in the Luxembourg, Australia, Spain, Canada, Ireland and the US. A decline was reported in Germany, Japan and Finland (Figures 1 and 2).

The increase in the number of gainfully employed and in the volume of work in itself does not indicate whether there is an associated improvement in the employment situation with accompanying increase in the working age population. In order to take population trends into account, the volume of work must be divided by the working age population, or better by the potential number of working hours that the population could work if they worked full time. This entails calculating the “utilisation rate” of the factor labour. It is usually assumed that 2,080 hours a year are worked, i.e., 173 hours a month. The calculations show that as the working age population grows the per capita volume of work increases only marginally. The utilisation rate of the factor labour rose in the countries examined from 56.8 percent (1983) to 57.6 percent (2005), fluctuating around an average of 57.9 (Figure 3). As shown in Figure 4, there are marked differences from country to country. A clear increase in the utilisation rate is seen in most countries, the strongest in Luxembourg, Spain, Australia, Netherlands, Canada, United States, and United Kingdom; and a decline in only six countries, i.e., Japan, Finland, Germany, France, Norway and Sweden.

The conclusion to be drawn is that work is not running out: employment and the volume of work have increased in the past twenty years, and despite a growing working age population the per capita amount of gainful work performed has not declined.

Y. S.-L.

STATE AID IN THE EU

The autumn 2007 update of the EU State Aid Scoreboard focuses on state aid in the twenty-five member states for the year 2006. In 2006 state aid in the EU-25 amounted to 0.42 percent of GDP.

15 percent of state aid in the member states was granted to specific sectors. This aid was directed primarily at coal (7 percent), services (5 percent) and manufacturing (2 percent). There are significant

differences between member states with respect to the sectors which are granted aid. The share of aid to the coal industry was relatively high in Spain, Germany and Poland. Aid directed at the services sector was high in Portugal and Austria. Malta and Hungary promoted primarily the manufacturing sectors.

In 2006 85 percent of aid was earmarked for horizontal objectives. This percentage compares to around 50 percent in the mid-nineties. Much of the increase in horizontal aid can be attributed to an

Table

State aid for horizontal objectives and sectoral aid as % of total aid, 2006

	Horizontal objectives								Sectoral aid ^{b)}					
	Total of horizontal objectives	Environment and energy saving	Regional development n.e.c. ^{a)}	Research and development	SME	Training	Employment aid	Other horizontal objectives (e.g. commerce, culture, natural disaster, risk capital, innovation and social aid)	Total of sectoral aid ^{b)}	Manufacturing sectors	Coal	Other non-manufacturing sectors	Services	Total aid for industry and services in million €
Austria	51	20	7	10	12	0	1	1	49	0	-	-	49	1,551
Belgium	98	20	18	20	31	3	3	3	2	2	-	-	0	884
Cyprus	96	0	9	5	18	12	-	51	4	-	-	0	4	70
Czech Republic	100	3	44	27	18	2	6	-	0	0	-	-	0	584
Denmark	96	34	0	7	0	0	51	3	4	3	-	-	0	1,021
Estonia	100	4	19	28	8	7	3	32	0	-	-	-	-	11
Finland	97	36	12	27	6	0	7	7	3	1	-	-	2	590
France	97	1	19	23	26	1	19	8	3	3	-	-	1	7,382
Germany	85	50	19	11	3	0	0	1	15	0	14	-	1	16,003
Greece	90	6	65	2	8	-	5	5	10	-	-	1	8	319
Hungary	52	2	25	7	4	1	6	7	48	43	5	-	-	833
Ireland	80	1	25	14	16	3	7	15	20	11	-	-	8	491
Italy	96	3	21	19	33	6	7	6	4	0	-	0	4	3,843
Latvia	100	8	67	-	23	1	-	0	0	0	-	-	-	25
Lithuania	100	18	30	11	30	6	5	-	0	-	-	-	-	54
Luxembourg	100	6	16	29	33	-	-	16	0	0	-	-	-	45
Malta	7	-	-	0	1	3	-	3	93	92	-	-	1	89
Netherlands	97	68	2	21	1	0	1	5	3	2	-	-	0	1,270
Poland	85	1	33	3	7	4	37	0	15	2	13	0	0	1,230
Portugal	14	0	3	0	5	3	3	0	86	0	-	-	86	1,418
Slovakia	95	0	76	2	10	4	1	1	5	3	2	-	-	199
Slovenia	88	3	31	13	20	1	11	8	12	2	10	-	-	147
Spain	72	5	29	15	9	1	4	9	28	0	27	0	0	3,861
Sweden	99	86	5	4	0	-	0	4	1	-	-	-	1	2,890
United Kingdom	90	35	19	18	5	4	1	8	10	0	1	9	0	3,096
EU-10	78	2	34	9	9	3	17	4	22	15	7	-	0	3,241
EU-25	85	29	19	14	11	1	7	4	15	2	7	1	5	47,903

^{a)} Aid for general regional development not elsewhere classified. - ^{b)} Aid for specific sectors awarded under measures for which there was no horizontal objective as well as aid for rescue and restructuring.

Source: Commission of the European Communities (2007), p. 25.

increase in tax exemptions for the protection of the environment and energy saving, in particular for energy-intensive industries. The three main horizontal objectives were environment protection and energy saving (29 percent of total aid), regional economic development (19 percent) and R&D (14 percent; Table).

There are large disparities between member states in the share of aid awarded to various horizontal objectives. Environment protection and energy-saving objectives were extensively supported by the Nordic countries, Germany, the Netherlands and the United Kingdom: 86 percent of total aid in Sweden, 68 percent in the Netherlands, 50 percent in Germany, 36 percent in Finland, 35 percent in the United Kingdom and 34 percent in Denmark. The second most favoured horizontal objective was regional development, which was mainly supported by EU-10 and Mediterranean countries. Research and development activities were favoured primarily by Luxembourg, Estonia, Finland and the Czech Republic (Table).

W.O.

Reference

Commission of the European Communities (2007), *State Aid Scoreboard – Autumn 2007 Update*, Brussels (COM (2007) 791 final).

PRIVATE INTERNAL RATES OF RETURN TO TERTIARY EDUCATION

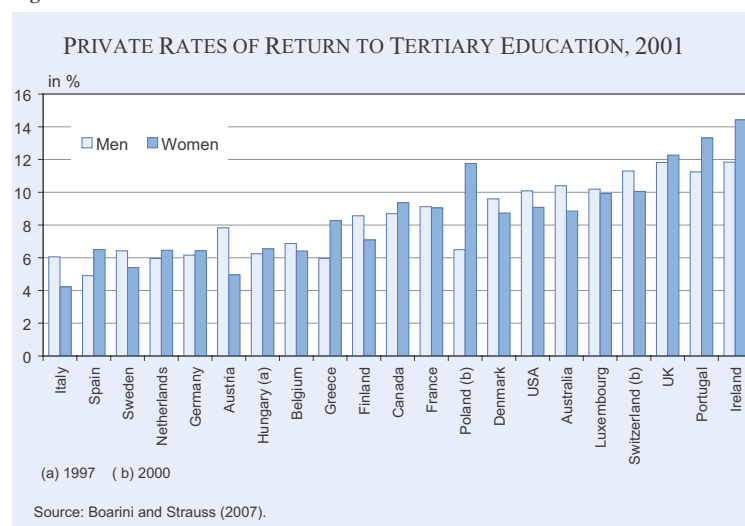
A broad consensus has emerged that human capital accumulation is a key determinant of per capita output growth and thus of future living standards. In addition, in the course of globalisation, industrialised countries face increased downward pressure on low-skilled wages from low-income countries. In response, the transformation of economies into knowledge-based societies by raising the share of individuals with tertiary education has become a key policy priority for industrialised countries. This share of tertiary graduates varies greatly among OECD countries and reflects the interplay of various supply and demand-side factors in higher education. On the demand side, the expected rate of return to tertiary education constitutes the key investment incentive for private agents. These private internal rates of return are a comprehensive measure reflecting all benefits and costs borne by the individual for an additional year of tertiary education. On the benefit side, the dominant force is the wage premium. The wage premium measures the difference of the future stream of wage income between a tertiary graduate and an individual with upper secondary education. This premium mainly reflects the higher labour productivity of the additional year of investment in human capital. In addition, higher education also increases the probability of being employed (employability premium) as well as raising future pension and potential unemployment benefits. The costs of tertiary education consist of direct (e.g. tuition fees) and opportunity costs, where the latter represents the dominant source. These opportunity costs represent the forgone income of an individual with a secondary education over the duration of tertiary education.

In a new study by the OECD, Boarini and Strauss (2007) have estimated these private internal rates of return for a range of OECD countries based on a highly comparable dataset of detailed benefit and cost factors. The Figure shows the average

private rate of return for males and females in 21 OECD countries in 2001. The average OECD rate of return on an additional year of tertiary education is about 8.5 percent for both males and females. This is substantially higher than the typical interest rate on long-term assets in financial markets and suggests that human capital constitutes an especially attractive form of investment for individuals. The incentives to invest in tertiary education are highest in Ireland, Portugal and the UK, and lowest in countries such as Italy, Spain and Sweden. While the average return is very similar for women and men, the spread between the highest and lowest return across countries is considerably higher for women, ranging from a low of 4 percent in Italy to a high of more than 14 percent in Ireland. For men, the internal private returns are lowest in Spain, 4.9 percent, and highest in Ireland, 11.8 percent. In Poland, the gap between the returns to tertiary education for men and women is largest with more than 5 percent.

Structural policies and a country's institutional setup can affect these rates of return, as Boarini and Strauss analyse in a range of simulation experiments. An important effect stems from the tax system. A progressive tax system with high marginal tax rates acts to depress the wage premium and hence lowers the internal rates of return. In contrast, a higher average tax rate impacts on returns mainly by lowering the opportunity costs and, thereby, raising incentives to invest in higher education. Boarini and Strauss show that a joint increase in both rates results in a negative net effect on returns in all countries. An increase in the average unemployment benefit replacement rate also has a negative, albeit, small

Figure



effect, because unemployment benefits dampen the effect on the employability premium and slightly increase opportunity costs. Higher tuition fees directly impact on the internal rates by increasing direct costs. However, an increase in tuition fees can also provide incentives to shorten the study duration, which in turn lowers the opportunity costs. The opposite reasoning is true for policies aimed at increasing the availability of part time jobs for students. While part time jobs dampen opportunity costs, they can increase time to graduation.

The high estimates for private internal rates of returns should in principle provide strong incentives to take up tertiary education. However, financing constraints might prevent people from responding to these incentives. Financial constraints can reflect credit market imperfections stemming from asymmetric information about students' abilities, uncertainty about future incomes as well as lack of collateral. Hence, an efficient system of student loans and grants constitutes a necessary prerequisite for individuals to respond to the opportunities of human capital investment. Finally, apart from demand side factors, supply conditions also determine tertiary enrolment and graduation rates. For example, a larger choice of different programmes, shorter study durations by offering intermediate diplomas as well as more autonomy for universities to select students can all act to increase the level of tertiary graduates by lowering the dropout rates.

O.R.

Reference

Boarini, R. and H. Strauss (2007), "The Private Internal Rates of Return to Tertiary Education: New Estimates for 21 OECD Countries", *OECD Economic Department Working Paper No. 591*, December 2007.

EMPLOYMENT RELATIONSHIP OF CENTRAL GOVERNMENT EMPLOYEES

In almost all continental European countries, the majority of central government employees, i.e., the civil servants, have traditionally enjoyed, and often still do, an employment relationship with special terms. The special parameters of this relationship originated in a concept of the state as the representative of the general interest of the nation. Its employees were seen as fulfilling sovereign functions on behalf of the authority of the state. This view rules out the possibility of opposition between the interests of the (public) employer and those of its employees. According to a report by Lorenzo Bordogna for euronline, this gave rise to two essential features of the employment and labour relations in civil service: first, the denial of collective bargaining rights (and at times also of the right of association and the right to strike) in favour of the unilateral regulation of terms and conditions of employment through laws or administrative measures; and second, almost in compensation for this deprivation, a special employment status consisting of various substantive and procedural prerogatives. The most important of these concerned employment security.

A distinction persists in the public sector between employees with special employment status (career civil servants) and personnel on ordinary employment contracts. In several countries, this special status covers a large proportion of central government employees, as in Austria (60–66 percent), Belgium (about 70–75 percent), Bulgaria (55 percent), Cyprus (55–65 percent), Finland (83 percent), France, Estonia and Lithuania (almost all), Luxembourg (67 percent) and Portugal (74 percent). In Germany, it covers around 40–43 percent of federal state employees, in Spain 46–48 percent and in Denmark about 35 percent (Table).

The right of association is almost universally permitted to both career civil servants and contractual employees. In some countries there are restrictions or exclusions for one or another group of civil servants, like judges, armed forces, police, fire brigades.

In about half of the EU-27, collective negotiations represent the only or the main method of regulating the terms and conditions of employment of the vast

majority (or all) of central government employees (wages and salaries included). This group includes Cyprus, Denmark, Finland, Ireland, Italy, Malta, the Netherlands, Norway, Slovakia, Slovenia and the UK, with qualifications in several cases. In a similar number of countries, on the other hand, either the right of collective bargaining is denied to career civil servants, which in some cases are quite a large proportion of central government employees, as in Germany and Austria, or it has a weak and uncertain status, not leading to true legally binding collective agreements, at least on pay issues, which is the case in France, Belgium and elsewhere. In other cases, even if it is formally allowed, it is rare or not practised at all because unions are too weak or totally absent, as in most former communist countries of central and eastern Europe.

The right of central government employees, especially career civil servants, to strike is subject to restrictions in several countries. In a number of cases this right is simply forbidden, in others it is subject to some special regulations, while in a third group of countries it is similar to that for private sector employees, with a few qualifications. Apart from the armed forces, defence, police and the judiciary, which are often excluded from the right to strike, severe restrictions or explicit prohibitions on strikes by civil servants operate in Germany, Belgium, Bulgaria, Denmark, Estonia, Hungary, Latvia and Poland. The right to strike is usually permitted to contractual staff in these countries, unless specified (Table).

W.O.

Reference

Bordogna, L. (2007), *Industrial Relations in the Public Sector*, European Foundation for the Improvement of Living and Working Conditions, Dublin.

Table

Special employment status in central government

	Special status		As % of central government employment	Right of association	Right of collective bargaining	Right to strike
	Yes	No				
Austria	Beamte		60–66	Yes	No	No
Belgium	Statutory civil servant		70–75	Yes	Uncertain status (protocols not legally binding)	No
Bulgaria	Career civil servant		55	Yes	No	No
Cyprus	Public servant		55–65	Yes, with restrictions for judges, armed forces, police, fire brigades	Yes, with restrictions for judges, armed forces, police, fire brigades	Yes, with restrictions for judges, armed forces, police, fire brigades
Czech Republic		No	–	Yes, with restrictions for armed forces, police	Yes, but limited scope for pay bargaining in central administration	Yes, with restrictions for the courts, state prosecution service, the armed forces and security forces
Denmark	Statutory civil servant		35	Yes	Yes	Not for civil servants
Estonia	Public servant		90–100	Yes	No	No
Finland	Career civil servant		83	Yes	Yes	Yes, but commitment to labour market harmony, and special mechanism for dispute resolution
France	Fonctionnaire publique de l'Etat (titulaire)		100	Yes, with restrictions for armed forces and judges	Uncertain status	Yes, with restrictions for armed forces and judges
Germany	Beamte		40–43	Yes	No	No
Greece	Public servant		n.a.	Yes, with restrictions for judges, armed forces, police, fire brigades	Yes	Yes, regulated by special rules and with restrictions for judges and armed forces
Hungary	Career civil servant		n.a.	Yes	No	Yes, regulated by special rules and with restrictions for armed forces
Ireland	Career civil servant		n.a.	Yes	Yes, but Pay Review Body for senior civil servants	Yes, with special mechanism for dispute resolution
Italy		No	–	Yes, with special rules for armed forces and police	Yes, with restrictions for judges, diplomats and prefects, armed forces and police	Yes, with special rules for essential public services
Latvia	Career civil servant		34–35	Yes, with restrictions for judges, armed forces, police, fire brigades	No	No
Lithuania	Career civil servant		90–100	Yes	No	Yes, regulated by special rules
Luxembourg	Career civil servant		67	Yes	Not for civil servants and clerical workers	Yes, with special mechanism for dispute resolution and ban for some civil servants

(Table continued)

Malta	Career civil servant		n.a.	Yes, with restrictions for judges, armed forces, police, fire brigades and some other public servants	Yes, with restrictions for judges, armed forces, police, fire brigades and some other public servants	Yes, with restrictions for judges, armed forces, police, fire brigades and some other public servants
Netherlands	Career civil servant		n.a.	Yes	Yes	Yes, with restrictions for armed forces
Norway	Embetsmenn		n.a.	Yes	Yes	Yes, but not for senior civil servants and military
Poland	Civil service official		3–4	Yes	No	No
Portugal	Public servant		74	Yes, with restrictions for judges, armed forces and police	No	Yes, with restrictions for judges, armed forces and police
Romania	Career civil servant		n.a.	Yes	No	Yes
Slovakia	Career civil servant		68	Yes, with restrictions for judges, armed forces, police, fire brigades	Yes, with restrictions for judges, armed forces, police, fire brigades	Yes, but not for top civil servants, fire brigades and police
Slovenia	Career civil servant		n.a.	Yes	Yes	Yes, with special mechanism for dispute resolution and minimum service provision
Spain	Career civil servant		46–48	Yes	Yes	Yes, except for judges, magistrates, public prosecutors, police and military personnel
United Kingdom		No	–	Yes	Yes, except for the approx. 3,850 senior civil servants, for which the Pay Review Body system applies	Yes

Source: Bordogna (2007).

NEW AT DICE DATABASE

In the second quarter of 2008 the main focus was on the redesign of the DICE interface. It offers users much quicker access to any of our topics. Additionally the DICE Database (www.cesifo.de/DICE) received about 80 new entries, consisting partly of updates of existing entries and partly of new topics. Some topics are mentioned below:

- Results of the PISA Test
- Stability Programmes and Stability Performance of the Euro Member States
- Gross Domestic Products and Its Components
- Minimum Wages
- Employment-conditional Benefits
- Unemployment Insurance
- Unemployment Assistance
- Social Assistance Benefits
- Cash Housing Benefits for Rented Accommodation
- Health Resources
- Pharmaceutical Consumption
- Closing a Business

FORTHCOMING CONFERENCES

Centre for Research in Institutional Economics (CRIE), University of Hertfordshire, UK, International Workshop on Institutional Economics
17–18 June 2008 in Hatfield

ISNIE, 12th Annual Conference at the University of Toronto's Rotman School of Management
20–21 June 2008 in Toronto

CESifo Venice Summer Institute 2008 – Workshop on Reforming Rules and Regulations
18–19 July 2008 in Venice

The focus of the workshop will be on reforming rules and regulations with an eye towards helping markets function better. In many instances, underlying rules and regulations hinder the competitive functioning of the markets, leading to loss of consumer or total welfare. In a broad sense, the loss may manifest itself in a variety of dimensions such as higher prices, lower product variety and quality, reduced product and process innovation, and

reduced quantity supplied to the markets. In recent years, many countries have taken steps to reform various domestic rules and regulations to improve the functioning of markets.

Scientific organiser: Vivek Ghosal

EEA/ESEM, Joint Annual Meeting
27–31 August 2008 in Milan

European Association of Law and Economics, 25th Annual Conference
24–26 September 2008 in Haifa

NEW BOOKS ON INSTITUTIONS

Issues Related to the Implementation of New Financial Regulations
Harald Benink
Blackwell 2008

Specialised Anti-Corruption Institutions: Review of Models
OECD 2008

The Next American Century
William Van Lear
University Press of America 2008

Before Norms: Institutions and Civic Culture
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University of Michigan Press 2008

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