

**Economic Returns to Education**

**Saul Eslake, Ben Jensen and Colm Harmon**

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**Transcript**

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Three leading economists discussed the evidence for how education quality drives economic growth. They also reviewed the evidence that the most important policy interventions are to improve teacher quality rather than school building improvements or class size reductions.

The panel provided an in-depth look at the above issues, and consisted of Colm Harmon, Director of the Geary Institute; Saul Eslake, Program Director Productivity Growth, and Ben Jensen, Program Director School Education, both of Grattan Institute.

**Speakers: Saul Eslake (Saul), Ben Jensen (Ben) and Colm Harmon (Colm)**

**Moderator: John Daley**

JOHN: I'd like to start by acknowledging the traditional owners and custodians of the land on which this meeting takes place, and also obviously to thank the Victorian government, yet again, for their space here in the Treasury Theatre. We have this evening a panel of extremely distinguished economists to talk about the economic returns to education. And I guess it's one of those fascinating areas where something that we've traditionally thought about as being very much nearer social policy, i.e., education, is now increasingly seen as an area of economic policy.

To talk about this tonight we have first of all Colm Harmon on my left. Colm is visiting Grattan Institute as we sponsored his visit out here for the next two weeks or so, talking about a range of things including behavioural economics approaches to policy, but Colm is also an expert on economic returns of education. He's a Professor of Economics as well as the Director of the Geary Institute at University College Dublin and is one of the leading economists in this field anywhere in the world.

On Colm's left we have Saul Eslake, Program Director for Productivity Growth at Grattan Institute and obviously one of Australia's leading public intellectuals and leading public economists who, given that he's doing a program on productivity growth, obviously has done already more than his fair share of work thinking about what are the impacts of human capital on productivity.

And on my right here we have Ben Jensen who is the Program Director at Grattan Institute for School Education. Ben is unfortunately a relatively rare breed being an economist in Australia working on education, and I think it would be fair to say that one of the things that in an ideal world would happen in Australia is that we'd see a lot more economists working in that field, given the importance of it to economic productivity as we will be talking about tonight.

So those are the people we have with us tonight. And what we are hoping to do is have a discussion between us around the kinds of issues that this raises, for about 35 minutes or so, and then throw it open to your questions and see which of the panelists succeeds in ducking for cover first and which gets left to answer the question.

The kinds of things that we were hoping to cover tonight I guess started off with we're thinking about what is the economic evidence about economic returns as a result of improving our education systems, then talk about what economics can tell us about the most cost effective places or points to intervene along the lifecycle of education. And then finally talk about what economics can tell us about the most effective forms of intervention at various points in peoples' education. So that's the kind of general layout of tonight's discussion.

And I guess one of the leading points to start this discussion is the work of Hanushek and Woessmann who, over the last I guess decade, two decades, have done some tremendous work looking at the correlations between productivity growth and school education both in terms of retention rates and as they demonstrate much more importantly, in terms of the ultimate quality of schooling certainly in terms of how you measure it in terms of test results.

And I guess the kind of the big headline that they came out with, with their work for the World Bank and others a couple of years ago was, although it's not well understood in this country,

was that you can explain something like 75% of the variation in GDP growth between countries in terms of the educational quality as measured in international tests such as the PISA tests. Now that's an astonishingly high regression test in terms of, as I said, something like 76% of a variation. You get actually similar kinds of regression analysis even if you only take the kind of top half of the OECD, so it's not just about kind of poor countries and rich countries, it seems to be something that holds across a wide variety of countries.

And of course if you're explaining 76% of the productivity growth of countries, that doesn't leave an awful lot to be explained. You ... there's not much left of in the nearer term. And I guess what is fascinating about their work is just how big an effect that is and of course although there's always a question around causation, is it that countries with higher GDP growth have better education systems, it's much more likely that the arrow of causation goes in the other direction, given that absolute GDP doesn't seem to correlate particularly well with the quality of education systems. It's the rate of growth in GDP. Now there may well be some kind of third causative factor that lies behind both of those things, but at least our intuition seems to be backed by the numbers which is that if you get your education system right, that seems to do an awful lot for your economics.

That I guess is the kind of big overall global picture and maybe we should have a look more specifically at Australia. Saul's been doing some work pulling apart productivity growth of various Australian states and I wondered if you'd like to talk about that, Saul?

SAUL: Well thanks, John. Obviously as a general proposition the economists have understood that there's a relationship between education and economic performance since the days of Adam Smith who wrote in the *Wealth of Nations* about the contribution that acquiring skills can add to not only what a workman produces for himself, but to the broader economy and society. And since then, both in the theoretical and in the empirical literature, economists have been attempting to flesh that out. It's widely accepted that human capital along with physical capital is one of the principal drivers of productivity growth over time and as you've said in referring to the Hanushek and Woessmann evidence that that's been taken a bit further to look at the distinction between the contribution of quantity of education versus the quality of it. Interestingly in the Australian context, although there have been studies demonstrating or purporting to show that increased education will increase ... years of education will lead to point eight point three percentage point per annum faster growth in GDP. What's been hard for researchers to disentangle is the contribution that higher levels of education make to participation in employment as distinct from the productivity of those who are in employment and from the point of view of analysing what drives productivity growth, that is an important distinction.

When people have looked at the contribution that rising levels of educational attainment in Australia since the early 1980s have had on variations in Australia's productivity performance over time, they've actually found it hard to attribute any significant proportion of it to that. The studies that have been done of the reasons for the improvement in Australia's productivity performance during the 1990s find that nearly all of it can be explained by either microeconomic and structural reforms or the diffusion of new technology which, in Australia in the 1990s, was faster than in all but about half a dozen other countries. And that leaves very little to be explained by the significant increase, for example, that had been taking place since the early ... between the early 1980s and the mid 1990s in retention rates to Year 12, or from the late 1980s onwards in participation in tertiary education.

More recently of course during the past decade we've seen a substantial slow down in productivity growth despite the fact that as more younger generations move into the workforce, the average level of educational attainment embodied in the workforce has continued to increase. So at the Australian level, while there's plenty of international evidence as you referred to cross country studies associating the rate of growth of productivity with the quantity or quality of education, what's been much harder to find is for individual countries including Australia, evidence linking an increase in the quantity or quality of education through time and changes in the rate of productivity growth in that country which leaves open as a question for some of the research that we intend to do as part of the productivity growth program. Whether there actually is such a link and if so where in the course of education are the most effective places for, for example, increased government or private investment.

JOHN: And Saul, if we look at some of the variations between states, is there anything that's at least a little suggestive on that line?

SAUL: Well yes there is, when you look across states, and maybe this is consistent with the way the international evidence works. For example, I've spent for various reasons quite a bit of time looking at differences in productivity and economic performance between Tasmania and other states. And what the statistics show is that per capita incomes in Tasmania are about 20% below the national average. About five percentage points of that is because of lower participation in employment. About three percentage points is because of a lower average number of hours worked, and the remaining 12 percentage points is explained by lower levels of output per hour worked. That's the Ken Henry 3Ps framework for analysing these kind of differences.

And then when you look as to why productivity might be lower in Tasmania than in other states, some of that is because Tasmania has a below average share of industry such as mining and financial services in which productivity anywhere is higher than the national average, and an above average share of industries like retail trade and hospitality in which productivity is typically below the national average wherever it might happen to be located. But it's also pretty clear that one of the reasons why productivity is lower in a majority of industries in Tasmania than the corresponding national average is because of the lower levels of educational attainment of Tasmanians compared with the mainland, for example, participation rates or retention rates to Year 12, between Year 10 and Year 12 in Tasmania are something like eight percentage points below the national average.

The proportion of Tasmanians who, and I'm referring to an ABS survey of literacy and numeracy skills possessed by Australian adults that was taken about three years ago, that the proportion of Tasmanian adults who lack the minimum prose literacy skills required to meet the demands of every day life and work is 2.6 percentage points below the national average. The proportion of adults lacking document literacy skills required is four percentage points below the national average. The proportion of Tasmanian adults lacking numeracy skills required to meet the demands of everyday life was about four percentage points below the national average, and so on. The proportion of Tasmanians who have post secondary qualifications, be they tertiary or VET qualifications is six percentage points below the national average.

So certainly there's evidence that's suggestive that the lower quantity of education possessed by Tasmanians detracts from productivity, but going along to the work by Hanushek and Woessmann about quality, while this is harder to measure and more controversial, certainly looking at test scores over time including the NAPLAN results suggest that while Tasmanians in the early years of their education don't perform significantly differently on most tests from people from other parts of the country, the longer they stay in the education system in Tasmania, the further they appear to fall behind. So while this isn't conclusive evidence, it suggests that the quality of the education system may be below that of the rest of the country.

And then finally of course, one of the things that contributes to differences in the level of skill attainment is that people who do acquire higher levels of education in Tasmania tend to move to the mainland, while people moving in the opposite direction tend to be older and are less likely to possess upper secondary or tertiary qualifications than people moving in the opposite direction. Now you can apply almost exactly the same analysis to high productivity areas of the country such as the ACT or Western Australia and to some extent New South Wales and find almost the opposite set of comparators, that is longer, higher retention rates to Year 12, higher proportions of the workforce possessing post secondary qualifications and to the extent that NAPLAN and other test scores are indicative suggestions that the quality of education is better than in the poorer performing states. To some extent South Australia resembles Tasmania in terms of some of the indicators I've mentioned. So the work we've done thus far suggests that a good deal of the quite significant variations across Australian states in levels of productivity can be explained by variations in the quantity of education possessed and the quality of education possessed by people who are in the workforce.

JOHN: Thank you. Which I guess immediately begs the question, what do we do about it and where do we invest? And Ben, I wonder if you would like to just comment on what have we been doing over the last 20 years, 'cause as Saul said, the evidence is that the productivity gains in Australia haven't been as a result of shifts in human capital achievement and have been essentially driven by other things. What have we been doing in terms of investing in the education system?

BEN: Well we've been investing in education quite considerably. I mean we've had substantial investments for about 30 years now, increasing investments in education for about 30 years in Australia and that hasn't been met by improvements in ... a lot of research actually shows it's actually declining skill levels on international tests and numeracy and literacy levels over that period. And what we've been doing from a policy or a program point of view is actually spreading what I like to think of as the main education resources as thinly as possible. And the main resource in education is teachers. In terms of effective education, teachers are the ballgame and we've been spreading those resources as thinly as possible through two policies really: one to decrease class size considerably; and the other to increase the number of subjects offered by schools as widely as possible. Now that has met, or has occurred, with increasing proportion of people attending higher levels of education. So that's been our main policy thrust over the past, well, two, three decades, to decrease class size and to increase the number of subjects offered, which therefore increases demands for teachers and different types of teachers.

JOHN: Yeah. And I guess one of the questions is ... that's worth remembering is that the ... you don't have to decrease your class size by very much to spend a lot of money.

BEN: No. Average class size in Australia varies considerably across year levels but you're talking about between 20, 25 students per teacher. If you decrease that to say 18 students per teacher you're looking at a substantial increase, roughly 20 plus percent increase in education expenditure. So one or two students difference per class ends up in a substantial change to the bottom line in education expenditure.

JOHN: Thank you. Which I guess then takes us to where should we be spending the money and I guess this is, Colm, where you've spent a lot of time thinking about this issue which is, you know, obviously one can spend one's additional ... one's marginal education dollar either on early childhood or on primary school or on secondary school or on tertiary education, and the obvious question is well where's the most effective place to spend that marginal dollar?

COLM: Well, if you ... by looking at the kind of ... sort of education returns and investment over a kind of a life cycle perspective from early years, pre-school, through to higher education, the strong economic evidence is that the biggest returns come from the early years. And one of the big drivers of this is the work of a colleague of mine, James Heckman, who was Nobel Prize winner in economics in 2001. And Heckman's curve, as it's going to be known, you probably ... I've certainly seen Australian policy documents that have the Heckman curve in it, essentially portrays it as you have, you know, a curve line and ... which is rate of return versus age at which you're looking at. And sort of portrays the idea that really high returns well above the kind of the investment return on funds from early years, pre-school, etc, and really low returns, almost ... it's like almost palliative care type returns from investing in higher education. And I think Jim Heckman himself would say that curve has been completely taken out of context because the curve is a static one, it gives no sense of dynamic to it. And that's where I think the real story lies in looking at education investment over a life cycle.

Properly structured early investment programs should start to see that curve shift out. In other words you start to increase the returns at all levels of education from getting a well structured, well founded and well balanced early year strategy. So, but I think in terms of economic returns, one caveat though is that the ... much of the evidence on the early childhood returns comes from cohorts of about 100 kids from mid '60s, typically South Chicago African-American, who went through a series of experimental programs aimed at improving their lot in life. And it certainly improved their lot in life. And one of the major things it did is it stopped them falling into prison. And therefore the sort of, as Andrew Leigh who calls it Madoff-like returns. When you see returns of 17 to one you should question it, right. So when you see 17 to one type returns



which are oft quoted, certainly our education Minister in Ireland stood up and our Parliament and said we can get returns of 12 to one from this, she was a bit behind the times, you have to recognise that of that 17 or so dollars back for every dollar you put in, 11 or 12 of it is from criminal justice savings. So huge amount of it comes from stopping ... that these kids didn't end up in prison or dead.

The second important point is that the other big chunk that we don't really know about, and there are very, very few experimental evidence, and this evidence comes from really robust, randomised experiments going on anywhere in the world, thankfully one of them is going on in Dublin which you're involved in, very few of them take place in countries where you've got a strong welfare state. So again you could sort of see how you go from 17 to one to sort of six to one, and that six to one is made up of returns based upon things like increased earnings and welfare, tax avoidance and all those sort of things. But it doesn't take account of the fact that in South Chicago in the mid 1960s to the best of my knowledge they didn't have much of a welfare state. And that props up the sort of average experience that individuals in kind of countries with strong programs and welfare like Australia, like the UK, like Ireland, like most of Europe and etc., would have.

So you'd have to put a big question mark over whether you would see the sort of returns that Ministers for Education like to quote about the early year strategy. That's one point. That said, I still think, you know, you're going to get returns that are way in excess of the sort of rate of return to funds. And it means that really, you know, the early year strategy based on any kind of reasonable assumption will give you the most return from a kind of a treasury exchequer point of view. I think that's stretching it to suggest that you should invest all your money there and ignore the rest of it, which is in a sense a direct interpretation of what Heckman's curve seems to suggest, because it doesn't allow for any sort of dynamic, and that's a whole different issue to sort of bring through.

JOHN: It does then beg the question of okay, well if you are going to intervene in early childhood years, what kinds of programs seem to work?

COLM: With the early years programs they tend to be very focused on rectifying more non-cognitive deficiencies in the children than the cognitive ones. So if you look at Heckman's evidence you'll see increased returns, earnings returns or employability returns from increasing things like mathematic scores or literacy scores. But the returns from increasing the children's self-sufficiency or self-esteem measures ...

JOHN: Concentration spans, yeah, all of that.

COLM: ... are quite multiples, absolute multiples of the returns from increasing. So shifting your literacy score by a standard deviation takes a lot of effort and generates a return which shifting a self-esteem or self-awareness measure by a standard deviation generates a much, much bigger return for these individuals. And that's a key point about that.

So most of the programs tend to be quite focused on improving kind of parental skills, passing that through in a kind of an intergenerational way, and improving as the children age their sort of self-esteem, and stopping that sort of very rapid fanning out that happens by socio-economic group of things like vocabulary standards. If you look at graphics of your vocabulary attainment of children from birth through to sort of age three or four, there's almost no gap in the early months and early years, if you like. But by age three, by age five, gaps have widened up very dramatically. So it's really stopping that happening is the key challenge.

I think the type of investment though needs ... the thing to bear I mind is that the evidence comes from targeted investments. It isn't from universal programs which again public administrations tend to prefer because it means never having to say you're sorry to see these people. And I think in that respect, again bear in mind that everything I've talked about unfortunately suggests that you get some diluting of the effect by moving it on. I think the question really though is the key challenge I think from early investment programs and how it links into the later on period is that the real point of those kind of policies is to deal with the size of a population of able children who won't progress because of family and other kind of

circumstances. But it's stemming that problem early on and as hard as you can that's the aim of those programs.

That means that with investment right the way through the school cycle and into higher education, you should in a sense turn off the tap of this kind of persistent problem of low SES participation in higher education and so on, and stem the need for a lot of the sort of remedial kind of programs that are needed to sort of ensure that kids make the progression from, in the first instance, sort of Year 12 type education and from there into higher education. So in a sense it's stemming that problem and dealing with that initial problem of dealing with those people who are able and should in time, in the fullness of time, be full participants in higher education but will never even think of it because their world is so completely different.

JOHN: I mean, does that imply that investing in middle class kids at that early area ... that early age is actually by and large not a good investment from a state point of view?

COLM: Well I think that type of investment, whether we like it or not, generates a lot of what economists call dead weight. Right, it's, in a sense, I'm almost curious sometimes about some of these ... when they're kind of universal policies because my question is who are you trying to get at? I mean, to some extent you may have an already pre-existing kind of welfare base crèche system or you may not. In Ireland as it happens we've just introduced a kind of a universal pre-school. And yet welfare recipients by and large had very well funded, very low kind of teacher ratio type community crèches. So they were already provided for. The wealthier parents already sent their kids to things like Montessori and so on, so they were already happy. So in a sense there was a group in the middle where the money was actually going. And there's no real evidence that that changes in any way the life outcome of the child. So it depends what you want. I mean if you want to consider those early childhood investments as, to some extent, labour supply subsidies for the middle classes, then that's what they are. They're not policies which will change the life outcome of the children. That's pretty well formed at that stage. I strongly think that that sort of, that targeted versus universality of these type of interventions is probably the key policy debate that policy makers need to have in this field.

JOHN: Thank you. Well I guess that then takes us to school education and I guess we should probably start with you, Ben, in terms of where should we be spending our dollars as we try to invest in human capital through schools?

BEN: Well, I mean I think what's been said is totally correct about the recent research seems to indicate that spending on the early childhood intervention or pre-primary years gives the biggest bang for the buck. But I think we set the bar quite low for education reform, particularly when we talk about the impact on economic growth. When we look at the work of Heckman and when we look at Hanushek and Woessmann's work, we can see that it's about one year's worth of schooling or, I mean, they did it with PISA test scores and it was 47 points on the PISA scale, if you increased your average score of your population, so 15 year olds, if you increased their PISA score by 47 points, that equates to about a 1% increase in GDP each year.

JOHN: Cumulative.

BEN: Cumulative. Now that's about the biggest microeconomic reform we're ever going to have. Now people say okay, what does 47 points on a PISA scale mean? It means about a bit over a year in school education. So it's a bit over a year's increase in skills and abilities, or a bit over a year's increase in the curriculum you learn in a given year. And people say okay, that's a large increase in skills and ability. But let's have a think about okay, first of all there are a number of countries that have achieved that growth. Korea and Poland, two of the most prominent. Korea achieved that growth and Poland achieved ... no sorry, just under that growth, they achieved it in six years. If we go back 30 years, and look at 25 to 34 year olds in Australia compared to Korea, if we look at the upper secondary graduation rate, Australia had about 20% more of their population with upper secondary graduation compared to Korea. Now go ahead 30 years, Korea has about 20% more compared to Australia. That's a massive change in an education system. And we say okay, they were an outlier and they are.

But let's have a look about some of what we mean when we talk about education reform. I said earlier for me, teaching is the ball game in education. Obviously curriculum, we're going to have a national curriculum and it's very important. But for me, teaching is the ball game. When you look at the studies comparing highly effective teachers with less effective teachers, I never say ineffective teachers, the highly effective teachers and less effective teachers in a given year, the amount of skills and abilities they convey to their students or they educate their students, it's about a year's difference. So in one year a highly effective, those in the top 5 - 10% compared to the lowest 5 - 10%, will go through about 18 months curriculum compared to six months. So that's the sort of difference that you can get if you have very highly effective teacher workforce.

Now I'm not saying we're going to get that top 10% across the whole teacher workforce. But just think about perhaps not we compare the top 10% with the bottom 10%, but if we compare the top 30% with the bottom 30%, and you don't get a full year's difference in one year, you get about say 20 - 30%, you could ... obviously, students are a school for about 12, 13 years, you consider that difference each year, then you're going to get more than that increase we're talking about in the PISA score.

JOHN: Another way that I've seen this expressed, Ben, is in terms of thinking about what's the difference in percentiles for a student? So if I'm in the middle of a class at the beginning of the year and I have a really good teacher versus, you know, middle of the class and I've got a less effective teacher ...

BEN: Yeah.

JOHN: ... now where do I wind up at the end of a year?

BEN: The important thing to remember is there's quite a bit of difference in a given year and it's cumulative. So over about three years you can end up about 50 percentile points difference.

JOHN: So I start off at 50 and I wind up at 25 and you wind up at 75.

BEN: Exactly, yeah. And the difficult thing is that we're not good in Australian education of pulling students up who have started to lag behind. So an ineffective teacher or a less effective teacher in one given year means that very, very difficult for that student to ever catch up. So to me I think we really can make significant gains in education and we can actually achieve those sort of reforms necessary over a 10 or 15 year period that creates a sort of impact upon economic growth that we normally think of as impossible.

JOHN: Thank you. Now I won't ask you this, Ben, because you have to live here and live with the consequences, but as you'll be acutely aware, the major spend in Australian education over the last year or so has been \$17b worth of school buildings. And Colm, I know that you've done some work on doubtlessly a very different building program in Ireland, but what's been its impact?

COLM: Well it's actually not, it's the building program in Britain. Which is called BSF. They've all got these catchy, Building Schools for Future. Come on, what's the Australian?

JOHN: Or Building the Education Revolution which is, you know ...

COLM: Vive the revolution. So Building Schools for Future is in some respects a similar commitment to rebuild and renovate the entire school stock. And it was the single biggest investment plan of what looks like the outgoing government in the UK. The thing that always surprised me about that program that ... was that ... well two things really. One is capital development programs have very little evidence to suggest that they really mean anything. I mean I think if you're in the sort of proverbial rat infested prefabricated building that dominates Irish education debates, it seems to be that most schools have this fabled rat that runs around annoying the children all the time. It seems there's one that runs around, goes from school to school. Then perhaps, I think there's a ... bit I don't think anything counteracts the sort of powerful, strong teacher effect.



So there's very little evidence that sort of physical space matters in a major way. You see some evidence that ... but it tends to get bundled up with other developments like introduction of IT or other pedagogic developments like whiteboard technologies in classrooms and a lot of it is kind of bundled up with other types of ... and it's very hard to disentangle the effects. There's very little what I call of experimental approaches. The reason that I think school capital type development programs tend to have is that their structure tends to be one where, you know, a school applies, they have to put forward a sort of a business plan of some description. In other words it tends to be quite enlightened school principals that do that. So in other words I think what you're actually seeing is that the initial or the money first goes to better run schools albeit it in poor areas as opposed to just basket cases. So of course as an economist I want to kind of randomly allocate the money and give it to all schools in a kind of a ... but in a random way. We weren't able to do that but we're trying.

JOHN: Those policy makers, they're just never any fun are they?

COLM: No, yeah.

SAUL: We did it here though.

COLM: So what we tried to do with the BSF evaluation is that so far there's been two: wave one and two of BSF schools are out. We've been observing through the kind of registry data that we have on the British school system and the British school system tests like crazy, so you've got these key stage exams every two years from about age four. So we have ... I think it's terrible for the students or kids but really great for us is that we have actually lots of data to sort of identify kind of progress. And if you're ...

JOHN: And would say it's actually very good for the kids as well.

COLM: Yeah.

JOHN: That's what the evidence says, you know.

COLM: Yes (laughs). Spoken by somebody who doesn't have children of course. But I think it's, you know, if you look at sort of progression of the same child from key stage three to key stage four, and the difference is that they were once in a not so great building and now the building has been renovated and it's nicer, there's a modest gain. It's rarely that statistically significant. Even when we have hundreds of thousands of observations to throw at the model, we're not finding much evidence of it. And I'm sure we can get much bigger gains and test scores from other types of investment. That said, again the caveat is that the way in which a program is designed means that we're really comparing sort of particular types of schools. What we now have, in a sneaky way, is that we know which schools are going to be invited into BSF before the schools know. So we're tracking schools that are going to be in future waves of the building program before they know it so that we can track their behaviours in terms of the school management, their recruitment strategies around teaching, their performance outcomes. So we're trying to do something about that. But in general, I think the sort of school building programs haven't got a huge return to be separate.

BEN: The same can be said also for computers and information technology in schools. The evidence says it's virtually a close to zero impact on student performance.

COLM: So what a typically a cheery panel of economists (chuckles). What does work? So it seems to be that I think one of the problems that dogs this debate from a kind of a policy maker's perspective is that all the kind of nice things that you'd like to do like ... and that your constituents probably like, like lowering class sizes in your area, are very expensive and have very modest returns. Building nice new schools is nice, but has very modest return. And the tougher stuff, like teacher accountability, which means you face the unions, etc., is much harder to do. And that's the stuff that actually generates the type of returns. And that's the difficulty of it.

JOHN: Comment on that?

BEN: Oh, just to totally agree with it. I think it's also part of the appeal of pre-primary. I think what we've said is there is a gap. Students arrive at primary school with a gap in their skills and abilities and we've noticed that and we've said okay well ... and we've also realised that we're not very good at lowering that gap. So what we've done is we've said okay, there's two options: one, we can get to these students before they enter primary school and try and lower the gap that way. And I think that's the flavour of the ... well the flavour of the year now. And most of the money is now going towards pre-primary. And the other option is well we can change our school education system to help lower performing students once they get there, and we've largely avoided that and focused on the pre-primary. And well my concern is, if we do get ... head down a track of okay, let's make, you know, the one year of pre-primary education compulsory for all students in Australia, is that in 10 or 15 years time the debate will be is, well we have students arriving at this pre-primary year well behind students from higher SES and what are we going to do about it? And eventually we'll be trying to get them into school at a very, very young age.

JOHN: Yeah. Well, and as Colm pointed out earlier, the issue is actually not about necessarily universal intervention pre-primary, it's about targeted intervention to the students from the kinds of backgrounds that we know will by and large leave them disadvantaged as they enter school.

COLM: Yeah, but a lot of policy of course, particularly in this area, is quite focused on getting a particular percentage of the cohort into ... so there's lots of fixations, you know, having X percent of the cohort going into university and stuff. And I mean I think it's also very vexed kind of issue. For a start you want the right X percent, in other words you want the most able and most talented. And that, unfortunately, is highly influenced by where you live and what your parents do, etc. And well the stuff we're talking about can rectify that. If it's not systemic and sustained, then any sort of investment you make early will rapidly degrade. And you'll end up not very far down the line.

The second, I guess, is that those sort of targets are sort of in a sense place the blame I think, shift the blame from one sector of the education policy environment to the other. And very often I think the universities get charged with sorting out that problem when in fact it's a problem that's formed well, well beyond ... well, well before they get there. And certainly the way the admission system works in Ireland, we don't know until they turn up at the gate, it's totally blind admission system, there's absolutely no intervention by my institution in which students get there, they sit a state exam, they get a point score, they apply, there's a hundred places, the hundredth person in sets the point score for the course and that's it, totally blind and totally done in a kind of a completely different place in the country that's central admissions office, etc. So we know nothing about the students who turn up until they turn up in September. And yet the university sector is blamed for having ... I mean I can say without a shadow of a doubt that UCD's socioeconomic mix is far worse, if you want to call it, you know, in the sense of there's far fewer lower SES kids in UCD than in Oxford, without a shadow of a doubt. Absolutely no doubt about it. And Trinity College in Dublin is even worse. Right, so in a sense there are more kids from Botswana in University College Dublin than from the area I grew up in, in Dublin. So it's a quite extraordinary outcome that we end up with, and yet the sector in a sense gets blamed for that. And that's one of the things that I think really is just a reallocation of blame from provider to ...

JOHN: Something that happened a long time ago. I guess that does lead us to well, what's the return like from investments in higher education? What's the evidence about whether or not that makes a difference and where does it make a difference to put our dollars?

COLM: Well from my point of view I think it's probably true that probably the highest private return but the lowest social return comes from the HE graduate. I mean, but the return for me as an individual from having gone to college is quite transformative. The return to society from me having gone to college, particularly me perhaps, is perhaps relatively low, negative my wife would say. But in a sense I think it's a key issue. So the question is not really about the individuals, the private returns as to why you want to make those investments. And I think the debate on the higher education investment stuff has become sort of sidelined or hijacked a little bit by buzz words: innovation, knowledge economy. In Ireland, it's a smart economy, for some

reason. And in a sense the question is whether that sort of investment in higher education or innovation as we might call it, can generate big returns.

And I think the real mistake really is that it's important I think not to over-stretch it, that you make higher education, and what you might brand as innovation, responsible for generating a sort of a new Australia and a new Australian workforce. But I think the jury's out a little bit as to what it actually does. My sense is what happens is that universities create the right environment for the sort of new, kind of new industrial revolution that I think the world, that certain parts of the world are going to have to face. I think it's not the case that the university invest ... it's of itself generates the sort of jobs. I think it's just it creates the right environment, the right buzz which generates it. And that's about as woolly an answer as I can give unfortunately.

JOHN: Well on that note, why don't we throw it open to the floor and ask if there's some questions from the floor. As you can see, a panel of distinguished economists next to me, so we guarantee to get at least four opinions in response to any question, not including mine. So I think there's one up the back there and, is there a microphone, Liz? Just coming that way. If you can very briefly state your name and where you're from, and if you can wait for the microphone 'cause that makes it much more useful in terms of being able to capture all of this for posterity. Thank you.

AUDIENCE: Thank you. Bronte Adams from Dandolo Partners, a public policy consultancy. We're pretty much agreed that teachers are an important lever here. What about evidence on the efficacy of education of teachers? So pre-service, but also professional development training that's often held up as the panacea to everything, and yet the evidence, at least anecdotally is that it's rather uneven both in terms of selection by teachers and in terms of quality of professional development itself. Is there any evidence of its efficacy?

JOHN: Do you want to ..?

BEN: When I was working at the OECD I used to hear from virtually every country that they spent in a small fortune on professional development for teachers and they have absolutely no idea what impact it's having. And the research supports that. So given that problem, I think it's an easy answer. I think what's happened is we have a problem with saying we know the best way to increase the quality of school education is to increase the quality of teaching, so let's put them in professional development, and I think that's the easy answer. We don't track what the impact of that is. Unfortunately, I think in education that professional development is not alone there. I think we're really bad at tracking the impact of programs and policies throughout education. I think, however, there is growing evidence of the importance of the quality of initial education, and I think that is growing to a degree whereby it's basically within countries comparing graduates from different universities, and you get quite distinct effect. In some countries it's a wage premium, but of course that's with few countries 'cause most of this is centralised agreements. But you are getting some effect on teacher value-added or whatever the metric you are trying to use. Of course, most of the evidence is qualitative rather than quantitative, just because of the nature of what we're doing and because you're trying to dissect teachers who are often teaching in the same school from different universities and the impact upon students. But for me, initial education of teachers is going to be the next main thing in education policy. We're very fortunate that Melbourne University has undergone the reforms it has and I think they're going to lead the way in terms of what's happened, what will happen in Australian education.

JOHN: Although presumably, Ben, one of the things has got to be disentangled when you do that analysis is the quality of the person who showed up to start the teaching degree in the first place which I think ...

BEN: Yeah.

JOHN: ... goes back to, you know, the whole sort of life cycle thing we've been talking about and at a rough guess, if other places like Australia, you know, the different cohorts frankly wind up at different universities, and that may be one of the things that colours the analysis.

BEN: Yeah of course. You have some countries where teachers are not allowed to hop in front of a classroom until they have a masters degree. Now that's a very different structure to what we have in Australia where you have, I mean, some of the lowest entry scores at university are into teaching. We know that. The government policy response to that has been to increase the starting wages of teachers, and that's been the main change in terms of teacher salaries in Australia. That, unfortunately, has meant that we have a very flat wages profile now for teachers. It peaks at about seven years and teachers after about seven years receive no salary increase. So therefore, we're starting to see teachers leave the profession at about five to seven years. That may or may not be a bad thing but it's obviously a problem that needs to be addressed.

I would think that if we really want to increase the quality of graduates, we have to completely change the teaching profession so not only provide them higher wages over the years, but to completely change the nature of the profession to one that actually is a lot more fluid, to end this notion of teaching is a job for life that that has to end, and I think is ending. No-one speaks about jobs for life anyway anymore. And to also provide the sort of development and sort of accountability aspects of it that not only reward effective teachers and effective teaching, but also provide people the stepping stone to other careers as well. I think we do have a bit of a problem in saying that people who sign up to be teachers, let's provide them the sort of education and training that enable them to be only teachers. And I think we've got to say that actually, let's provide an education training so they can teach for five, 10, whatever years, but then they've got the skills and abilities to go elsewhere.

JOHN: Is the implication of what you saying earlier on class sizes that we could afford to make the opposite trade off, so have fewer teachers but pay remaining teachers more?

BEN: Yeah. I'm planning to do that analysis soon, but increase class size, reduce the number of subjects taught and pay teachers more, and the flipside, which is never talked about in terms of teacher salaries, is if the biggest bang for your buck is in primary and pre-primary, that you pay primary teachers more than secondary teachers. Now that doesn't happen anywhere in the world from what I know. Some countries pay primary teachers as much as they do upper secondary teachers. Australia is about the same. But I've never heard of a primary teacher, or a pre-primary teacher let alone, getting paid more than an upper secondary teacher. And the evidence would suggest that's what we should do.

COLM: Yeah, no, on the final point, I mean just to pick up the issue on the pre-primary. I mean, I think sometimes the evidence I've seen on who's actually involved in delivering pre-primary can be pretty scary. I mean, the sort of ... certainly in my part of the world the sort of required standard for sort of ... for kind of early child programs is very different to the sort of people that are involved in these experimental programs that are delivering all these returns, I mean, which tend to be masters graduates with child psychology degrees. That ain't what's actually populating the crèches and child centres that are delivering the programs. And which I think ... I agree completely with Ben, I think that from little I know about from the evidence that I kind of ... that appeals to me which is this experimental, or semi-experimental evidence, is that your teachers who are more qualified in a subject tend to have better performing pupils. That the level of variation within school can be quite astonishing. And the fact that school managements can do very little about that is an amazing issue. And on the CPD and kind of performance pay, there's a paper by Angrist and Lavy a few years ago which is one of the few I think of that's an experimental evidence on the impact of CPD and performance pay. And it shows positive effects. That's probably the most robust evidence I've seen on that topic.

JOHN: Thank you. Do we have another question? Thank you.

AUDIENCE: Yeah, good evening. So my name is Federico Ruckert. I'm German. I'm working here in Australia since three years and it's actually my fifth assignment in an international company.

Now, I find this really very, very interesting that economists and non-economists are sitting together and trying to understand the importance of education. And I think there is, every one of us will agree on the significance of the connectivity of the more you invest in skills, the more you

can expect from a person. I think we talked about the importance of having good teachers. I would agree this, already an analogy we have seen life, seen between companies investing in people, in training people and seeing the outcome of it. I think you guys talked about the importance of having good teachers and obviously investing in good teachers for training the people in the right manner in an efficiency in the training process. So there's also productivity in that area. But I think as a company but also as a country it must be important that we are not investing. For example we as engine distributor and seller and server, in dentist, so just as an extreme, if we would develop people as dentists we are not having the right investment in having dentists in our company because we can't use it. So I think it's very important that a company or a country understands in which areas you want to invest in skills in order obviously to ensure that you're investing in the right force, workforce you want to retain in that country. So I think there's a pre-question we have to answer and this is a question I want to address to you. Which are the areas you think for Australia are important to invest in people in order to retain people here in Australia, because there's no meaning that you guys are developing people which will then go with the skills to other countries. So the productivity you will see here in this country is if you invest in people which you want to stay here ...

JOHN: Yeah.

Q2: ... or which would attract even foreign companies to invest in new buildings or new industry here in Australia. So maybe you can explain a little bit that area?

JOHN: Thank you. That's a fascinating question. I don't know if Saul, whether you got any views on which kinds of skills and industries we're kind of under or over-investing in?

SAUL: I think I'd make two observations in response to Federico's question. One, although I'm not aware of any hard evidence from Australia to prove the assertion I'm about to make, I think it is *a priori* you would expect investments in skills made by companies in their own workers to have a higher pay off in terms of the skills that are relevant to that company, than more generic investments in education of a broad cohort of younger people or older people for no specific work related purpose. As I say I'm not aware of hard evidence for that but commonsense suggests that companies are not going to spend shareholders' funds on sending their staff to do something other than work unless they expect to get a significant rate of return from it, and companies who don't do that probably don't succeed in the long term anyway.

Now the problem, and I don't know whether it's greater in Australia than it is in some other companies, is that in Australia employers often like a free ride on the training investments that are made by other companies in their workers and then persuade them to move. And of course if every company is doing that, then ... is seeking to free ride, then the overall level of firm specific investments training is going to be suboptimal. Australia did experiment, I think it was in the early 1990s, with a training guarantee levy where all employers were required to spend some pre-stated percentage. I forget what it is, 1% or so on training. And of course, as is often the case with these kind of regulations, it spawned a whole lot of things. It was more about compliance than about effectiveness. And we've never really revisited that territory at all.

It may well be that the social norms in other countries, including Germany, are different from those in Australia, but as I say that would be the first observation I'd make. The second observation I make which Federico raised about retaining talent within Australia. I guess I have two perspectives on that. One is that I don't think that talented Australians taking their skills offshore is necessarily a bad thing, not least because they're generally speaking highly motivated people who are going to add to their stock of human capital as a result of their overseas experience and to the extent that we worry about that at all, the challenge should be to bring them back afterwards at some stage later in their life rather than to prevent them going in the first place. And I take the same view I guess about migration within Australia, as I do about migration from Australia to other countries. But the second point is that I think on net, Australia gains far more in terms of the skills base of its workforce from immigration to Australia than we lose from emigration from Australia of highly talented people, especially given the way in which the migration program has been reoriented away from family reunion towards skilled migrants since the mid to late 1990s.



JOHN: And I guess also particularly when you remember, when you look at the rates of returning Australians where, although there is yes a very large Australian ex-patriot population, there's also a very substantial proportion of that that in fact does come home eventually.

SAUL: Right. And, I mean just to pick one specific example of how we make net gains from migration. I mean if you think about the extraordinarily high number of well educated and skilled New Zealanders who are working in Australia, attracted by our much higher wages really 'cause the average wage gap between Australia and New Zealand is now about 30%, you know, that Australia does very well picking the eyes out of the New Zealand education system at no expense to Australian tax payers. We don't even pay unemployed New Zealanders social security benefits over here anymore, nor should we. But you know, I guess that's just an illustration of the fact that as a general proposition, Australia gains far more in terms of the skill base from immigration than it loses from emigration.

BEN: Can I just add to that, in terms of school education? I think, as I said before, I think we've gone too far the other way of not investing in teachers just in case they leave. And part of the reason you can attract say higher achieving people to enter the teacher workforce is to give them the skills that were for teaching but also for elsewhere. And I think that's a really important factor.

SAUL: You might almost say the army does this very well, doesn't it?

JOHN: Yeah.

SAUL: That the army actually takes people and gives them skills that fit them and not only professional skills, sort of engineering and those kind of things, but leadership and management skills that the army is actually very good at imparting that. Now whether or not there are lessons from the defence forces that could apply for the teaching profession in the same way that Ben described is perhaps something worth thinking about.

JOHN: Interesting question.

COLM: Well, I guess out of three ... three kind of talks, one was the point about economists talking about this stuff. I think remember, I'm always quick to say what we talk about when we talk about ... what's that song, what we talk about when we talk about love. We talk about when we talk about economics or education, is that economists tend to, as I described it, be able to describe the size and shape of the box, but not really what's going on inside it. And that's what I think is ... it's a really ... really ... that's very true when we talk about things like education. So a lot of what I've talked about and the others talk about are about what we know causes something, X causes Y, you know. We know that class sizes don't have the impact. So I think that's one thing to say about what we've been talking about tonight, is tend to be essentially about evidence on different things. I think that the ... secondly you said there's ... I think we are getting to a point where countries will need to think about the areas they wish to invest in and again it's ... it's about to be one of these horrible policy public administration questions you don't want to have. Do we want to keep training historians, to pick a discipline, when we need more science and engineers? Or do we need more science and engineers or is it what we actually need is a very broad based, well educated workforce and that what discipline they ...

JOHN: More historians.

COLM: More historians perhaps, yes. So in a sense, and there's pros and cons on both sides. I mean Universities Australia group issued a report this week, and normally they're just puff pieces, but actually I bought a lot of what they said which is that there is ... whatever about the kind of evidence that Saul was talking about, about the direct relationship with growth and productivity, we do know very robust evidence on things like what accountants call externalities. It is very good for a country to have a well educated workforce. It makes it a better place to live and more likely to go voting, you're less likely to have crime, you're much more likely to have civic engagement and social capital and all those other things. So there is a kind of a very nice societal return rather than a kind of a social return in the kind of economic sense of it, which might be more related to growth. So that's one point.

But I think that, and again this is where I'm out of my depth a little bit in terms of where the world is kind of changing somewhat, and I think that, you know, other countries have caught up with the sort of the mainstream developed countries of the world. So in a sense Ireland's experience is kind of interesting in the sense that we grew so rapidly in the sort of late ... when I went to college in 1988 as a kind of freshman, my expectation would have been to emigrate, without a shadow of a doubt. By 1992 when I'd done my masters, that had changed and it was, you know, there were jobs starting to appear. And that ... and those jobs, partly the myth is it was because of this well educated workforce. It was actually because it was a cheap well educated workforce. And it was the cheapness of the graduate labour market that made us so appealing.

Now in the sense the Intels and the Microsofts and the Googles and so on that have set up their European headquarters in Ireland, are still there despite the very rapid change in unit labour costs, and despite the fact that they could go elsewhere. But, and that's largely because of some costs. They've invested so much money in plant and investment that it's hard to move them. But they will move eventually if they have to. And in a sense, it is about deciding what we need to produce to keep those folks coming. And fortunately your competitive advantage is eroded, and eroding rapidly. And that, as I said, it creates one of those things that, you know, university vice chancellors and Ministers can row about, endlessly about where the money needs to be spent in terms of producing more. In general, I think my instinct is always that I hate when governments turn around and say we need to educate more scientists, but we probably do actually need to educate more scientists, and there's not much we can do about it.

BEN: But I think it's another part of the story is that, I mean if you think about the drivers of economic growth and you know, you go back to the endogenous growth models which were very trendy the past few years, I mean you do one or two things with the labour force: you either increase their skills and abilities of the general labour force so they can use the technological innovations that are occurring, or you increase the very high end and you hope that that part of the labour force comes up with the technological innovations that the rest of the labour force can use.

Now Australia, with their university system, has gone down the first route of basically with the Dawkins reforms and the other reforms that have followed, of just creating a level playing field for universities. Now every year, or every couple of years, we have a debate and someone points out that there's no Australian university in the top 20 or top 100, whatever list comes out. And that's something I think we need to think about. I mean it goes against some core principles about university and tertiary education that means creating elite universities for just some people. But that's something that probably bears something to think about. I mean I always think of the United States which is the benchmark in terms of productivity growth and economic growth around the world. And on efficiency terms, purely on efficiency terms, has the worst school education system in the world. No doubt about it. Spends an enormous amount, gets terrible outcomes, but has an incredible tertiary sector, incredible university sector. Now, we don't have a country of 400 million people, 350 million people, so that's something to do with it. But I'm always perplexed that the United States, the benchmark for productivity in education is itself an outlier in most of the analysis. So I think that's something to consider.

JOHN: We've probably got time for just one more question, so I don't know whether anyone would like to volunteer? Thank you.

AUDIENCE: Hi, my name is Sarah. I work at the Australian Council for Educational Research. We've just been finished off talking about unis but I want to take it right back down to the other end, to pre-primary kids. Obviously we've got a major issue in Australia with the skill level and the level of remuneration of people that teach pre-primary, but while one of the elephants in the room in Australia is how we increase teaching skills, another perhaps bigger elephant is parenting, 'cause a lot of the, you know, if kids are arriving at primary school already literate and already fairly good with numbers, that's going to make a massive difference. We know that there's a mass amount of evidence which shows that the educational level of parents has a huge impact on the educational level of kids. Now I'm not sure, and this is what I'd like to ask, is if there is evidence in terms of investing in supporting families, increasing maternity leave, etc,

that those kind of interventions in countries actually have an impact on the development of children before they even arrive at school?

COLM: Yeah, absolutely is the answer. The particular program I mentioned that we're working on in Dublin is exactly addressing school readiness. So the area ... it's ... the community that it's working in in Dublin, kids start school at age five and typically they're about, you know, more like three year olds than five year olds in terms of their ... so the objective of the program is to increase that preparedness for school using a set of ... and we start observing these kids at, as I call it, T minus six months. So this is they're recruited in the maternity ward, they're randomised into a program of varying intensity, and away we go. We start following them.

What's been interesting and is a very small ... very early days and very small numbers, we in a sense, I think the last kids are still to be born for this study and the first batch that we recruited are about six months old now. So we take about 12 or so snapshots between pre-birth and age five. And so the most striking things about the results are, one, that things that we expected to have an impact on in relation to the parents like encouraging more breastfeeding or encouraging them to stop smoking or do things better during pregnancy, didn't matter. The treatment and control group were pretty much exactly the same. What's changed quite dramatically for the treatment group is that the mums are much more aware of what's going on, that their self-awareness as mothers, the pride they're taking in the process and so on is remarkably different, so much so that we may have a problem even with the ethics approval for this program because it looks like it's working and one of the guidelines of the program is that for as long as it might be working, you could persist with this randomisation. So we have to sort of find a few mums where it's not working so well and change the average, damn them.

But yeah, I mean essentially what is ostensibly a mentoring program for parents is the one that is ... the objective of that is a program that leads to improved school readiness for the children. And it is all around cognitive development, physical health, motor skills, all those kind of things. So yeah, very early days, but it seems to be working. But where it's working surprised me, it's much more about their awareness of what they're going through rather than any kind of hard measure like, you know, they're breastfeeding more or they're eating better or they gave up smoking. But that, no, I mean school readiness is a really interesting target and by kind of having the five year olds five year old as opposed to three year olds is important. And I should say like for example that all of the material that we have to prepare for that study has to be for a reading age of 11 to 12. So we're ... the parents themselves have pretty low levels of skills. So I mean it's not this is ... this is all for very low parental base, yet you know we're trying to have very massive impacts on the children. So yeah, can do, can work.

JOHN: Terrific. Thank you. Well can I ... the witching hour has well and truly arrived and we should let people get out into a cold, wet and probably quite unpleasant Melbourne evening.

COLM: Stop this cold stuff.

(Laughter)

COLM: Is a ... it's 10 degrees back home. It's summer.

JOHN: As I'm perpetually ... perpetually reminding you, Colm, you are talking about a very low base, one which probably needs very targeted assistance. Can I thank all of our panelists this evening, Colm, Saul, Ben. It's been a fascinating discussion. Can I think particularly those who asked questions but all of the audience for coming. I hope you've enjoyed it. As with all of the Grattan seminars, this seminar will be posted on the web shortly, so please tell your friends and very shortly thereafter the transcript will also be posted. So for all of your friends whom you sit here thinking I wish so and so had been here, they can re-live the experience and hopefully get something from it.

Thank you for coming and we look forward to seeing you all at the next Grattan event. Thank you.

Applause - End of recording