



Northern Ireland
Assembly

Research and Library Service Briefing Paper

Paper 53/11

22 April 2011

NIAR 249-2011

Eoin Murphy

The Economics of Higher Education

1 Introduction

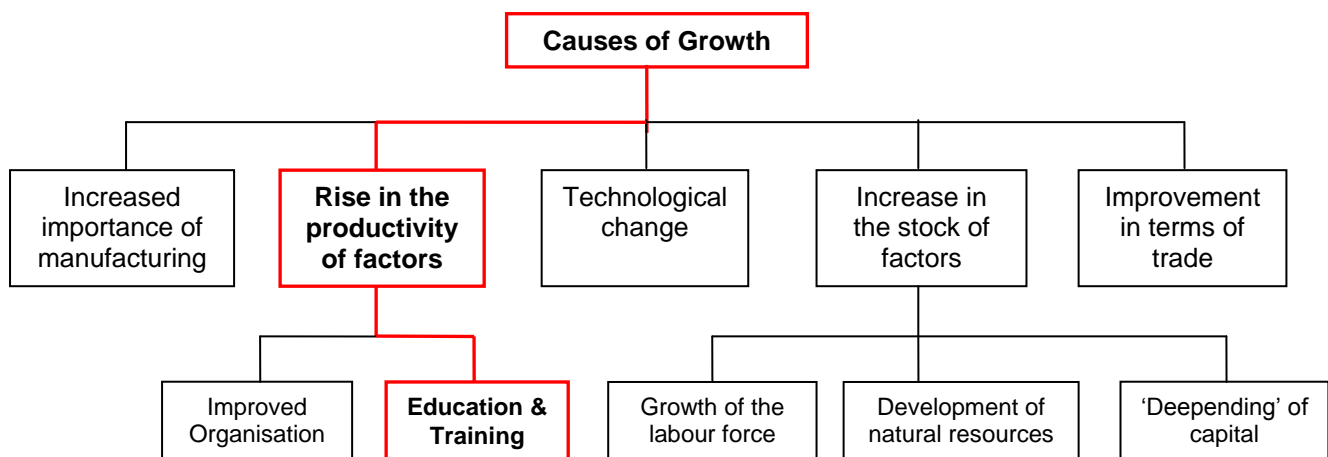
This paper provides a brief discussion on the economics of Higher Education (HE). The paper quickly explores the causes of growth, the social rates of return from HE and the individual benefits resulting from a third level education.

The paper also considers perceived disadvantages of Higher Education such as overreliance on it for economic growth and the potential impact of over qualification in the labour market.

2 The Benefits of Higher Education

Higher Education (HE) plays a significant role in a nation's economic development, acting as a driving force behind technological change, expansion in industries and skill building within the workforce.

It is one of a number of factors which play a part in economic growth as show in Figure 1 overleaf. These include improvement in trade and growth of the labour force.

Figure 1: Causes of Growth¹

As can be seen above, Education and Training are a key factor in growth, acting as a means of raising productivity alongside improved organisation.

Short run improvements can be made through other factors, such as large scale production (inciting economies of scale), more intensive use of capital equipment and the physical improvement of the labour force, (e.g. through better food and working conditions). A good example of this can be seen in Brazil, which has had a large growth in its GDP over the last decade (in 1997 GDP was \$807.8 billion and jumped to \$1,463 billion in 2007) as conditions for its labour force improved.

For long term growth, however, education and training are critical.

Harvey and Jowsey (2007) stated that:

In the longer run, more significant increases can come with education and the acquisition of skills through training. These really represent, however, an increase in the capital invested in labour².

The benefits of higher education appear in two main ways – the individual level and the societal level (normally referred to as the ‘social returns’).

Individual Benefits

Individuals benefit from Higher Education in a number of ways, from increased job prospects to improved long term health.

A 2008 study by Borooah and Mangan³ examined the rate of return⁴ achieved by those undertaking higher education courses.

¹ Harvey, J and Jowsey, E Modern Economics 8th Edition 2008, Palgrave Macmillan

² Ibid

³ Education Economics Vol. 16, No.4, Borooah, V and Mangan, J “Education, occupational class, and unemployment in the regions of the United Kingdom” December 2008

⁴ The gain or loss on an investment (in this case an individual’s paying for tuition fees, cost of living, etc, rather than seeking employment) over a specific period.

In their initial investigation, they found that 38% of 16 - 74 year olds in Northern Ireland had no qualifications, the lowest figure in the UK regions. However, it is worth noting that when the upper age limit was reduced the proportion with Level 4 qualifications rose:

- 16 – 74 year olds – 18%;
- 16 – 40 year olds – 20.4%;
- 16 – 30 year olds – 21.3%.

The paper assessed the rate of return by considering the “labour market success” associated with different levels of qualifications. Two measures of success were used:

- The likelihood of persons being employed in good jobs; and
- The likelihood of persons in the labour force being in employment.

The study found that:

In every region of the UK, better qualifications were significantly, and strongly, associated with high probabilities of labour market success.”

The study also found that in all regions qualifications, particularly high qualifications (Levels 3 and 4)⁵, exert the highest marginal impact in increased professional, managerial and technical job opportunities.

The benefit of higher education qualifications can be best seen when comparing secondary and tertiary level qualifications. The OECD Education at a Glance 2010 report highlights the earning differentials which appear between upper secondary and tertiary education.

Charts 1 and 2 on the page following, detail relative earnings from employment by educational attainment and gender. The charts use an index to measure the changes in earnings as a result of level of qualifications. In the case of Charts 1 and 2 Upper secondary and post-secondary non-tertiary education (i.e. leaving school with A-levels and the equivalent qualifications) is set at the index of 100 and acts as the baseline for measurement for other qualifications.

As can be seen, with qualifications below upper secondary education there is a sharp drop in earnings (the equivalent of leaving school with GCSE’s), although it is roughly the same for males and for females.

For those going on to Tertiary Type B education (such as HND’s) there is a jump in earnings well above earnings for upper secondary leavers, with females gaining greater benefit than males (in the case of the UK, although this trend holds true for a number of other OECD nations).

⁵ Based on a scale of: no qualifications; Level 1 (equivalent to 1 GCSE); Level 2 (roughly 5+ GCSEs at A-C grades); Level 3 (roughly 2+ A levels); and Level 4 (first degree or higher, HNC, HND)

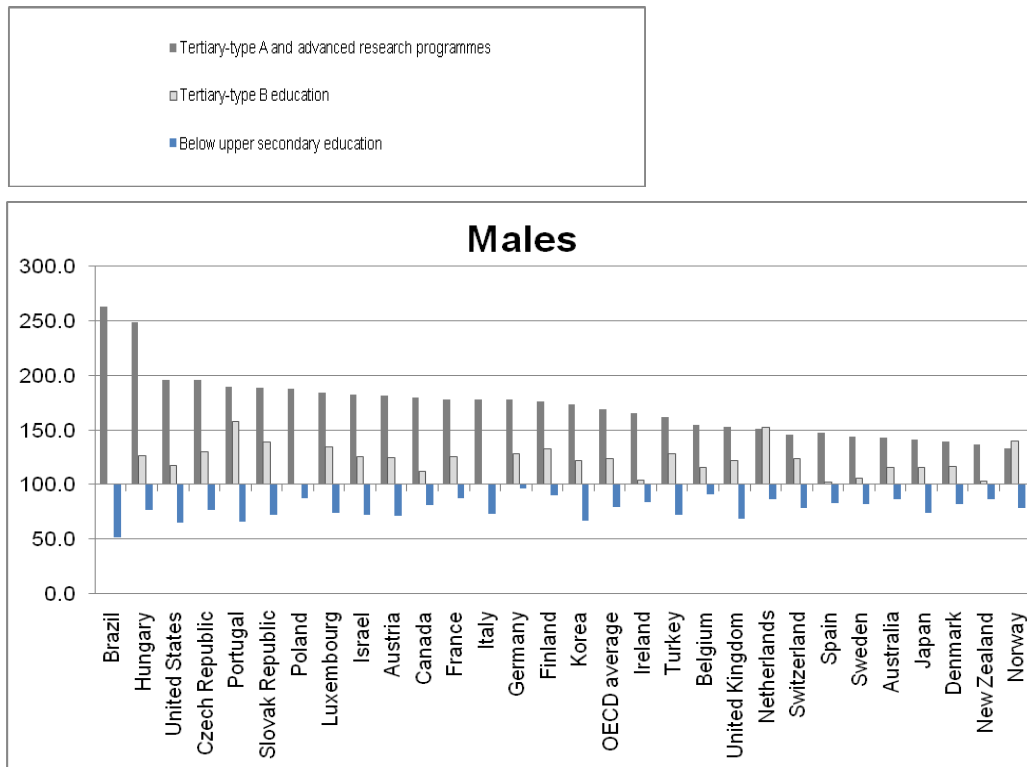


Chart 1: Relative male earnings from employment (2008 or latest available year)

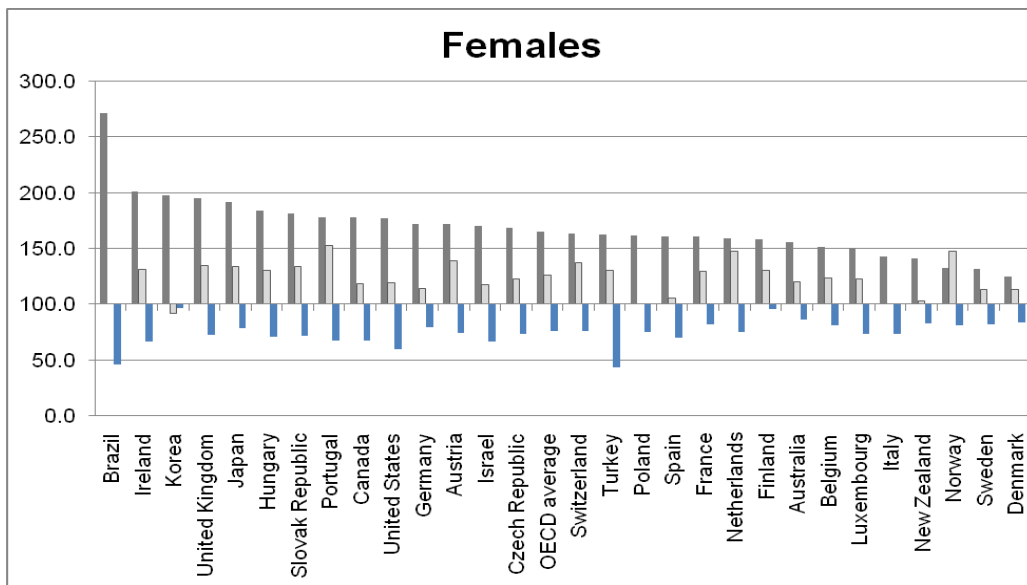


Chart 2: Relative Female earnings from employment (2008 or latest available year)

The greater increase in earnings for both males and females occurs when tertiary type A qualifications are gained. UK females are ranked third highest for benefiting from becoming graduates, and although males are lower on the scale they benefit much higher than those with no upper secondary qualifications (with type A graduates having an index of 150 and non upper secondary approximately 40).

As such, earning differentials are apparent between upper secondary education and tertiary education (both type A and B)⁶. As suggested by the OECD⁷:

In many countries Upper secondary education forms a dividing line beyond which additional education attracts a particularly high premium.

The report went on to state that:

In most countries...tertiary education not only increases the prospect of being employed at an older age, but is also associated with improving earnings and productivity differentials throughout the working life.

In the same study it is stated that:

On average across OECD countries, a female investing in tertiary education can expect a net gain of close to \$100,000 and a male of almost \$150,000.

Higher Education also provides non-material benefits to individuals. For example it is widely accepted that the higher the level of education the better health and quality of life the individual has (although it should be noted that these are based on individual value judgments rather than empirical research)⁸.

Heise and Meyer (2004) carried out a meta-analysis on research into the benefits of HE over an individual's life time and found that there was:

A positive correlation [...]between education, training and skills on the one hand, and, for example, health, quality of life, family formation, reduction of criminal behaviour and avoidance of social exclusion on the other.

Social Returns of Higher Education

Social returns are the benefits and disadvantages resulting from government investment in HE.

Ming and Tan (1996)⁹ examined the social returns derived from education via externalities¹⁰ and non-economic effects. The study used the overall economic performance of various countries to identify the externalities.

The study found that investing in education is socially profitable, with significant returns for the countries that invested heavily in education. However, it should be noted that

⁶ Type A programmes are largely theory based and are designed to provide specific qualifications. Type B programmes are shorter than type A and focus on practical, technical or occupational skills for entry to the Labour Market.

⁷ OECD Education at a Glance 2010

⁸ CEDEFOP 2004 Impact of Education and Training – Article by Heise, M and Meyer, W The benefits of education, training and skills from an individual life-course perspective with a particular focus on life course and biographical research

⁹ CEDEFOP 2004 Impact of Education and Training – Article by Wilson, R and Briscoe, G The Impact of Human Capitalism on Economic Growth: A review.

¹⁰ Externalities – higher levels of education are typically associated with better environment, higher levels of public health and greater social cohesion all of which contribute to faster economic growth

the results suggest sensitivity to the stage of economic development achieved by the individual country. For example, low income countries had the best returns from investing in primary education, middle income countries from secondary education and for high income countries the best social return was from investing in higher education.

Supporting evidence for this can be found in a meta-analysis carried out by Wilson and Briscoe in 2004¹¹, who examined literature on the impact of education and training on economic development. They found strong evidence that higher education inputs:

Increase[s] productivity and so produce higher levels of national growth

Evidence to support this includes Sianesi and Van Reenen (2000) who concluded that an overall 1% increase in school enrolment rates leads to an increase in GDP per capita growth of between 1 and 3%.

They also found that:

An additional year of secondary education which increases the stock of human capital, rather than just the flow into education, leads to more than a 1% increase in economic growth each year.

A report written by Oxford Economics in 2007 on behalf of the Department for Employment and Learning examined the relationship between the proportion of graduates in the employed labour force and the levels of productivity¹². It stated that:

- A high percentage of the employed labour force with graduate qualifications is associated with high wages and productivity; and
- This relationship only exists for graduates working in the private sector with no relationship for those employed in the public sector.

The authors stated that Northern Ireland needs to encourage its private sector businesses to develop activities that require graduate level skills and that NI needs to attract new firms with these types of activity.

They found that Northern Ireland schools already produce more recruits to higher education than can be employed locally and as such demand for graduates, rather than supply, should be the focus of policy.

The paper goes on to examine if graduate levels have an impact on private and public sector earnings. It had two main findings:

1. There was a strong positive relationship between wages and the percentage of graduates working in the private sector; and
2. There is no equivalent relationship for graduates in the public sector.

¹¹ Ibid

¹² Department of Employment and Learning/Oxford Economics February 2009 The Influence of Graduate Qualifications on Average Wages and Productivity Across the UK

Importantly, it was found that a 10% increase in the percentage of graduates in the private sector resulted in 30% higher wages for all workers¹³. The report speculates that this may be a result of graduates facilitating the creation of high value added activities, resulting in increased demand for high paying specialised (non-graduate) labour.

It must be noted, however, that a high number of graduates does not automatically result in higher wages and productivity within the regional economy. This is most apparent for NI as the high number of graduates' results in individuals relocating to areas where there is demand for their skills. As the report states:

Given the high mobility of graduates, it is demand for graduate skills, that is to say the availability of appropriate jobs, that is most likely to determine where graduates become concentrated.

This places the emphasis not on the production of graduates but on the growth of private sector firms¹⁴ and as such has implications for Northern Ireland with its large public sector and small private sector.

Potential Disadvantages of Higher Education

As with any economic policy there is potential for side effects and investment in Higher Education is no different.

Despite the wealth of information regarding the link between high levels of higher education and economic growth, some economists argue that it may not be as clear as assumed above.

Alison Wolf, in her 2002 book "Does Education Matter?"¹⁵, carried out an extensive analysis around this matter, arguing that:

The links between education and growth are far less direct than our politicians suppose.

Wolf does state that education is an essential part of the economy and is of major importance. However, the author argues that:

*The problem arises when, as has happened in recent decades, we move to extrapolating the benefits of education in much the same mood of boundless and groundless optimism as investors caught up in a stock-market bubble. **The result has been expansion as an end in itself.** [emphasis added]*

Wolf makes three critical points regarding this expansion:

¹³ Ibid

¹⁴ Ibid

¹⁵ Wolf, A, Penguin Publishing 2002 "Does Education Matter? Myths about education and economic growth"

1. It is not the best policy for delivering rapid growth, but rather threatens to undermine the real, if partial, symbiosis between education and the economy;
2. Educational policies are ill-conceived as a way of helping society's least advantaged and least successful members; and
3. This approach progressively narrows and devalues the conception of education.

Wolf points out that whilst someone with a degree is more likely to earn higher than someone without one, graduates are exposed to certain financial risks. For example, tuition fees (with a degree in England likely to cost a student up to £27,000 for a three degree), living costs and the opportunity cost generated by not taking on full time employment instead of a third level course.

As a result, in order to consider the true costs of HE, Wolf points out that the net returns to education must be considered and that rather than a social choice, accessing higher education should be considered as an investment.

An individual's productivity and economic value is calculated based upon their wages, therefore the assumption is made by government economists that the higher wages of the educated are a reward for greater productivity. As stated by Wolf:

The graduate is taken to possess a far higher level of human capital in the form of knowledge, skills or values which, like other forms of capital 'yield income and other useful outputs over long periods of time'.

Wolf argues that earnings are an inaccurate measure of how productive an individual is, stating that the measurement of social returns of HE by a process of how much society earns from graduates and how much from non-graduates is inaccurate, with this method used to set government policy is the equivalent of "if two aspirin are good, five are better".

Graduate Overeducation and Overcrowding

In addition to the points raised by Wolf, investment in HE can also have an impact on the cost of labour and the value of a degree, through overeducation and overcrowding in the market.

The process of over-education (also known as bumping-down theory) discusses how as the supply of qualified workers grows, there are insufficient skilled jobs available.

McIntosh (2008) provides an example of this process¹⁶:

Suppose that following an expansion of higher education there are too many tertiary-educated individuals in the economy for the number of graduate jobs available; in some instances graduates accept jobs for which only an upper-

¹⁶ OECD 2008 McIntosh, S. Education and Employment in OECD Countries

secondary level of education is required. Individuals with an upper-secondary education than find there are fewer employment opportunities for them at their own level, and so accept jobs for which a lower secondary education is required. Individuals with a lower secondary education are then bumped down into jobs requiring low or no qualifications, and those who actually have no or only low level qualifications are replaced and so bumped-out of the labour market altogether.

In order for this bumping-down process to be in operation it requires the increase in supply of graduates to outstrip the rise in demand for graduate posts. If this was the case, however, there would be a subsequent fall in their relative wage (as supply increases the value of the resource, in this case graduate education, would fall as a result of the fall in demand).

A working paper by ERINI states that overeducation:

*Describes the extent to which an individual possesses a level of education in excess of that which is required for their particular job.*¹⁷

McGuinness (2004) points out that such a policy assumes that there is either unmet demand for graduate labour or that employers hiring graduates will upgrade their production techniques in order to take advantage of a more education labour force.

However:

Should demand prove insufficient, or unresponsive to changes in relative supply, then workers may be forced to take jobs for which they are overeducated.

As such overeducation can be potentially costly for the individual (in terms of tuition fees, the opportunity cost as a result of three years spent in higher education rather than joining the labour force), the firm (with implications for staff morale) and the education system itself.

More specifically, McGuinness found that:

- At Firm level there is some evidence to suggest that overeducation is associated with lower productivity, including:
 - Overeducated male workers are significantly less satisfied with their jobs and more likely to quit relative to well matched male workers;
 - Firms hiring over educated workers are more likely to lose investment in training, recruitment and screening;
 - A study on overeducation in the USA found that a one year reduction in surplus schooling would increase output by more than 8% (i.e. an additional gain to the company of almost \$5 billion).

¹⁷ ERINI, McGuinness S October 2004 Over Education in the Labour Market: Reality or Fiction?

- At an Individual level:
 - Over educated workers are likely to earn a lower return on their investment relative to similarly educated individuals whose jobs match their education;
 - Over educated workers may incur non-transitory costs associated with lower levels of job satisfaction;
 - It is also possible that previously well matched workers in the economy will be 'bumped down' in the labour market and perhaps out of it entirely, as over educated workers move into lower level occupations, thus *raising* the mean educational level within these occupations rendering some previously adequately educated individuals undereducated.

McGuinness concluded that:

The impacts of over-education are likely to be non-trivial and phenomenon may potentially be costly to individuals and firms, as well as the economy more generally.

McIntosh, however, found that there was no evidence of a fall in graduate wages. A 2006 study by McIntosh examined the 'returns' to high level qualifications (Returns are the gap between the wages of highly qualified and low/unqualified individuals) and found that there had been no fall in this figure. As such there is no evidence for a surplus of skilled workers in the UK.

An interesting point made by McIntosh is in regards 'heterogeneous skills within qualifications categories'. This theory argues that not all graduates are the same, with different individuals having different characteristics, such as work ethic, marketable skills and natural ability. As such, some graduates who are weaker in these areas will be the most likely to be in non-graduate jobs. As McIntosh states;

Although they might appear to be over-educated in terms of their formal qualifications, they are actually in jobs commensurate with their skills and abilities.

Gautier et al (2002) conducted a study into crowding out of low skilled workers during economically difficult years for businesses. They hypothesised that during these periods low skilled workers would be let go from the company and high skilled workers hired to fill these vacant positions. In a study of Netherland businesses, they found that whilst low skilled workers were let go, high skilled workers were not hired to take up these vacant posts.

The researchers explained this through additional evidence which showed that "*highly qualified workers are no more productive than low-qualified workers.*" As such firms will find no value in hiring a high skilled worker to do a low skilled worker's job¹⁸.

¹⁸ OECD 2008 McIntosh, S. Education and Employment in OECD Countries

Summary

The economics of Higher Education is a large field of study and this paper only touches on some of the main points. Other factors, such as quality of education, socio-economic background and even an individual's age can affect the impact of HE on the individual and its societal benefit.

As such, this paper provides a short glimpse of the economics of higher education, discussing the individual and social benefits of investment in it. It also highlights that there are potentially negative side effects such as graduate over qualification or poor targeting of resources. The need for skilled graduates should be carefully balanced against the needs of industry with an oversupply of graduates potentially being a drain on valuable resources.

It can, however, be clearly stated that higher education is an essential part of a country's long term economic development, with significant advantages to having a well educated workforce.