



UCD Geary Institute

Research. Analysis. Evidence

Policy Briefing No. 1

The Economics of Investing in Children

James J. Heckman

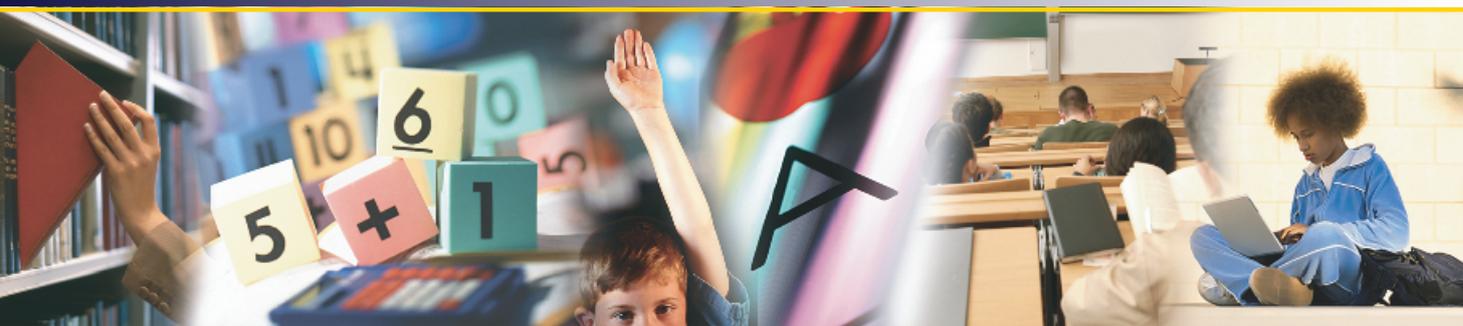
James J. Heckman is the Henry Schultz Distinguished Service Professor of Economics at The University of Chicago. His recent research deals with such issues as evaluation of social programs, econometric models of discrete choice and longitudinal data, the economics of the labour market, and alternative models of the distribution of income. Professor Heckman has received numerous awards for his work, including the John Bates Clark Award of the American Economic Association in 1983, the 2000 Nobel Memorial Prize in Economic Sciences (with Daniel McFadden) and the 2005 Jacob Mincer Award for Lifetime Achievement in Labor Economics.

Professor Heckman is one of the lead investigators in a new research programme at UCD Geary Institute on the design and development of policy interventions. This programme is a joint venture between UCD Geary Institute and the Harris School of Public Policy at the University of Chicago.

Professor Heckman is also UCD Professor of Science and Society - a joint initiative of the UCD Geary Institute and UCD Conway Institute.

This is the first of an occasional series of short briefing papers from the UCD Geary Institute which communicates academic evidence on major public policy issues in an accessible, authoritative and independent manner. We welcome your comments on this format of presentation and suggestions for topics. Please send your ideas and suggestions to Professor Colm Harmon, Director of UCD Geary Institute (geary.director@ucd.ie).

The work discussed in this briefing note, supporting references and documentation, and related research are available on request.



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The Economics of Investing in Children

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OVER THE COURSE of 2005 and 2006 the Irish Government has made major commitments to investing in children. The budget of Minister for Finance, Brian Cowen T.D., in late 2005 released a major package aimed at areas such as childcare. A dedicated Minister for Children, Brian Lenihan T.D. and the highly visible Office of the Minister for Children all underpins this investment.

There has also been a number of reports and policy inputs in the past 18 months on this topic. For example, the National Economic and Social Forum (NESF) issued a substantive contribution to this debate in their Report 31: Early Childhood Care and Education, or ECCE (including material by my UCD Geary Institute colleagues Arnaud Chevalier, Claire Finn and Colm Harmon).

Why should society invest in disadvantaged young children? The traditional argument for doing so is made on the grounds of fairness and social justice. It is an argument founded on equity considerations. There is another argument that can be made. It is based on economic efficiency. It is more powerful than the equity argument, in part because the gains from such

investment can be quantified and they are large. In this note we demonstrate how the investment by Government in children, particularly the focus on early child development and outcomes, will prove to be a wise decision if the pattern of outcomes for Ireland reflect in any way the evidence from other countries.

It is a rare public policy initiative that promotes fairness and social justice and at the same time promotes productivity in the economy and in society at large. Investing in disadvantaged young children is such a policy. Early interventions for disadvantaged children promote schooling, raise the quality of the workforce, enhance the productivity of schools and reduce crime, teenage pregnancy and welfare dependency. They raise earnings and promote social attachment.

The interesting point with this policy domain is how to avoid the equity-efficiency tradeoff that plagues so many policies. The reason lies in the importance of skills in the modern economy and the dynamic nature of the skill acquisition process. A large body of research in social science, psychology and neuroscience shows that skill begets skill; that learning begets learning. There is substantial evidence of critical or sensitive periods in the

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noncognitive ability is a major determinant of success

lives of young children. Environments that do not stimulate the young and fail to cultivate both cognitive and noncognitive skills place children at an early disadvantage. Once a child falls behind, he or she is likely to remain behind. Remediation for impoverished early environments becomes progressively more costly the later it is attempted in the life cycle of the child. The track record for criminal rehabilitation, adult literacy and late teenage public job training programs is remarkably poor despite their visibility (and indeed prevalence) as public policy interventions.

Impoverished early environments are powerful predictors of adult failure on a number of social and economic dimensions but the evidence is now pointing to the fact that impoverishment is not so much about the lack of money as it is about the lack of cognitive and noncognitive stimulation given to young children. This evidence, from experimental interventions similar to those about to appear on the Irish landscape for the first time on a large scale, shows that enriched early childhood environments produce more successful adults. These interventions raise both cognitive and noncognitive skills.

The evidence is rich and comprehensive - and the supporting literature for this work is available at www.ucd.ie/geary. In a summary format we can show -

- Life cycle skill formation is a dynamic process where early inputs greatly affect the productivity of later inputs in the life cycle of children. Skill begets skill; motivation begets motivation. Early failure begets later failure.

- Many major economic and social problems can be traced to low levels of skill and ability in the population. Abilities are multiple in nature - human capital comprises both cognitive and noncognitive elements for example. Much public policy discussion focuses on cognitive ability and especially IQ but noncognitive skills are also important for success in life. Motivation, perseverance and tenacity feed into performance in society at large and even affect scores on achievement tests. Much public policy discussion is focused on cognitive test score measurements, even though

cognitive test scores miss important aspects of human development. Cognitive and noncognitive ability are both important in explaining schooling, crime and a variety of other outcomes. Noncognitive ability is neglected in many public policy discussions regarding early childhood, yet noncognitive ability is a major determinant of socioeconomic success. Both are equally important.

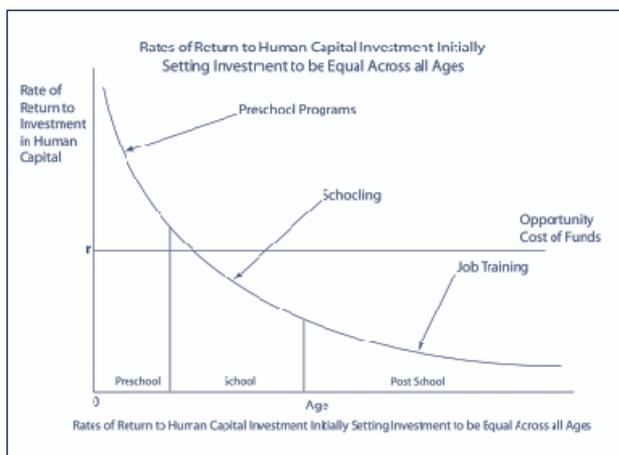
- Early family environments are major predictors of both cognitive and noncognitive ability. Experiments support the non-experimental evidence that adverse family environments promote adult failure. Going across income groups, gaps in cognitive ability emerge early in the life cycle, and widen slightly in the early years of schooling. They stay constant after age eight. Research shows that schooling environments play only a small role in accounting for these gaps or in widening or narrowing them. They start early and persist. Once we control for early family environments, the gaps narrow. Similar phenomena characterize noncognitive skills. Gaps by family income appear early and persist. Schooling quality plays little role in accounting for these gaps or their stability. Controlling for early family environments largely eliminates these gaps.

- If we intervene early enough, we can affect both cognitive and noncognitive abilities. Early interventions promote schooling, reduce crime, promote workforce productivity and reduce teenage pregnancy. Consider the Perry Preschool Programme. This was an experimental intervention in the lives of disadvantaged minority children. The Perry intervention group had no higher test scores than the control group. Yet, in a follow up to age 40, the Perry treatment children had higher achievement test scores than did the control children. On many dimensions, the Perry treatment children are far more successful than the controls. Early interventions can partially compensate for early disadvantage. Perry intervened relatively late (at ages 4-6) in the life of the developing child. Earlier interventions like the ABCDerian programme that starts when subjects are 4 months of age permanently raises the IQ and the noncognitive skills of the treatment group over the control group.

Early failure begets later failure.

Early interventions targeted toward disadvantaged children have much higher returns

These interventions have high benefit-cost ratios and rates of return. Early interventions targeted toward disadvantaged children have much higher returns than later interventions such as reduced pupil-teacher ratios, public job training, convict rehabilitation programs, tuition subsidies or expenditure on police. The economic benefits of the Perry Programme are substantial. Rates of return are 15-17%. The benefit-cost ratio is eight to one. Similar returns are obtained for other early intervention programs.



Given these points we strongly support early intervention as a remedy to social disadvantage, and do so on sound economic grounds. However can we not rely on the 'conventional' economic system to iron out the problems of disadvantage that open up? Can we look to schools to remedy early disadvantage? Or policies that hit older age cohorts such as tuition fee policy for higher education?

A major finding from the research literature is that schools and school quality contribute little to the emergence of test score gaps among children. The Coleman (1966) report showed that families, and not schools, were the major sources of inequality in student performance. By the second grade in the United States gaps in test scores across socioeconomic groups are stable by age, suggesting that later schooling has little effect in reducing or widening the gaps that appear before students enter school. In work with my colleague Pedro Carneiro we performed a cost-benefit analysis of classroom size reduction on adult earnings. While smaller classes raise the adult earnings of students, the earnings gains do not offset the costs of hiring additional teachers. Because of the dynamics of human

skill formation, the abilities and motivations that children bring to school play a far greater role in promoting performance in school than do the traditional inputs that receive so much attention in public policy debates.

Similarly evidence by Carneiro and Heckman (2002, 2003) suggests that resources available to children in their college going years play only a small role in accounting for socioeconomic and ethnic differentials in attending college. At most 8% of the families in America cannot afford to send their children to school. While policies targeted to this 8% are cost effective, the major source of the gaps in college attendance is gaps in the abilities that children have in their late teens. These ability gaps are formed much earlier in life. Again in my work with Sergio Cunha, Lance Lochner and other over recent years we reveal that later compensation for deficient early family environments is very costly. Lack of early skill and motivation begets lack of future skill and motivation. If we wait too long to compensate, it is economically inefficient to invest in the skills of the disadvantaged. A serious tradeoff exists between equity and efficiency for adolescent and young adult skill policies. There is no such tradeoff for policies targeted toward disadvantaged young children.

We summarise with the findings of a large literature. The economic return to early interventions is high. The return to later intervention is lower. The reason for this relationship is the technology of skill formation. Skill begets skill and early skill makes later skill acquisition easier. Remedial programs in the adolescent and young adult years are much more costly in producing the same level of skill attainment in adulthood. Most are economically inefficient. Children from advantaged environments by and large receive substantial early investment. Children from disadvantaged environments more often do not. There is a strong case for public support for funding interventions in early childhood for disadvantaged children although the interventions do not have to be conducted in public centers. Vouchers for use in privately run programs might allay the concerns of many parents who want to determine the values held by their children and yet who want to enrich their children's early cognitive and noncognitive stimulation.