

## Evidence session on “The Role of Skills in a Growth Strategy for the UK”\*

The LSE Growth Commission is organising a series of evidence sessions with leading thinkers from academia, business and policy that will inform the development of a strategy for the UK to support long run growth. The second session in this series was held on Wednesday 14 March. Professors Erik Hanushek, Steve Machin and Ludger Woessman gave pioneering evidence on the role skills should play in the formulation and implementation of a strategy to secure long run growth for the UK, drawing on lessons from international experience and state of the art academic literature. The session was chaired by Prof. John Van Reenen (co-chair of the Commission), who was joined by commissioners Prof. Tim Besley (co-chair), Sir Richard Lambert and Prof. Francesco Caselli. This note provides a summary of the main evidence and arguments made.

Opening the discussion, Prof. Hanushek highlighted the importance of looking beyond the Great Recession and paying attention to the issues that are pertinent for the long-term. One such issue is human capital formation and school quality in particular.

According to Prof. Hanushek, available measures of human capital have been a source of concern for economists for the last 20 years, despite their importance to understanding what drives economic growth. Traditional measures of number of years of schooling explain about a quarter of the cross-country differences in long run (per capita) growth rates<sup>1</sup>. Such measures, however, implicitly assume that a year of schooling in, for example, England is equivalent to a year of schooling in Peru.

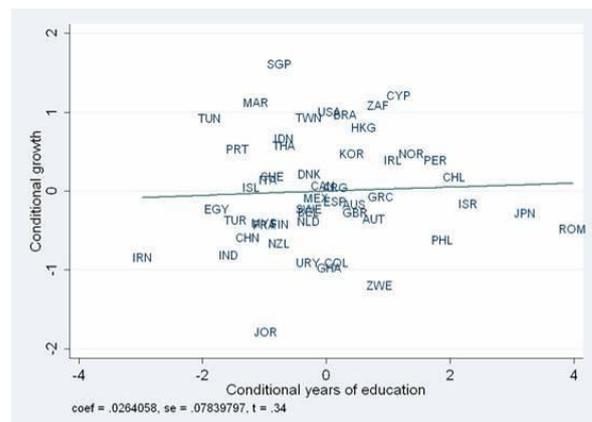
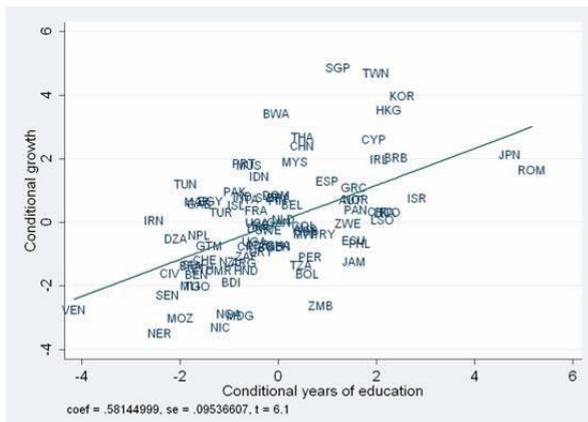
In practice, years of schooling need to be combined with measures of cognitive skills/attainment<sup>2</sup> to give a reasonable picture of the quality of education. Perhaps unsurprisingly, when years of schooling are combined with a measure of attainment, the correlation between years of schooling and long run economic growth disappears. In other words, if children spend a lot of time in school without significantly improving their attainment in the process, economic growth is unaffected. Hence, excessive policy emphasis on keeping children in school and increasing school completion rates, regardless of improvements in attainment, is very likely to be misplaced.

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\***Disclaimer:** This summary document represents the views of the evidence givers and not necessarily those of the commissioners.

<sup>1</sup> Long run economic growth is measured relative to 1960.

<sup>2</sup> E.g. exam scores from international studies like the OECD Programme for International Student Assessment (PISA).



Improving attainment to promote long term growth raises one important question: who should policy concentrate on, the highest or the lowest achievers? Prof. Hanushek's interpretation of available evidence is that both are equally important. If any distinction at all can be made, it would tend to favour slightly the importance of concentrating on high achievers in developing countries, but not in the developed countries. Similarly, there seems to be a strong case for policy to focus on improving basic cognitive skills, as this seems to be more closely associated with growth than the level of tertiary education.

Prof. Hanushek explored this point further by alluding to the findings of his own research. According to his own calculations, a relatively ambitious reform of the UK education system (e.g. one that increased achievement by a quarter of a standard deviation over the next 20 years), would place the UK at the same achievement levels as Australia and Germany, and would increase national income by \$6.8tn<sup>3</sup> in present value terms (compared to the US:\$45tn) or 300% of current GDP<sup>4</sup>. An even more ambitious school reform (e.g. increasing exam scores by half a standard deviation) would produced gains in the region of \$15tn (US: \$105tn) or 630% of current GDP.

In contrast, simply eliminating the bottom 14.4% of low achievers in the UK could result in an increase in national income (in present value terms) to the tune of \$9.6tn (US: \$50tn) or 405% of current GDP. To put this in perspective, the estimated cost of the Great Recession during 2008-2012 in the US is in the order of \$3tn.

Prof. Hanushek then moved on to show the association that seems to be emerging in the data between trends in the countries' skills (in school) and trends in economic growth rates. In this respect, Japan and Korea consistently have both the highest test scores and the biggest increases between 1975 and 2000. Finland has shown great gains as well, while Italy's test scores have declined.

Prof. Hanushek concluded his presentation with a discussion of policy options. Simply increasing spending on education is unlikely to be an effective option. Evidence from OECD countries tends to show a lack of correlation between cumulative expenditure on schools and achievement. In contrast, improving teacher quality should be an important policy objective.

<sup>3</sup> This is the present value of GDP over 80 years of lifetime for someone born today (assuming the future is discounted by 3% and a working life of 40 years). These figures assume that the historical relation between long run economic growth and cognitive skills will hold in the future.

<sup>4</sup> Assume the current GDP growth rate is 1.5%

Teacher quality accounts for a very important part of differences in pupils' achievement<sup>5</sup>. Prof. Hanushek's findings for Maths in the US suggest that having a teacher at the 75th percentile of the quality distribution, as compared to the 25th percentile, would move a student at the middle of the achievement distribution to the 58th percentile. Seen from a different angle, if every school in the US replaced their worst teachers (bottom 6-10% in terms of teacher effectiveness) with average quality teachers, the resulting achievement gains would bring the US up to the achievement levels of Canada and Finland.

Professor Machin started his presentation with an overview of the UK labour market, arguing that the key policy question is how human capital formation can be harnessed for productivity improvements.

Between 1981 and 2011, the percentage of employed men with an undergraduate degree or higher increased from 7% to 31%. This increase was from 3% to 30% for women. In the same period, the proportion of men and women employed but with no qualifications has plummeted to 5% from 55% and 62%, respectively. This was accompanied by an increase in the percentage of the employed labour force with intermediate qualifications.

Since the mid-2000s, some of these trends seem to have decelerated. For example, staying on rates (for post-compulsory education) have stagnated since then. Nowadays, about 25-30% of pupils do not stay on after compulsory schooling years.

In terms of wages, graduates have done quite well while others have fared badly. Graduates were paid about 1.5 times more than an average qualified person in 1980. This premium increased to 1.67 times in 2008, despite a huge increase in the supply of graduates since the eighties. Post graduates earned 6-7% higher wages than graduates in 2008. In the same period, the intermediate and lower levels have fared relatively poorly, due to deficiencies in their basic skills – literacy, cognitive and ICT skills to use new technology. As a by-product of these trends, wage inequality has risen sharply.

The problem of low achievement can, in part, be traced back to the compulsory school system. The long tail in the lower part of the basic skills distribution is a feature of the UK (and some places in the US) but of like Sweden, Germany and Finland where education system seem to deliver better outcomes.

One other reason for the long tail in the distribution of basic skills is the relatively strong association between school achievement and pupils' socio-economic background. Indeed, the UK has one of the highest socio-economic gradients in education<sup>6</sup>.

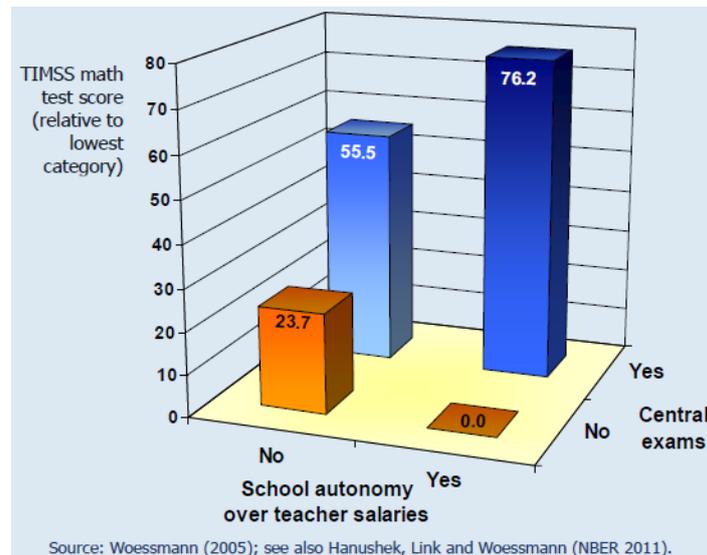
Prof. Woessman's presentation focused on international comparative evidence. In his view, institutional reforms aimed at increasing accountability, autonomy and choice are key for long run growth. To ensure educational investments are made efficiently, the incentives of principals, teachers and parents need to be aligned to improve student outcomes. These incentives, in turn, are determined by the institutional framework of the education system.

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<sup>5</sup> It is important to note that teacher quality is not generally associated with measures that are often used as markers of teacher effectiveness: e.g. teaching qualifications, experience and certifications.

<sup>6</sup> Machin and McNally, "The evaluation of English education policies", National Institute Economic Review (2012).

One important feature of that institutional framework is its level of accountability. In this area, Prof. Woessman argued international data seems to suggest that schools that face external exit exams tend to have better student results than schools that face no such exam<sup>7</sup>. Furthermore, there appears to be a negative relation between accountability and autonomy – i.e. schools with greater autonomy in the absence of central accountability tend to perform badly. Thus, accountability and autonomy go hand in hand in generating positive outcomes.



Another widely-discussed institutional feature is degree of private sector involvement in the education system. Prof. Woessman showed evidence indicating that school outcomes tend to be worst in countries where the share of private funding is higher, which gives credit to the those who argue that government should be heavily involved in the funding of education. In contrast, in terms of private sector provision, larger shares of private sector schools tend to be associated with higher student performance.

Prof. Woessman concluded his talk with a few important observations on the labour market outcomes of individuals with general skills versus those with vocational training across different age cohorts. Evidence from Germany appears to suggest that vocational training offers relatively higher probability of employment for individuals at labour market entry age. However, as age increases, the probability of being employed falls faster for individuals with vocational training, so that for people in their 50s, it is actually lower than that of individuals with general skills. Thus, an excessive emphasis on increasing vocational training may not be desirable for the long run.

The presentations were followed by a Q&A session between the commissioners and the presenters. Prof. Van Reenen began by raising the question: given that within school teacher quality and incentives are the most important factors and one can *ex-post* observe teacher effectiveness, is the removal of the bottom decile of teachers the only policy solution (as Prof. Hanushek suggested)? If yes, how can this be institutionally achieved (for e.g.: employment regulation)? And, if not, what are the other ways (for e.g.: incentive pay related to value added) to raise teacher effectiveness?

<sup>7</sup> This observation is based on TIMSS math test scores and is conditional on student background, teacher qualifications and class size

Prof. Hanushek agreed with Prof. Woessman that what is needed are institutions that drive up the quality of teachers. To increase accountability, a regular and credible evaluation system for teachers as well as supervisors is required. He gave the example of Washington D.C. wherein if a teacher is in the bottom 2% of the school for two consecutive years, he/she is removed while if they are in the top 2% for two years they are rewarded with an increase in the base pay.

Prof. Machin also agreed that teacher incentives could be the key to helping under-performing children. His main argument was that there needs to be a re-professionalization of teaching staff. He pointed to recent evidence in the UK that shows that new entrants to the teaching profession have lower academic qualifications themselves<sup>8</sup> than before. This could be improved by reforming teacher compensation (targeted resources) and the work environment for teachers. An example of a partially successful policy in this area in the UK was the "Teach First" program.

The exchange with the Commissioners continued with Sir Richard Lambert questioning whether teacher quality is more important in areas where parental engagement in children's education is minimum, Similarly, Prof. Caselli asked whether the polarisation of parental engagement in the UK was responsible for the achievement gaps between children of different socio-economic status.

Prof. Hanushek and Prof. Machin agreed that parents are undoubtedly a powerful force behind attainment, but were of the view that teachers can help make up for parental background differences. Prof. Hanushek referred to his own research wherein he finds that low income students with highly effective teachers<sup>9</sup> for 3 consecutive years are capable of overcoming the drag caused by their low socio-economic background.

Prof. Hanushek also noted that, in the US, teachers' salary levels are very compressed and so the profession attracts risk-averse people. The fixed salary levels are too low for effective teachers but very high for low performing teachers. Thus, a policy that increases salary levels across the board will not solve the incentives problem. Prof. Machin pointed out that, in the UK, teachers' pay has decreased relative to other occupations. In Europe, on the other hand, Prof. Woessman found that teacher pay has actually grown parallel to other occupations.

However, all the presenters agreed that it is more about selection of people into the profession, rather than salary levels. Finland, for example, despite having low salary levels attracts its best graduates into teaching. It achieves this by devising a strong entrance test for teachers, over and above their qualifications.

With regards to the UK's socio economic gradient in student achievement, Prof. Machin said this is driven by two main factors: house price premium for good schools and a very small share of students in private schools (about 7%). These two forces, combined with proximity based enrolment, leads to a clustering of well performing students and schools. These forces are not present in other countries like Finland. One useful policy to address this problem was Labour's initiative to convert the worst performing schools into academies.

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<sup>8</sup>Stephen Nickell and Glenda Quintini, "The consequences of the decline in public sector pay in Britain: A Little bit of evidence", The Economic Journal (2002).

<sup>9</sup>A highly effective teacher, here, is one whose value added score is in the 85<sup>th</sup> percentile.

Turning to the optimal operation of schools, Prof. Besley raised the question of whether business sector engagement in schools improves their outcomes. Both Prof. Hanushek and Prof. Machin were pessimistic about the role of businesses did not consider this to be a solution.

Sir Richard Lambert raised the issue of whether the structure of the labour market drives the lack of basic and intermediate skills in the UK. Prof. Machin agreed that the high turnover in some low wage sectors is responsible for employers' low commitment to training. As a result, training is higher for the already highly educated high income population. This exacerbates the skill gap between the top and bottom of the distribution.

Finally, Prof. Van Reenen raised the widely discussed problems with the apprenticeship system in the UK. Is the system unsuccessful due to employer disinterest or institutional factors in the UK? Prof. Machin thinks the problem is that the vocational qualifications in the UK is so mixed in quality that employers do not know what it means. Sir Richard Lambert and Prof. Woessman highlighted that Germany's successful apprenticeship system is very different. The apprenticeships are for a longer period and include some element of general training. So, the UK should include more general skill content into apprenticeships as well as provide some re-training throughout the life cycle.

The session ended with Prof. Woessman prescribing caution to the focus on vocational training and apprenticeships. Determining the right mix of vocational and academic education suitable for the UK is the key.