

# Research in PUBLIC POLICY

Bulletin of the Centre for Market and Public Organisation



## Cradle to Grave

The latest research evidence on  
children's development and pensions reform

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To listen to a podcast interview with the author, visit: <http://www.bris.ac.uk/Depts/CMPO/audio/main.htm>

# Pensions Reform

The Pensions Commission, led by Adair Turner, made its recommendations in May and after the initial burst of attention, there has been relatively little more reflective scrutiny of its proposals. In this issue of *Research in Public Policy*, we have three articles looking at pension systems and in particular two pieces on crucial aspects of the Commission's proposals.

**Martin Weale** looks at means testing for state pensions. One of the key concerns about the current pension system looking forward is that more and more people are likely to be entitled to the means-tested Pension Credit. To prevent this, the Commission proposed that the basic state pension should be indexed to earnings.

It is often argued that the means test – whereby people lose 40% of any extra income from savings in lower benefits – discourages saving, partly through people stopping work earlier. Weale makes the crucial point that offering people higher incomes from the state pension also encourages people to save less and retire earlier. So the true effects of means testing are not straightforward.

He examines the switch from the Minimum Income Guarantee (which had a 100% withdrawal rate) to the Pension Credit (with the 40% rate applied to more income). He suggests that the lower taper does encourage savings among those with low potential incomes from savings but reduces it for the slightly more affluent.

On balance, he finds that overall welfare is raised by the reform but the full cost to the Treasury (including behavioural responses) could be up to £650 million.

Moving to a system of universal pensions would result in welfare lower than that provided by the current Pension Credit system. This is because the positive effects on saving from reducing the numbers facing disincentive effects from the taper are outweighed by the adverse incentives to save among the better off.

**Sarah Smith** focuses on another major issue addressed by the Pensions Commission: raising the retirement age for the state pension. She shows how the proportion of time spent in work is falling rapidly as, with each generation, we spend more years in education and retirement and fewer in work. This is substantially because of rising life expectancy.

Smith notes two important considerations that have not received much attention in the proposal to raise the age at which people can receive the state pension. First, unskilled workers die seven years younger than professionals and hence receiving the pension later represents a much larger reduction in the total value of the pension they will receive.

Second, raising the age a person receives the state pension does not necessarily raise the age at which they stop work. By the age of 60, around 30% of people report that health problems limit their ability to work; by the age of 68, this figure approaches 40%. So many of those not able to receive the pension will potentially claim incapacity benefits instead – and this is especially true for those in working class occupations.

Taken together, these two pieces raise some worrying concerns about the proposed reforms: the increase in the value of the state pension benefits the more affluent as they live longer and would not receive the means-tested Pension Credit. For this group, the likely effect is that they will retire earlier not later, using personal pensions and savings before they reach the age of 68. Those with health problems, who are often poorer, will drop out of work onto incapacity benefits rather than retire later.

Hence the Commission's proposals are likely to cost the Exchequer more than previous estimates suggest while transferring money from poorer pensioners to the more affluent.

# Save More, The Challenges of



In May, the government set out its proposed reforms for the pension system, based heavily on the work of the independent Pensions Commission. Drawing on recent CMPO research, *Sarah Smith* discusses the challenges of getting people to save more or work longer if they want to have adequate incomes in retirement.

Population ageing has put increasing strain on the UK pension system. Unlike many other OECD countries, there has not been the prospect of rapidly growing state spending on pensions. Nevertheless, past reforms have created their own problems:

- A decline in the value of state pensions relative to earnings, without the anticipated increase in private provision, has left millions of people facing the prospect of low incomes in retirement.
- There are big gaps in state pension coverage, especially among those with caring responsibilities. More than two-thirds of women retiring today do not qualify for a full pension.
- There has been a big increase in means testing – projected to apply to 70% of pensioners by 2050 – bringing with it complexity and disincentives for people to save for retirement on their own account.

To address these problems, the proposals in the May 2006 White Paper – *Security in Retirement: Towards a New Pensions System* – have the following core elements:

- Linking increases in the value of the basic state pension to earnings rather than prices. Together with a flat-rate top-up (the state second pension), this will provide a pension worth around 30% of average earnings by 2050. Carers will be helped by a reduction in the number of years' qualifying contributions and an increase in the generosity of credits.

# Work Longer:

## Pensions Reform

- A new National Pension Savings Scheme will be introduced to encourage private saving. All employees will be automatically enrolled into low-cost individual pension accounts, albeit with the opportunity to opt out. They will be required to contribute a minimum of 4% of their earnings, with employers contributing a further 3% and the government contributing 1%.
- The state pension age for men and women will be increased gradually from 65 in 2020 to 68 by 2050. But even with this increase, state spending on pensions will need to rise by 1.5% of national income by 2050.

In its first report, the Pensions Commission concluded that with people living longer, there were some hard choices to be made between saving more, paying more in taxes, working longer or facing lower incomes in retirement. The government's current set of proposals contains elements of all four choices.

### Lower incomes, more saving

With a higher state pension age, the value of pension income will fall, particularly for those with shorter life expectancies (see Box). With a reduction in the value of means-tested benefits for pensioners, government figures show that the level of income received from the state by an average earner with no private savings at retirement will be slightly lower under the proposed system than under the current one. Yet under the new system,

the government estimates that nearly one-third of pensioners will receive some means-tested benefits in 2050.

The system will also remain complex, acting as a further possible barrier to saving. The transition arrangements will inevitably be complicated, but even in the long run, there is the problem of a two-tier flat-rate pension system – the basic state pension and the state second pension – with different indexation arrangements. Moreover, the government has delayed the indexation of the basic state pension to earnings at least until 2012, sending a mixed signal about its commitment to reform.

This means that for there to be any substantial increase in incomes in retirement, the proposed National Pension Savings Scheme needs to work where stakeholder pensions have largely failed: in boosting private saving.

### The National Pension Savings Scheme needs to work where stakeholder pensions failed: in boosting private saving

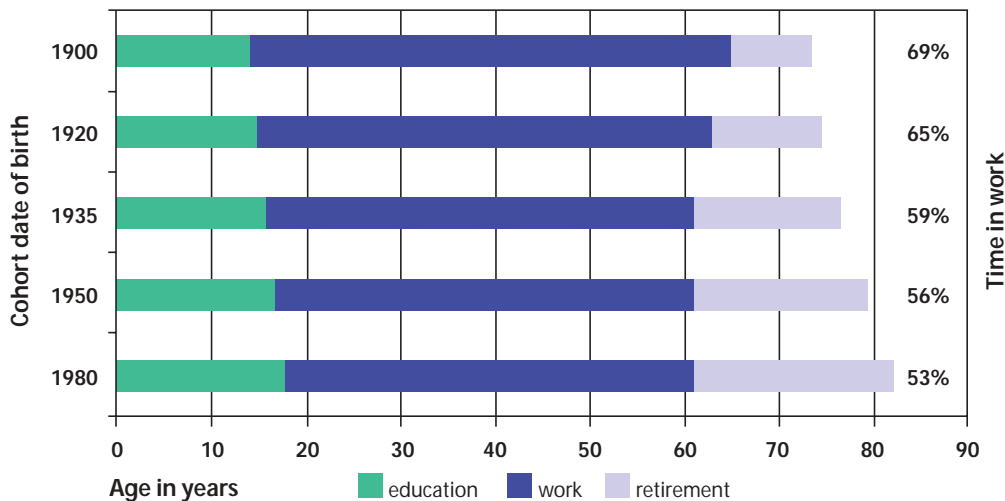
A key feature of the National Pension Savings Scheme is 'auto-enrolment'. The idea behind this is to overcome psychological barriers to saving, particularly inertia. There is a growing body of evidence from the United States and the UK that companies who introduce auto-enrolment into their pension schemes

### Life expectancy

There are well-established inequalities in life expectancy by social class. The most recent estimates of life expectancies show that the gap between social classes V and I is seven years at birth: 78.5 years compared with 71.1. At the age of 65, the gap is slightly smaller: 17.5 years compared with 13.4.

Raising the state pension age by a year therefore reduces the value of the pension by (proportionately) more for those in lower social classes. The relative value of a pension, considered from the age at which someone starts to make contributions – at say, age 25 – is lower still.





**Figure 1: Years spent in education, work and retirement, by date of birth cohort**

Notes: The retirement age for the 1950 and 1980 cohorts is assumed to be unchanged from the 1935 cohort. The age of leaving school and the retirement age are based on data from the Family Expenditure Survey. Data on life expectancy are from the Office for National Statistics' *Population Trends* (2004).

experience significant increases in participation. But the decision to change to auto-enrolment is often motivated by employers' desire to raise participation, and may be accompanied by other measures to boost pension saving, such as enhanced communication.

The effect of government-imposed auto-enrolment could well be a lot smaller than these studies have suggested, particularly if there is employer resistance. If employers and the government match individual contributions, this should increase participation, but it may also reduce individual or employer contributions among those who contribute already.

### Working longer

As Figure 1 shows, rising life expectancy and falling retirement ages have meant that people now spend a longer proportion of their lives retired. In raising the state pension age, the government wants to 'signal the need for a behavioural change': if we are living longer, we may need to work for longer.

But raising the state pension age is unlikely to be sufficient – or indeed necessary – to raise the age at which people actually

retire. Most people currently stop working before the state pension age, and fewer than one in ten men stop working at 65 and draw only a state pension at this age. So changing the state pension age will have a limited, direct effect on retirement.

For the majority of people, incentives in their private pensions (occupational and individual schemes) are likely to matter more than the state pension age for when they retire. Until very recently, occupational pensions have typically encouraged early retirement, but now, faced with growing deficits, many schemes have reduced early retirement provision and raised normal retirement ages.

### The challenge is not to push people to work past 65 but to get them to stay employed at least until 60

Retirement ages among people with occupational pensions will undoubtedly rise in the future. For the growing number of people with individual pension schemes, retirement will depend on the size of funds that they have been able to build up and their investment strategies (and asset returns) in the run-up to retirement.



**Figure 2: Proportion of people reporting health problems, by age.**  
Source: British Household Panel Survey

Among those with no private pension, few work until the state pension age (and many are out of work by their fifties), drawing instead on income support and, more commonly, disability benefits. These benefits will continue to provide an alternative route to retirement before the state pension age.

Ill health is likely to act as a continued constraint on raising effective retirement ages: as Figure 2 shows, rising numbers of people are reporting health problems well before the current state pension age. The government faces a continuing challenge in providing support for those who genuinely need it, while limiting the use of disability benefits as an alternative early retirement vehicle.

The high levels of non-employment among those in their fifties, particularly those with few qualifications, suggests that the real challenge in extending working lives is not to encourage people to work beyond the age of 65, but to get them to stay employed at least up to the age of 60. Much of the focus of researchers and policy-makers in the past has been on unemployment among younger workers: what is needed now is greater understanding of the demand for – and productivity of – older workers.

This article draws on research evidence summarised in 'Retirement in the UK' by James Banks and Sarah Smith, CMPO Working Paper No. 06/140 and *Oxford Review of Economic Policy* 22:1 (Spring 2006). For the full paper, see: <http://www.bris.ac.uk/Depts/CMPO/workingpapers/wp140.pdf>

To listen to a podcast interview with Sarah Smith, visit: <http://www.bris.ac.uk/Depts/CMPO/audio/main.htm>

# Means Testing for State Pensions:

## The Impact on Incentives and Equality

Means testing for state pensions is often criticised for discouraging individual savings and work effort – and thereby creating a dependence on the welfare state. Yet means testing does make it possible to target benefits at poorer households, which supports greater equity of incomes in retirement.

These countervailing criteria imply that choosing the ‘most appropriate’ degree of means testing for any benefit is a particularly complex problem. It is even more complicated for pensions since the evaluation needs to take account of the choices that people of working age make between consumption and saving and between work and leisure – and the effects of their expectations of retirement benefits on those trade-offs.

Our research has developed a framework for making such an assessment and used it to explore the long-run micro- and macroeconomic implications of a recent change to the means testing of retirement benefits in the UK. The key feature of this change was a move from narrowly targeted benefits with a high ‘taper’ or marginal tax rate to more diffuse benefits with a lower taper rate. High taper rates provide sharp disincentive effects for relatively small numbers of people, while lower taper rates expose more people to weaker disincentive effects.

The study simulated a panel of households of different ages strung out along the income distribution. Each household is assumed to make employment and savings decisions to maximise its expected welfare, taking account of the uncertainty of its date of death and of its income while in work. Thus the results summarise the outcome of optimisation decisions made in an uncertain environment.

The framework can be used to address a wide range of issues in taxation and social security: in each case, it shows how the choices of optimising households will respond to the tax/benefit environment they face. This particular study considers the impact of changes to the pension system, notably the replacement of the Minimum Income Guarantee (MIG) with the Pension Credit (PC) in October 2003.

Under the MIG, the basic state pension received by a couple with both spouses over the state pension age was topped up by £32

per week. But there was a withdrawal rate of 100% so that the first £32 of any private sector pension was effectively lost. Under the PC, the withdrawal rate was reduced to 40% so that all households with private sector pensions of up to £80 received some extra support from the government.

**Overall welfare is raised by the move from the Minimum Income Guarantee to the Pension Credit but the full cost to the Treasury could be up to £650 million**

The change from the MIG to the PC meant that no households faced a withdrawal rate of 100% but, on the other hand, many more faced what is still a high marginal tax rate of 40%. The difference between the two illustrates the standard problem of means-tested benefits. Is it better to have a small number of people facing a very high effective tax rate or a much larger number of people facing a lower but still high tax rate?

### Changes in household behaviour

Looking first at the MIG, we find that households’ behavioural responses are exaggerated as private income increases. This is attributable to the fact that the replacement rate offered by state benefits is higher for very low-income households. In our simulation, the poorest 17% of households earn no private income at age 65 under the MIG. For them, the MIG provides a two-thirds replacement rate on average for disposable income during their working lifetime.

Many of these households do not save because of the generosity of the state pension, and not in response to the poor investment returns that they receive under the MIG – an income effect rather than a substitution effect. Hence, the analysis suggests that the PC is unlikely to be very effective in motivating households that would have been wholly dependent on the MIG to save their way out of welfare dependency.

In contrast, the improved incentives to save associated with the PC have a pronounced effect on households that could accrue appreciable savings, and yet are subject to the 100% taper under the MIG – those with private incomes of between £3.20 and £32



**Recent UK pensions reform has included a change in the system of means testing for state pensions. *Martin Weale* assesses how the replacement of the Minimum Income Guarantee with the Pension Credit has affected the incentives to work and save for households at different points in the income distribution.**

per week. Our analysis indicates that between the ages of 60 and 64, these households will, on average, choose to increase their savings by 37% of average annual employment income under the PC relative to the MIG.

This increased accumulation of wealth is mirrored by a prolonging of the working life, with 15% of households choosing to work between the ages of 60 and 64 under the PC where they did not under the MIG. Indeed, on average, households in this part of the income distribution choose to work an additional year when subject to the PC. And the additional savings accrued by these households up to the age of 64 are not generated solely by increased labour supply, but also by reducing consumption – by 1.3% of average employment income between the ages of 60 and 64.

Interestingly, the behavioural responses of the households with private incomes between £3.20 and £32 per week imply that government tax revenues net of benefits over the life course increase by 42% of average annual employment income. This is due to two effects. First, these households generally receive welfare benefits if they retire early: as they tend to retire later under the PC, they find themselves both paying more in income taxes and receiving less in benefits during their working lifetime.

Second, the lower taper rate applied by the PC does not lead to a substantial increase in the budgetary burden of this group of households during retirement. This finding is also reflected in the fact that households with a private income below £3.20 pay higher net taxes during retirement under the PC. This is because the reduction in revenues associated with the lower taper rate on private income under the PC is offset by the increased revenues derived from the consequent rise in aggregate savings. Hence, the behaviour of households caught within the 100% taper rate under the MIG appears to support the introduction of the lower taper rate applied by the PC.

In contrast to the above, the behavioural responses of households with a private income of between £32 and £80 per week fit those of households for whom the income and substitution effects of a reduction in means testing motivate reduced savings and earlier retirement. Average savings fall by

24% of average annual employment income between the ages of 60 and 64, and the proportion employed falls by 13%.

The higher propensity of this group of households to consume prior to the age of 65 is the product of smoothing the financial benefits provided by the PC over the lifetime, with slightly higher consumption also observed between the ages of 65 and 69. These behavioural responses are purchased at a substantial cost to the welfare state.

As might be expected, the impact of the policy change on behaviour falls away for higher income households. Wealthy households are generally ineligible for means-tested benefits so they are largely unaffected by which benefit they do not receive.

### **Aggregate effects of the reform**

The framework also allows us to explore the aggregate effects of the reform. The offsetting behavioural responses of households at different points in the income distribution imply a small delay overall in the timing of retirement. 0.1% of the total cohort chooses to work under the PC between the ages of 60 and 64 where they did not under the MIG. Hence, from the perspective of the aggregate impact on labour supply, the substitution effects of poorer households tend to dominate very slightly.

### **Moving to a system of universal pensions would result in welfare lower than that provided by the Pension Credit**

In contrast, the savings figures indicate that the income and substitution effects of middle-income households dominate the long-run impact of the policy change on average household wealth. The reduced means testing discourages saving overall. Average household wealth is likely to fall with the introduction of the PC, by 7% of average annual employment income for households aged 65-79.

The increased labour supply and greater generosity of the pension system under the PC also generate higher average consumption throughout the lifetime – by approximately 11% of average annual employment income when aggregated over the simulated lifetime.

Aggregating the age-specific data generated by the cohort simulations to reflect the age profile of the UK population suggests an annual aggregate cost of payments made under the MIG of between £1.22 and £1.34 billion. This compares with an annual aggregate cost of payments made under the PC of between £1.30 and £1.48 billion, a rise of between £76 and £145 million. This points to the PC being the more generous of the two pension schemes.

But focusing only on the impact of payments made directly under the MIG and PC fails to capture the full budgetary impact of the pension policy regime. Aggregating all tax and benefits payments to households of pensioner age suggests that the transfer system with the MIG provides a net transfer benefit to pensioners of between £21.2 and £22.8 billion per year. The PC provides a net transfer benefit of between £21.6 and £23.6 billion per year – £384-£840 million more than under the MIG.

The higher budgetary cost of the PC when taking account of the impact of taxes follows from the lower aggregate savings of households. Consequently, the simulations suggest that replacing the MIG with the PC will increase reliance on the welfare state in the long run, and increase the aggregate budgetary burden of the retired population.

Extending the analysis to consider an entire population cross-section suggests that the PC will reduce the aggregate tax revenue from households. Simulations suggest net tax receipts for the population will fall by £50-£650 million per year (-0.01% to -0.13% of average disposable income for each household). The improvement in the net budgetary effect of shifting to the PC, relative to the comparison of retired households only, is attributable to the prolonged working life of households under the PC.

But even when account is taken of this fiscal effect, the overall finding is that welfare is raised by moving from the MIG to the PC. Subsequent analysis suggests that the complete abolition of means testing – moving to a system of universal pensions – would result in welfare lower than that provided by the PC.

**Martin Weale is director of the National Institute of Economic and Social Research (NIESR). This article summarises 'Means Testing Retirement Benefits: Fostering Equity or Discouraging Savings?' by James Sefton, Justin van de Ven and Martin Weale, NIESR Discussion Paper No. 265 (<http://www.niesr.ac.uk/pubs/dps/dp265.pdf>).**

# Pension and the

**For people in private pension schemes, retirement will depend on how well their contributions have been invested in the capital markets. But according to research by CMPO associate *Ania Zalewska*, in some countries, pension funds can be far too big for the market in which they operate.**

Pensions reform in many countries is seeking to move from public 'pay as you go' systems to far greater reliance on pensions funded through private savings schemes. But how should the contributions that individuals make to their private pensions be invested so that they can generate a sufficient rate of return for their desired retirement income? My research has looked at the recent experience of Poland, where pension funds have had a huge impact on the national market, the Warsaw Stock Exchange.

The central aim of pension fund investment is to create a balanced portfolio of assets that guarantees, on the one hand, high return, and on the other, low risk. But while pension fund managers are appointed to keep the long-term performance of funds at a satisfactory level, they also face the problem that their own remuneration often depends on the short-term performance of money under their management.

**Poland's pension funds had more money to invest than there were assets worth purchasing**

To make things even more complicated, the body of their clients is far from uniform. Those clients who are young – and have in front of them the prospect of many years' contributions – are willing to invest more of their money in risky assets (such as shares) whereas those who are approaching retirement age are more cautious and, in consequence, more inclined to invest in less risky assets (such as government bonds).

Swings of stock markets – shifts from bull to bear markets and back again – also add to the difficulty of choosing the right composition of assets in a portfolio. As an illustration, the recent shift in the portfolio allocation of many UK pension funds is a result of the worldwide decline of equity markets between 2000

# Funds Capital Markets

and 2003. This caused an increase in the demand for local government bonds, which reduced their yield to its lowest level for the past 100 years.

Clearly, there is a two-way process between the funds and the markets. Pension funds, or more generally, institutional investors, are affected by the performance of stock and bond markets. But the investment behaviour of pension funds can also have a detrimental impact on the performance and development of these capital markets.

Because the UK capital market is big and well developed, the impact of institutional investors, although noticeable in a short run, does not seem to be too damaging in the medium and long run. But elsewhere in the world – even within the European Union (EU) – there are many countries that have small, underdeveloped capital markets, which are more prone to the effect of pension funds' investment policies.

This is because these underdeveloped or 'emerging' markets offer very limited investment opportunities. In such cases, pensions reform that introduces compulsory saving schemes can create pension funds that are far too big for the market in which they operate.

My research on Poland provides a good example. Following pensions reform, the countries' new pension funds started

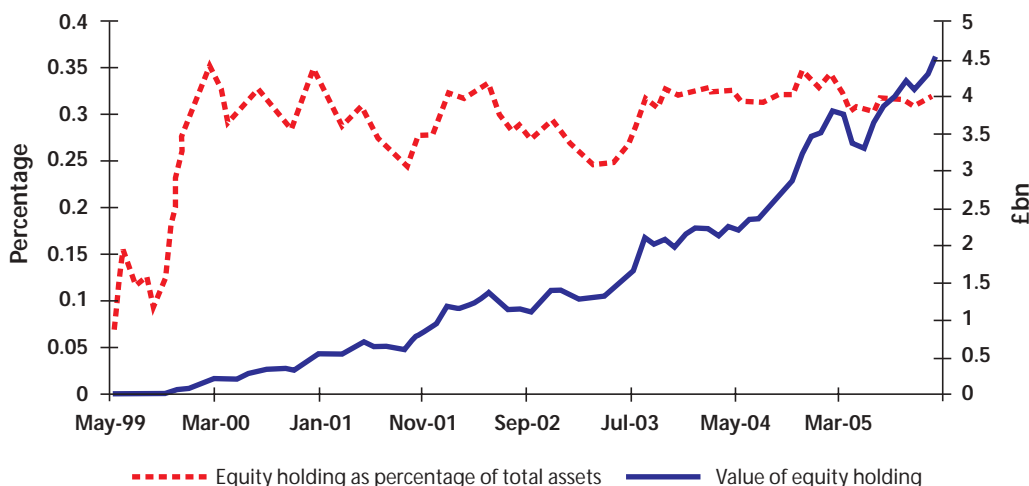
operations in the second quarter of 1999. Because there were heavy restrictions on the assets in which they were allowed to invest, all the money was invested in local equities and (government) bonds (in a rough proportion of 1:2).

As Figure 1 shows, at the end of 1999, the total value of the pension funds' equity portfolios was just above £0.09 billion. By the end of 2005, their total value exceeded £4.5 billion. In other words, it had grown by nearly 5,000%. During the same period, the main market index of the Warsaw Stock Exchange rose by 98%.

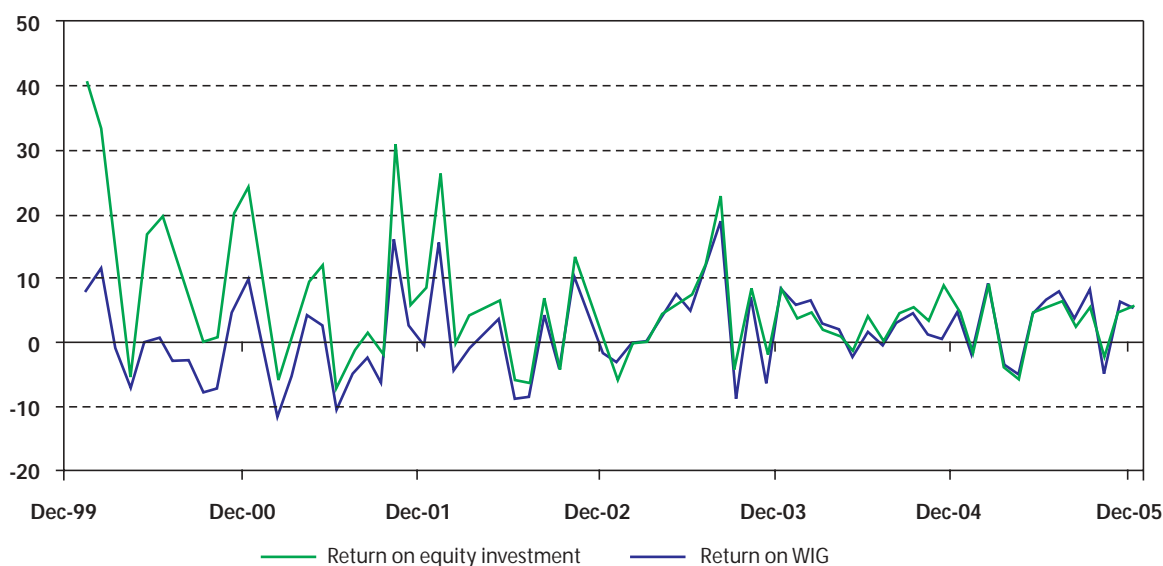
Have these investments helped to develop the Polish equity market? It might be expected that a guaranteed cash inflow to the market would have a positive impact on companies always hungry for cheap investment money. Moreover, if pension funds are more 'professional' in their investment decisions, they should be better at selecting the companies worth investing in. Finally, since there should be more trading, market liquidity and efficiency should improve, speeding up market development.

## Within less than three years, the Polish pension funds virtually 'became the market'

Unfortunately, this did not happen. The pension funds had more money to invest than there were assets worth purchasing. So they bought up a significant fraction of all the shares listed on the exchange. While UK pension funds invest in approximately



**Figure 1: Comparison of the nominal value of equity investment (right hand side scale) and the equity holding as a percentage of all assets under management by the Polish pension funds in the period May 1999-December 2005**



**Figure 2:**  
Comparison of the performance of the Polish pension funds' equity portfolios and the main index (WIG) of the Warsaw Stock Exchange

25% of companies listed on the London Stock Exchange, the Polish pension funds hold stakes in nearly two-thirds of companies listed on the Warsaw Stock Exchange. As Figure 2 shows, the Polish pension funds virtually 'became the market' within less than three years of starting operations.

What is even more worrying is that for many of these companies, the pension funds hold significant fractions of all their shares that are traded on the market. This 'gobbling up' of the 'free-float' affects both big and small companies. For example, if we rank all the companies by market capitalisation, then for the highest quartile, the free-float held by the pension funds is 36.4%, for the second quartile, it is 27.3%, and for the third and fourth quartiles, it is 28.2% and 26%, respectively.

The pension funds have acquired more than 50% of the free-float in 20 companies, and more than a quarter of the free-float in 68 companies. But there are substantial differences in the average number of funds investing in individual companies in each of the quartiles. While, on average, 11.4 funds (out of 15 in operation) invest in each of the companies of the first quartile, the following quartiles' companies attract only 6, 3.6 and 2.6 funds, respectively.

The enormous growth of the pension funds is not only bad for the funds themselves (for example, since exit costs are high, the pension funds find it very difficult to modify their portfolios), but for the market too. The main statistics of the Warsaw Stock

Exchange have not improved in the past six years; indeed, in many ways, they have worsened. Moreover, there is an increasing performance gap between the Polish stock market and those in the other countries of Central and Eastern Europe that joined the EU in 2004.

Since pensions reform and, in particular the creation of pension funds as big institutional investors, has been seen as an integral part of the reform of the financial system, the obvious question arises as to whether the policy missed the target. While it might be too harsh to dismiss the whole idea of pensions reform, it is certainly true that the policy that locks pension fund investments into their domestic market needs to be reconsidered.

**This article draws on 'Home Bias and Stock Market Development: The Polish Experience' by Ania Zalewska, CMPO Working Paper No. 05/136, forthcoming in *Corporate Governance and Finance in Poland and Russia* edited by Tomasz Mickiewicz, Palgrave Macmillan (2006); and 'Is Locking Domestic Funds into the Local Market Beneficial? Evidence from the Polish Pension Reforms' by Ania Zalewska, CMPO Working Paper No. 06/153, forthcoming in *Emerging Markets Review*.**

For the full papers, see:

<http://www.bris.ac.uk/Depts/CMPO/workingpapers/wp136.pdf> and

<http://www.bris.ac.uk/Depts/CMPO/workingpapers/wp153.pdf>

# Children's Development

**Children's educational attainment is crucial for their future employment and earnings. It is also important for a host of other outcomes though all too often these lead to a focus only on children's cognitive development in childhood. In this issue of *Research in Public Policy*, we have three articles from leading experts on children's development and their life chances.**

**Janet Currie** reviews the emerging research literature here and from North America that shows that children's health matters not just in its own right but also for its influence on their educational development.

She notes that many adverse health outcomes are in place at birth: premature babies, low birth weight and smoking during pregnancy are all associated with poorer educational development even comparing siblings with the same parents and home environment.

But the relationship between health and development continues as children get older: children who experience chronic health conditions often have lower educational attainment; and conditions such as asthma are associated with adverse behaviour.

Currie also stresses how these health conditions are strongly socially graded: more affluent children are far less likely to have chronic health conditions, have far fewer injuries and are more likely to be carried to term and to not be low birth weight.

The incidence of abuse and neglect seems to be higher in families headed by teen parents, single mothers and mothers with poor mental health. All of these 'risk factors' are more common in poor families.

Both Currie and **Paul Gregg** point out the importance of mental health problems, such as ADHD, for children's educational development. Gregg finds that other non-cognitive traits such as self-esteem, personal efficacy (beliefs that your own actions can make a difference rather than luck or fate) and ability to concentrate are also major drivers of educational attainment.

Furthermore, he shows how these factors are increasingly important drivers of intergenerational mobility as they have become more socially graded. In contrast, IQ, sometimes seen as a measure of innate ability, is playing a smaller role in children's attainment and life chances.

The two pieces by Currie and Gregg together highlight the key role that health and behaviours have, in addition to cognitive development, in children's learning and hence life chances.

**Jane Waldfogel** looks at the role of early childcare and parenting programmes in influencing all three of these important aspects of child development: health, behavioural and cognitive development.

She argues that the evidence of the effectiveness of parenting programmes is weak, but some home visiting programmes and those to encourage parents to read to children have shown improvements in test scores and behaviour, while tailored programmes for parents of children exhibiting conduct disorders can result in improved behaviour.

The evidence that centre-based childcare can have beneficial effects on reading and maths scores has been commonly demonstrated, but quality of childcare is paramount. Low cost childcare can result in adverse outcomes, especially for behaviour. Quality means well-qualified staff and small class sizes with a clear focus on learning.

The government has initiated a ten-year strategy to expand childcare and early years support for parents. This initiative is bold but the lessons are clear that health and behaviour need to be as central as early literacy and numeracy for the programmes to maximise their potential benefits; and the quality of childcare settings is paramount for the prospects of the programme to advance the life chances of poor children.

# Life Chances:

## Accounting for Low and Falling Intergenerational Mobility

**Research has shown that circumstances of birth play a substantial and increasing role in children's 'life chances' in the UK. *Paul Gregg* and colleagues are now digging deeper to explore the roles of ability, education and non-cognitive skills in explaining why 'intergenerational mobility' is low and falling.**

There is broad political support for the idea that children's 'life chances' should not be determined by their circumstances of birth. A key measure of this is the level of 'intergenerational income mobility': If mobility is low, children who grow up in poor families are more likely to end up in poor families as adults – there is 'intergenerational income persistence'. If mobility is high, those from poor families have a greater chance of leaving this group and earning higher wages in adulthood.

Previous research on life chances has made comparisons between countries and over time. The evidence leads to two main conclusions: first, the level of mobility in the UK is low by international standards (Jäntti et al, 2006; Corak, 2006); and second, the level of mobility in the UK has fallen between the generation of children who grew up in the 1960s and early 1970s and the generation who grew up in the 1970s and 1980s (Blanden et al, 2004).

Our latest research takes the evidence further, attempting to account for the key mediating influences in the strong relationship between family income in childhood and adult earnings. The first stage tries to account for the low level of mobility by examining the role played by four components in the transmission of parents' income to adult earnings: education; cognitive abilities; non-cognitive traits (such as self-esteem, personal efficacy and concentration); and early labour market attachment (whether young people are in employment or training if they have not stayed in education).

The first stage of our analysis uses data from the 1970 birth cohort survey. In the second stage, we compare the 1970 birth cohort with the 1958 birth cohort, for whom intergenerational mobility was higher. We try to account for the decrease in mobility over time by considering the changing nature of the relationship between the four components, parents' income and adult earnings.

We find that the four components account for over half of the intergenerational income persistence in the 1970 cohort, with inequalities in educational attainment at age 16 and access to higher education playing key roles. The four components also account for up to 90% of the decrease in mobility between the 1958 and 1970 cohorts, with an increase in the relationship between parents' income and children's education and labour market attachment accounting for much of the action.

### **Inequality in access to higher education is a key driver of the decline in intergenerational mobility**

In common with many prior studies, we measure intergenerational income persistence in terms of the strength of the relationships between a son's earnings and his parents' income. For the four components to account for income persistence, there are two conditions: first, they must have a relationship with family income; and second, they must have a return in the labour market.



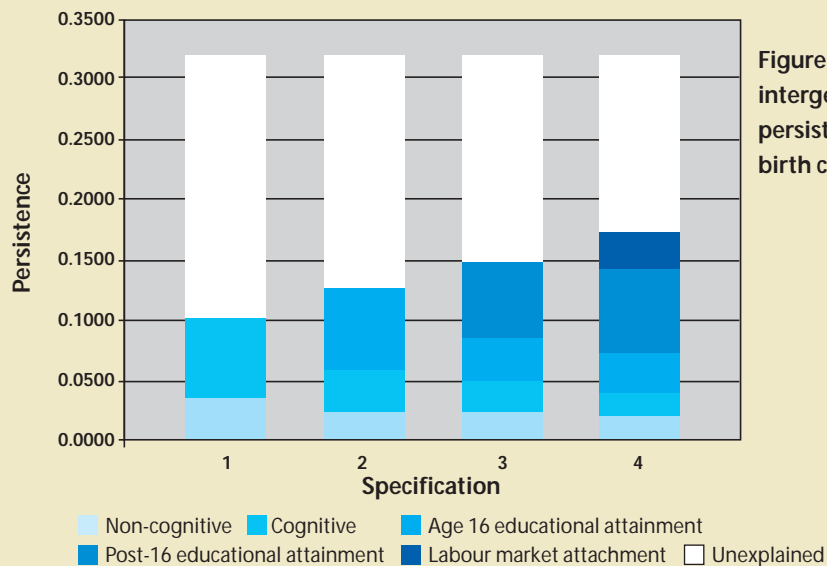


Figure 1: Accounting for intergenerational income persistence in the 1970 birth cohort

We therefore use a simple two-stage process: first, measuring the extent to which a component is related to parents' income; and then estimating the returns a component will have in the labour market. The combination of these two measurements reflects the extent to which a component can account for intergenerational persistence.

As we are looking at children as they get older, early events or characteristics may well affect later components. So, for example, innate ability will undoubtedly affect educational attainment and its impact on future earnings will, to some degree, come through educational attainment. Therefore, to explore these sequential effects, we build our analysis up in stages over periods of time.

The results from the 1970 cohort indicate that all four components – cognitive and non-cognitive attainment at ages 5 and 11, educational attainment and labour market attachment – are important in accounting for the high level of intergenerational income persistence. Both cognitive and non-cognitive traits have a significant relationship with parents' income, fulfilling the first criterion for them to play a role in accounting for the persistence.

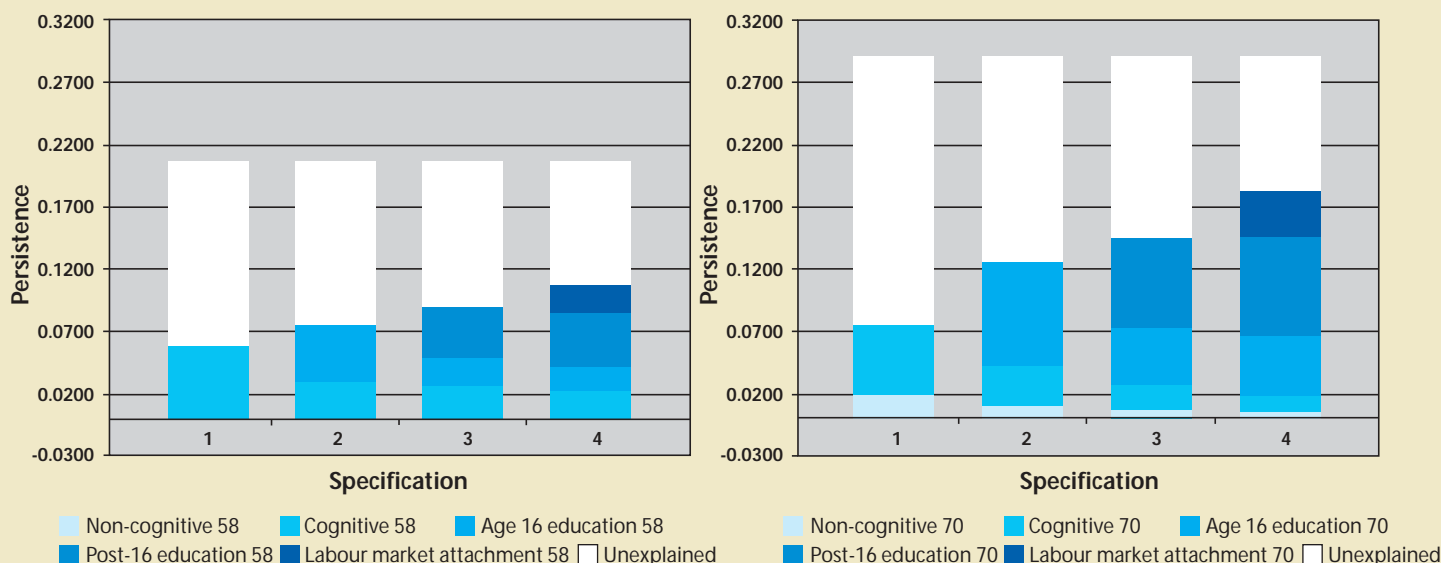
In our analysis of earnings, the role of cognitive ability and non-cognitive traits diminish once educational attainment at age 16 is included, suggesting that both of these early childhood measurements influence earnings through

education. Likewise, with the inclusion of post-16 education, we find that half the returns to attainment at age 16 come through opening access to higher education. Attachment to the labour market in early adulthood has a large influence on sons' earnings at age 30 and therefore also plays an important role in our story.

### Non-cognitive traits, such as self-esteem and concentration, are also increasingly important drivers of educational attainment and hence intergenerational mobility

Figure 1 breaks down the impact of the four components on intergenerational income persistence into four 'specifications' of our analysis:

- Specification 1 indicates that with the cognitive and non-cognitive traits combined, we can account for around 30% of the persistence, cognitive measures making a more substantive contribution.
- Specification 2 introduces educational attainment at age 16, allowing us to see the role of school-based attainment in persistence and the extent to which cognitive and non-cognitive factors operate through education. We can now account for 40% of the persistence, 21% of which is coming directly through attainment at age 16.



**Figure 2: Accounting for intergenerational income persistence between the 1958 and 1970 birth cohorts**

- Specification 3 introduces post-compulsory education. It is clear that around half of the contribution from attainment at age 16 comes through access to post-compulsory education.
- Specification 4 introduces labour market attachment, taking the total of the persistence accounted for to 54%. Within this, cognitive and non-cognitive traits only account for 6% each, though this is the contribution over and above their effects operating through improved education and labour market attachment.

## What lies behind declining mobility?

The second stage of our analysis compares the 1958 and 1970 birth cohorts using the same methodology and with the impact of the four components displayed in the same way in Figure 2. There are a number of noticeable differences between the two cohorts:

- Parents' income has a weaker association with all measures of each component in the earlier cohort.
- Non-cognitive measures seem to have little or no relationship with parents' income in the earlier cohort. And although the returns to non-cognitive traits are slightly lower in the earlier cohort, this is offset by the increased importance of the cognitive component. This suggests innate ability declined in importance in determining child outcomes (confirming Galindo-Rueda and Vignoles, 2005).
- For the education components, there was an increase in the returns to attainment at age 16 and degree holdings between the cohorts, but a sharp fall in the returns to staying on post-16.

- The impact of labour market attachment on earnings did not change over time.

When accounting for the change in persistence, our components do a good job with the part accounted for increasing as indicated by the decrease in the unexplained portion of Specification 4 in Figure 2. Almost 90% of the change has thus been accounted for.

Three main factors account for the rise in intergenerational income persistence between the two cohorts:

- Access to higher education has become far more strongly related with family income, accounting for 29%.
- Labour market attachment, again entirely through the strength of the relationship with family income, accounts for 19%.
- Attainment at age 16 accounts for 34%.

Non-cognitive traits are also increasingly important, again through the strengthening of the relationship with family background, but they operate mainly through educational attainment.

## One particular problem for policy is youths who are not in education, employment or training

The components provide suggestive evidence of how parents with more income produce higher earning sons. The first stage shows that they account for half of the association between parental income and children's earnings for the 1970 cohort. It is clear that inequalities in achievements at age 16 and in post-compulsory education by family background are extremely important in determining the level of mobility.

But the dominant role of education disguises an important role for cognitive and non-cognitive skills in generating intergenerational persistence. These variables both work indirectly through influencing the level of education obtained, but are nonetheless important directly as well. Attachment to the labour market after leaving full-time education is also a substantive driver of intergenerational persistence.

We are able to account for almost 90% of the rise in intergenerational income persistence, with the increased relationship of family income with education and labour market attachment explaining a large part of the change. The growing imbalance in access to higher education by family background as higher education expanded has been noted in earlier research (for example, Blanden and Machin, 2004 and Glennerster, 2002). Here we provide powerful evidence that this imbalance is partly driving the decline in intergenerational mobility.

There are clear indications too of a strengthening of the relationship between family income and behavioural traits that inhibit children's educational attainment. But cognitive ability offers no substantive contribution to changes in mobility, implying that genetically transmitted intelligence is unlikely to be a substantive driver.

## The implications for policy

If policy-makers want to increase mobility, then this research suggests some key areas of intervention, starting with the strengthening relationship between family background and educational attainment. Resources need to be directed at programmes to improve the outcomes of those from deprived backgrounds.

This can be done either by universal interventions that are more effective for poor children, for example, high quality pre-school childcare (Currie, 2001) and the UK's literacy hour (Machin and McNally, 2005), or by directing resources exclusively at poorer schools or communities.

Our results also suggest that these programmes should not focus exclusively on cognitive abilities but also on self-esteem, personal efficacy and concentration.

In addition, there is an urgent need to address the problem of youths who are not in education, employment or training as early labour market attachment plays an important role in accounting for low mobility, particularly through its impact on earnings.

**This article summarises 'Explaining Intergenerational Income Persistence: Non-cognitive Skills, Ability and Education' by Jo Blanden, Paul Gregg and Lindsey Macmillan, CMPO Working Paper No. 06/146. For the full paper, see: <http://www.bris.ac.uk/Depts/CMPO/workingpapers/wp146.pdf>**

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# Children's Health and Later Life Outcomes

**Family background plays a crucial role in children's outcomes in later life. But what is the specific impact of health in childhood on educational success? Janet Currie discusses the latest research evidence.**

Economists like to talk about 'human capital'. The idea is that investments in people provide payoffs just like investments in other forms of capital. Most researchers have focused on education as the number one investment in children's human capital. We know that, on average, education explains a great deal of the variation in pay among adults, and is related to many other positive outcomes.

But what determines a child's educational success? Most studies point to family background as the key factor. But this raises a 'chicken and egg' problem. We know that more education leads to higher income, and that children in high-income families are likely to get more education than other children. Clearly, we need to open the 'black box' of the family to understand why better backgrounds promote success in life.

While there are clearly many things about background that might matter, research increasingly implicates health as a major factor. Low parental education and income is linked to poorer child health, which in turn is linked to poorer educational attainments.

**Poor children suffer worse health than richer children and health problems in children damage their future prospects – and those of their children**

Differences in the health of rich and poor children are apparent at birth, for example, in the incidence of low birth weight (less than 2.5 kilograms or roughly five and a half pounds). Maternal reports about child health – in which mothers are asked if their child's health is excellent, very good, good, fair or poor – also suggest that poor children are in worse health than richer children. This is true in the UK and Canada despite their national health services as well

as the United States, although the gaps in health are a little smaller in the UK than in the United States and do not seem to grow as much over time.

The problem may be that poor children suffer more experiences likely to damage their health. For example, in developed countries, injuries rather than illnesses are the leading cause of death for children aged between 1 and 14.

In the UK between 1991 and 1995, six children out of every 100,000 died annually from injuries; 29% of these resulted from car accidents. But among the children of manual workers, the death rate from injuries was 20 out of 100,000. The injury rate has fallen slightly over time (perhaps due to heightened societal awareness or safer products), but it has fallen more quickly among the children of high-status fathers than those of manual workers, so that the gap between the two groups has actually risen over time.

Child abuse and neglect is an important cause of injury, and is also more common in poor families. While it is true that reporting biases make it more likely that poor households will be reported to the authorities, the incidence of abuse and neglect does seem to be higher in families headed by teen parents, single mothers and mothers with poor mental health. All of these 'risk factors' are more common in poor families.

Injuries that do not lead to death are extremely badly documented, but what reporting there is suggests that deaths from injuries are the tip of the iceberg. One problem is that surveys often ask only about 'medically attended' injuries, and poorer families may be less likely to seek medical attention for injuries that are not life threatening.



We see similar differences in the health of rich and poor children in rates of chronic conditions and hospitalisations for 'ambulatory care sensitive conditions' – those that could be prevented by appropriate outpatient care. In the UK, 11% of 0-3 year old children have chronic conditions in families with annual incomes over £50,000. This contrasts with 23% of 0-3 year olds in families with annual incomes below £10,000.

There are even gaps in health in common childhood mental health conditions. These may be particularly important because such conditions can be very limiting and they are relatively common (much more common than most chronic physical conditions or diseases such as childhood cancers). Behaviour problems such as those associated with 'attention deficit hyperactivity disorder' (ADHD) and conduct disorders (like chronic aggression) are strongly associated with school failure, as well as with lower scores on cognitive tests, and a higher probability of being kept back a year in school and/or placed in special education.

### **Differences in children's health at birth have serious long-term consequences**

Recent research has shown a link suggesting that ADHD may arise when there has been premature birth, low birth weight and/or smoking during pregnancy. This research points to a possible mechanism underlying some of the gap in the incidence of mental health conditions between rich and poor, and suggests that differences in health at birth may have serious long-term consequences.

It is one thing to point to gaps in health, and another to demonstrate that these gaps have causal effects on educational

attainment. A good deal of recent research has been devoted to this question. Work using the US Panel Study of Income Dynamics shows that if you compare siblings, the brother or sister with poorer health during childhood had lower earnings as 25 to 47 year olds.

Several studies exploit large birth registries to follow low birth weight children over time and examine their outcomes. Studies conducted in Norway, Canada and the United States all show a link between low birth weight and lower educational attainment – even among twins.

In the UK's 1958 birth cohort survey (the National Child Development Study), the effect of low birth weight on maths scores at age 7 is greater than the advantage associated with being from a family in a high socio-economic group. Moreover, low birth weight appears to be passed on from one generation to the next. If we compare two sisters, one of whom was low birth weight, the children of the low birth weight sister are more likely themselves to be low birth weight than their cousins.

Data from the 1958 birth cohort also suggest that the number of chronic conditions a child has at age 7 is associated with poorer educational achievement (controlling for income) as is the number of chronic conditions at age 16 and height at age 23. (Height is often regarded as a measure of long-run health status that incorporates both nutrition and the effects of illness on the body.)

Data on the effects of specific chronic conditions are much sparser. For a specific condition to have a measurable impact on average educational attainments of rich and poor children, it would need to be common (at least among low-income children) and have a large impact on affected children. Mental

health problems make up an important class of conditions that meets these criteria.

Asthma is another such condition. Asthma is the most common physical health condition and accounts for the majority of school days lost and urgent care visits due to chronic conditions in childhood. Careful research suggests, however, that asthma does not directly affect children's test scores, but that it is associated with a higher incidence of behaviour problems, which may in turn affect schooling attainment.

Some former scourges of childhood such as lead poisoning and anaemia, which disproportionately affected poor children, have seen huge improvement with the adoption of public health measures such as banning lead in paint and gasoline and the enrichment of foods with iron.

But it is likely that the large gaps in maternally reported overall health reflect more than the presence or absence of specific chronic conditions. Poor children often suffer from multiple health problems. They also tend to experience more 'minor' acute illnesses – like ear infections and dental caries – than other children. Taken together, these problems represent a significant drain on their resources and may have a significant impact on their chances of success in life.

The research summarised here suggests that child health is important not only for its own sake but because it affects children's future prospects, as well as the prospects of their future children. It also suggests that equalising access to health care will not be sufficient to eliminate gaps in health.

We also need to understand more about the reasons why poor children suffer a higher incidence of negative health events, so that we can do more to prevent them. Investments in prevention are likely to have a large payoff in terms of the future accumulation of human capital.

**Janet Currie is Professor of Economics at Columbia University in New York. She presented her research on the relationship between child health and human capital development at a July 2006 conference on family background and child development organised by CMPO and the Centre for Analysis of Social Exclusion (see: <http://www.bris.ac.uk/Depts/CMPO/events/workshops/family/main.htm>).**

# Early Years The Research

UK policy on children's 'early years' has been transformed in recent years, with more changes to come. But how effective are early years programmes in meeting the twin goals set out in the recent Childcare Act: to improve outcomes for all children; and to narrow the gaps between disadvantaged children and others?

Desirable policies will be those that improve a range of child outcomes, including health, cognitive development and social and emotional development. Recent economic and educational research has been looking at the success of early years policies in the UK, the United States and elsewhere.

Early years policies can be divided into two main types:

- **Parenting programmes**, which are very diverse and include parent education (such as teaching parents to read with their children), parent support (such as home visiting for new parents) and parent management training (such as training parents of children with conduct disorders).
- **Early education programmes**, which are also diverse and include school-based pre-school programmes, centre-based programmes in the community and other childcare programmes.

Within each of these broad headings, programmes vary along many dimensions: the goal of intervention (to improve cognitive, behavioural/social, educational, child maltreatment, health or crime-related outcomes), whether the programme is targeted (and, if so, by what criteria), children's age, the location of services, the services offered (in particular, whether services are individual or group), and the intensity and scale.

## The research evidence on parenting programmes

It is well established that parenting matters a lot, particularly in early childhood. But the evidence is much weaker for the effectiveness of parenting *programmes* (Karoly et al, 2005). This matters because for such programmes to be a good investment, we have to know that parenting matters *and* that programmes change parenting and improve child outcomes.

Parenting programmes may change *parents' behaviour*, but the evidence that they change *child outcomes* is less strong. A few stand out. US programmes like 'Parents as Teachers' and



# Policy: Evidence

The UK's 2006 Childcare Act, which promises high quality childcare and other services for children under five, seeks both to improve outcomes for all children and to close the gaps between disadvantaged children and the rest. *Jane Waldfogel* looks at the evidence on the effectiveness of 'early years' policy.

'Reach Out and Read' can raise child test scores. Universal home visiting programmes for pregnant women and new mothers using trained nurses reduce child maltreatment and crime, and improve test scores and behaviour. And training for parents of children with conduct disorders can improve children's behaviour.

## The research evidence on early education programmes

The evidence base on the effectiveness of early education programmes is much stronger (Waldfogel, 2004, 2006). UK and US research finds consistently that school- or centre-care in the early years increases children's readiness to go to school; and that higher-quality care is more effective than lower-quality care.

We know from experimental evaluations in the United States that high-quality pre-school programmes produce substantial cognitive gains, particularly for disadvantaged children. Positive results have also been found for Head Start and Early Head Start, as well as for more typical pre-school programmes. There are some adverse effects of group childcare on child health and concerns about safety, particularly in low-quality care. But childcare may also be protective, reducing physical discipline and domestic violence. Programmes may also boost mothers' education, employment and earnings.

## High quality in early education programmes is essential for improving child outcomes

Evidence from the Early Childhood Longitudinal Study-Kindergarten Cohort, a large nationally representative study of children in the US equivalent of reception classes, indicates that pre-school raises children's readiness for school (they score better in reading and maths) and significantly lowers the likelihood that they will be kept back a year. Pre-kindergarten programmes, operated or supervised by the schools, are particularly effective.

Effects are larger and longer lasting for disadvantaged children, such as those whose families receive welfare. Larger effects are also found for children with less-educated parents or whose first language is not English. But longer hours in pre-school are also associated with more behaviour problems, except for children who attend kindergarten and pre-kindergarten in the same school (Magnuson et al, 2004, in press).

Results from the UK's Effective Provision of Pre-school Education (EPPE) study are similar, indicating that children who attend pre-school start school at a cognitive advantage. And the longer children are in pre-school, the greater the advantage in pre-reading, early numbers and language. Children who began pre-school at age 2 are ahead of children who began at age 3, and maintain that gain at school entry (though this is not true for the few children who began before age 2).

Children who attend pre-school also start school with better social and behavioural development, except as measured by whether they are 'anti-social' or 'worried'. Children who began pre-school earliest (at age 2 or below) are the most anti-social or worried. Children at risk of having special education needs, children for whom English is an additional language and children from some ethnic minority groups gain the most from attending pre-school.

## Children who attend pre-school start school at a cognitive advantage but exhibit more anti-social and worried behaviour

The EPPE study also found that the effects of child, family and home environment factors are weaker at school entry than at 3 for some cognitive outcomes (pre-reading and early numbers) although not for social and behavioural outcomes. This may be the result of peer group effects, for example, children make more progress in pre-reading if they attend centres with more children from highly educated families. Children also make more progress in higher-quality centres, but the quality and effectiveness of care is uneven (Sammons et al, 2002, 2003).

## The role of quality

There is no doubt that quality matters. This has been seen most recently in the contrasting evidence from several major childcare expansions. Quebec's \$5 a day childcare policy increased enrolment, but it was mainly low-quality settings with adverse effects for children (Waldfogel, 2005).

This contrasts with evidence from Argentina's kindergarten expansion (Berlinski et al, 2006) and the evidence on US pre-kindergarten programmes, where schools set high quality standards and children gain in terms of their readiness for school (Barnett et al, 2005; Gormley et al, 2005).

But how should we define and measure quality? In parenting programmes, two key aspects are trained staff who follow a specific curriculum, and services delivered with sufficient intensity.

In early education programmes, two key aspects are staff education and the teacher-child ratio (Karoly et al, 2005). Other factors identified by Ellen Galinsky (2006) are: higher intensity service; beginning early; well educated, well trained and well compensated teachers; small class sizes and high teacher-child ratios; and a clear focus on children's learning. Follow-on programming can also be helpful but this matters more when early intervention is less intensive.

### The question of accountability

How do we know whether programmes are effective and how can we hold local areas and programmes accountable? In thinking about this question, it is important to keep in mind the distinction between process and outcomes. Process has to do with what type of programme is being delivered, with what intensity, to which children, etc. Outcomes have to do with gains for children, ideally in comparison to a control group.

### The evidence that parenting programmes change child outcomes is weak

In the United States, there is considerable interest in using outcomes data to track effectiveness and hold local areas and programmes accountable. This does not mean testing each and every child, but may require gathering some assessment data on at least some children to determine whether outcomes really are improving.

### Conclusion

Early years policies must address the twin challenge of improving outcomes for all children, and helping to close gaps between disadvantaged children and others. We know from research that early education programmes are effective at meeting these twin goals. The evidence on parenting programmes is weaker. But, for both types of programmes, quality matters. So the challenge is how to deliver quality, and how to assess effectiveness on a continuing basis, so that local areas and programmes can be held accountable. This may require tracking outcomes as well as process.

**Jane Waldfogel is Professor of Social Work and Public Affairs at Columbia University. She presented her research on early years policy at a July 2006 conference on family background and child development organised by CMPO and the Centre for Analysis of Social Exclusion, of which she is a research associate (see: <http://www.bris.ac.uk/Depts/CMPO/events/workshops/family/main.htm>).**

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# Competition and Quality

## in Healthcare Markets

**With market-based reforms of healthcare delivery becoming increasingly widespread, what do we know about the impact of competition on the quality of service and the benefits to society more broadly? CMPO associate *Martin Gaynor* surveys the latest evidence from economic research.**

The percentage of GDP devoted to healthcare has more than doubled in the economies of the G7 since 1960. Since many of these countries' healthcare systems feature universal coverage and no price rationing, reforms aimed at controlling the rapid increase in healthcare costs have emerged as a key issue. The quality of healthcare has also become an important area of concern.

A number of countries are currently adopting a more market-oriented approach to healthcare. Once such a system is in place, competition policy – or what is known in the United States as 'antitrust enforcement' – becomes relevant. The presumption of competition policy is that unregulated monopoly is bad and, what's more, self-regulation (for example, by professionals like doctors) is not good for society – in the language of economics, it does not promote social welfare.

Competition policy is an important component of healthcare policy in the United States, which relies on markets for both healthcare delivery and financing. It is also increasingly important in the European context, where most market-based reforms involve competition in the supply of healthcare while continuing central government financing. If supply is decentralised, then competition policy is relevant even with centralised financing. Even if prices are set centrally, non-price aspects of service are determined by healthcare providers, which brings competition and competition policy into play.

In the United States, competition and antitrust enforcement are real issues, given the extensive consolidation of healthcare providers in recent years, notably through hospital mergers (Gaynor and Haas-Wilson, 1999; Gaynor and Vogt, 2000; Vogt and Town, 2006). Because of the pervasive presence of insurance against healthcare expenditures, consumers are not exposed to

the full expense associated with their healthcare decisions. And when price has a reduced role, quality looms larger in consumer choice and serves as an important rationing device.

### What quality in healthcare means

Quality in healthcare involves better or worse health, including death. So is it possible to talk about quality being excessive in a healthcare setting since that means that mortality rates might, in some circumstances, be too low? Suggesting that society would be better off – that social welfare would be improved – by increasing mortality rates is not a pleasant prospect.

But the same economic concepts apply here as to any other problem of resource allocation. We want to devote resources to reducing patient mortality up to the point where the marginal benefit of reduced mortality is balanced by the marginal cost. This means that there will be a socially optimal mortality rate that will certainly be greater than zero.

**In terms of healthcare quality, the socially optimal mortality rate will certainly be greater than zero**

While this may seem repugnant, it is important to realise that there are competing uses for resources and if the value of a reduction in patient mortality is not that great, then it may be better to devote those resources to finding a cure for cancer, school lunches or battleships. It is also important to realise that trade-offs involving mortality risks are made every day. We devote resources to improving traffic and airline safety, but not to the point that the risks of death associated with these activities are zero.

## Economic theory

Economists, antitrust scholars and the courts intuitively think that competition is a good thing. Indeed, this is the presumption of competition law and policy. But the view is not so clear in the economic theory of differentiated products. These are any products that consumers do not regard as identical, and thus are not perfectly substitutable. The products may be differentiated either because some are better (a Honda compared with a Yugo) or because they are somewhat different, at least to some consumers (for example, Coke versus Pepsi).

Although economic theory does not provide a clear answer to the question of whether competition is welfare-enhancing in markets with product differentiation, it does provide guidance for thinking about the issues. Theory tells us that if prices are fixed, through methods such as regulation, then competition leads to more quality. This doesn't, however, necessarily increase social welfare. In particular, social welfare can decrease if quality competition results mainly in demand being divided up among more firms rather than increasing total demand. If prices are determined in the market, then economic theory tells us anything can happen – there are no definite predictions.

Something called the Dorfman-Steiner (1954) condition offers a way of gaining some insight into the likely impact of competition. This tells us that the effects depend on the relative demand elasticities of price and of quality – how responsive consumer demand is to changes in price and quality.

### **Most studies of healthcare markets where prices are fixed show a positive impact of competition on quality**

For example, the advent of managed care in the United States in the 1990s is commonly thought to have increased the price elasticity of demand facing healthcare providers (hospitals in particular) – in other words, consumers became more responsive to price changes. This was also the likely result of the NHS reforms in the 1990s encouraging payer-driven competition. The increase in the price elasticity of demand should have led to decreased prices, and indeed seems to have done so in the United States (Dranove and Satterthwaite, 2000; Gaynor and Vogt, 2000).

If there was no sufficiently countervailing increase in the quality elasticity, then quality should have fallen. It is important to bear in mind here that if the starting point was one where hospitals possessed market power, then the analysis predicts that quality should have been at above optimal levels. Thus a decrease in quality could be welfare-improving (assuming it did not fall below the optimal level).

Another recent change in healthcare markets is the emphasis on medical errors and quality improvement. If that leads to the quality elasticity of demand increasing, then quality will increase. If the price elasticity remains unchanged, this will increase prices (since increased quality raises marginal costs), but price-cost margins will remain unchanged.

## Empirical evidence

Empirical research on competition and quality in healthcare markets is, for the most part, fairly recent and growing rapidly. Most of the studies of markets where prices are fixed (such as US Medicare) show a positive impact of competition on quality. The most prominent is by Kessler and McClellan (2000), who study the impact of hospital market concentration on mortality among US Medicare patients suffering heart attacks.

Kessler and McClellan find that patients in the most concentrated markets had mortality probabilities 1.46 percentage points higher than those in the least concentrated markets (a 4.4% difference) as of 1991. This is an extremely large difference: it amounts to over 2,000 fewer (statistical) deaths in the least concentrated markets compared with the most concentrated markets.

This result is not surprising since economic theory for markets with regulated prices predicts such a result. The empirical evidence for fixed prices clearly supports predictions from theory: it is clear that increased competition leads to increased quality. The current set of studies are not structured in such a way, however, that we can make any inferences about the effects on social welfare.

The results from studies of markets where prices are set by providers are much more variable. Some show increased competition leading to increased quality, and some show the opposite. For example, Propper et al (2003) find that competition led to substantial increases in mortality among heart attack patients in the UK following the NHS reforms of the 1990s encouraging payer-driven competition. The estimated cumulative effect of competition led to increases in mortality that cancelled out the mortality reductions that would have occurred due to improved treatment methods.

On the other hand, Sari (2002) finds that quality (measured by a set of quality indicators, including mortality) is significantly higher in more competitive markets in the United States. While these contrasting results may appear surprising, they should not be. Economic theory predicts that quality may either increase or decrease with increased competition when firms are setting both quality and price. The presence of more competitors can increase quality elasticity, price elasticity or both. If price elasticity increases more than quality elasticity, then quality will fall – and vice versa.

It is possible that the NHS reforms led to a larger increase in price than quality elasticity, hence the findings of Propper et al. Sari's finding could result from competition in the markets he examined leading to a greater increase in quality than price elasticity. This is possible since the NHS reforms introduced price competition where it had not previously existed, while in the US setting, price competition was already in existence. Presumably the introduction of price competition has a bigger effect than variation in the number of competitors in a setting where it already exists.

### CMPO research found that competition led to increased mortality rates among heart attack patients

The implications of these findings for society are unclear. A study that finds that competition increases quality doesn't tell us if this is socially optimal: competition could lead to excessive quality. Similarly, a result that competition decreases quality does not tell us if this is good, bad or neutral with regard to social welfare. If quality was excessive previously, then a decline may be welfare-improving: it may free up resources to be used where they are more highly valued.

### Conclusions

The first generation of studies of competition and quality in healthcare markets has provided a very valuable base of knowledge for further research. But they don't allow us to make inferences about whether their estimated results imply that competition increased or decreased social welfare. A major next step for research in this area is to sort out the factors that determine whether competition will lead to increased or decreased quality, and specifying more complete models of quality determination in healthcare markets so as to allow for normative analysis.

Market-oriented healthcare reforms are being considered by quite a few countries. US courts have to make decisions about antitrust issues involving healthcare providers. Evidence on the effects of competition on quality in healthcare is vital to the policy decisions these individuals must make. There is considerable scope for future research to contribute to policy on this issue.

This article summarises 'What Do We Know About Competition and Quality in Health Care Markets?' by Martin Gaynor, CMPO Working Paper No. 06/151. Gaynor is E.J. Barone Professor of Economics and Health Policy at the Heinz School of Public Policy and Management, Carnegie Mellon University. For the full paper, see: <http://www.bris.ac.uk/Depts/CMPO/workingpapers/wp151.pdf>

### Further reading

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# Resolving Contractual Disputes

**It is often not possible to write contracts where performance is measured precisely: this can lead to disputes. Theoretical work by *Surajeet Chakravarty* and *Miltiadis Makris* on how to resolve such disputes provides a new approach to thinking about incentives and productivity in the public sector.**

Incentives within organisations – such as bonus payments or promotions – are often made using subjective criteria. For example, UK doctors proceed up the NHS hierarchy on the basis of years of experience, administration, courses taken, errors made and publications. Their employment contracts do not specify objectively how much weight is assigned to each of these factors and only give a broad indication of their job requirements. Such specifications would be very difficult to do in a complex field like medicine and may, in any case, distort doctors' behaviour in undesirable ways.

The use of subjective measures of performance and the potential non-verifiability of outcomes can lead to disputes. This could have high costs and may also make it more difficult to write a contract that provides appropriate incentives. Our research shows that in fact a contract can be written under potential non-verifiability and that this contract can produce benefits for all as long as there is some arbitrator or mediator to address disputes that may arise from non-verifiability.

The theoretical analysis explores a contractual relationship between a principal (such as an employer) and an agent (such as an employee), in which the principal cannot observe the effort made by the agent. The outcome is observed by both the principal and the agent but it may not be possible for it to be verified by a third party – a court, tribunal, arbitrator, mediator or any alternative dispute resolution body.

Both the principal and the agent report their assessment of the outcome to the third party. This gives both of them an incentive to misreport since any salary or reward for the outcome is a transfer from the principal to the agent. But the court is an active player, which attempts to find information about the potentially non-verifiable state and uses any such information to resolve disputes.

We discuss two possible methods the court may use to resolve a dispute. The first method – arbitration – is used when the court itself observes a signal about the outcome but the signal is

imperfect. This is similar to situations where a court spends a considerable amount of time and effort finding the truth. In this case, when the outcome is not verified, the rule to determine the final payment to the agent is a truth-telling one.

The second method – mediation – does not induce truth-telling. The only extra restriction used here is that the rule strikes a compromise between the claims made by the principal and the agent. This is similar to cases where an employer and employee take their dispute to an outside tribunal.

Under both arbitration and mediation, at least one of the contracting parties always has an incentive to go to court. The agent has an incentive to go to court if the outcome is not a success and claim that it is a success; the principal has an incentive to go to court if the outcome is not a failure and claim that it is a failure.

The principal wants to avoid failure not only because there is no benefit but also because failure cannot be proved and it may still be necessary to pay the agent something. In the case of success, the principal not only gets the benefit of success but may also be able to reduce the payment to the agent because of non-verifiability.

## **An arbitrator or mediator can resolve disputes over contracts with potentially non-verifiable outcomes**

The resulting contract depends on the degree of non-verifiability. For lower degrees of non-verifiability, the contract form is similar to that of a contract written under full verifiability, regardless of the rule. For sufficiently low verifiability, on the other hand, under arbitration, the optimal contract is flat. Under mediation, however, the contract form is that the agent is given a bonus unless there is absolute failure. This is consistent with previous findings that if assessment is subjective, then the principal is more likely to make a favourable ruling about the agent's performance.



Our second main result is that under both arbitration and mediation, the agent may be induced to put in effort which, depending on the environment, is equal to or greater than the 'first-best' level of effort – the level that can be induced when incentive contracts can be written on objectively assessed effort. The primary reason for this result is that agent can always expect some transfer more than the promised bonus even if the outcome is failure.

A simple model highlights this idea. Consider a contractual relationship between a principal and agent where the former cannot observe the effort made by the latter. Suppose also that the output of the agent's effort can also be affected by outside and unanticipated factors, that it is valued only by the principal and that it can be observed by both the principal and the agent. But this output cannot be verified by a third party, the court responsible for the enforcement of trade between parties that have voluntarily established a contractual relationship.

This stylised principal-agent relationship can be thought of as a first approximation of contracting public services like 'private finance initiative' (PFI) projects. Under such projects, the public and private sectors enter a contract for the provision of a major capital asset for public services such as a school or a hospital and related support services like repairs and maintenance.

The contract specifies the outputs required from a public service facility and the basis for payment for these outputs. Specifically, the public sector principal undertakes to make payments to the private sector agent based on the latter's performance. Typically, also, there is no third market for the asset: the service provided is valued only by the government. Furthermore, there is a third party to evaluate the delivery of the contracted service: the Project Review Group. Finally, the services required, like the quality of maintenance, are often hard to quantify.

Following up on this basic model, the non-verifiability of output gives both the principal and the agent an incentive to challenge any contract that specifies a price for a level of output. In particular, each contracting party has an incentive to claim that the output is different than the one the other party claims it to be. The reason is that any salary or reward for the output is a transfer from the principal to the agent. If we had assumed that contracts conditioning payments on non-verifiable output levels are not feasible, then there would have been no trade: the agent would have exerted zero effort and the principal would only pay the agent the basic wage.

In our work, however, we explicitly model the court's role in resolving contractual disputes. One possible method the court may use to address disputes is that it observes an imperfect signal about the performance and orders a payment that is conditional on this signal. This is similar to instances when the dispute goes to an arbitrator, which may be within the firm or belong to an industry association, and which may itself gather information.

Another judicial rule could depend only on the reports of – the cases made by – the principal and the agent, and dictate a transfer that is a weighted average of the claims made by the principal and the agent. This is similar to cases when the employer and the employee may take their dispute to an outside tribunal or court.

Naturally, the type of judicial rule will affect the incentives in the relationship. Within this novel framework, we can ask the question: can the existence of contracts that are based on non-verifiable outcomes improve the efficiency of public organisations?

### **Contracts that are based on non-verifiable outcomes can improve the efficiency of public organisations**

To see how this could occur, suppose that, by challenging the contract, the principal can expect a transfer to the agent that is lower than the promised bonus when output is high. This will make the agent less willing to exert effort and thereby increase the cost to the principal of inducing the agent to perform well. Suppose also that the principal can expect to give a higher transfer to the agent than the promised payment when output is low due to the agent challenging the contract.

Thus, preventing the bad outcome is even more important, all other things equal, for the principal. If the latter effect is relatively strong enough, the principal may find it optimal to give the appropriate incentives so that the agent exerts a higher effort than would be exerted in the absence of a contract.

**This article summarises 'Resolving Contractual Disputes: Arbitration versus Mediation' by Surajeet Chakravarty and Miltiadis Makris, CMPO Working Paper No. 05/117. For the full paper, see:**  
<http://www.bris.ac.uk/Depts/CMPO/workingpapers/wp117.pdf>

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