

THE WHITE PAPER ON EDUCATION: A FAILURE TO INVEST

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High educational standards in Ireland are often cited as one of the main reasons for the emergence of the Celtic Tiger. To ensure continued high growth rates the government is conscious of the need to invest in education in order to maintain our knowledge economy. Aibhistin O'Dubhslainé considers the government's advancements in this area against their white paper on education, "Charting our Education Future".

Introduction

Eleven years ago the Irish government launched the white paper on education, "Charting our Education Future". This white paper outlined a plan to radically improve the education system. This paper contained two principal objectives: firstly to create a more equal education service and secondly, an education system geared to help advance the economy. This essay will evaluate the implementation of the white paper's objectives in primary education and in the education of science, mathematics and foreign languages. Prior to this, the essay will present the theories explaining the benefits of education to the economy. These benefits produce externalities and thus provide the basis for state involvement in education. The essay will conclude that there has been considerable progress towards the two objectives of equity and providing for economic expansion. In absolute terms, the government's white paper has failed to achieve its objectives.

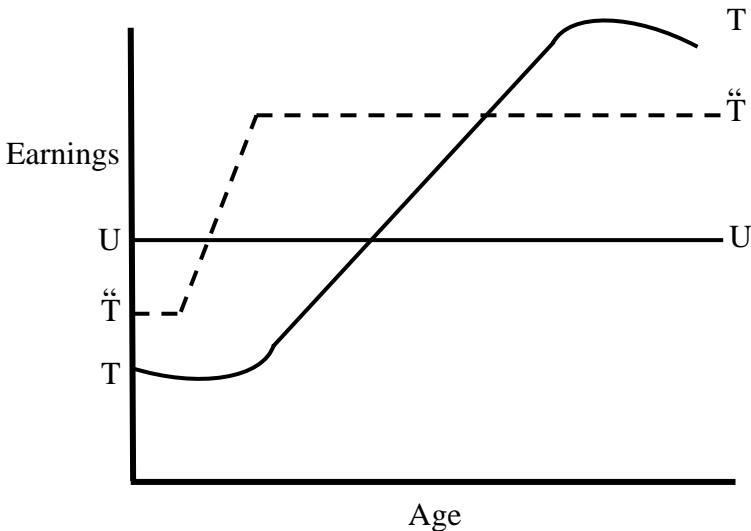
Importance of Education

There are two theories that explain the importance of education to the economy: human capital theory and the signalling theory. Human capital theory argues that the accumulation of human capital is an important element of economic growth. In contrast, signalling theory states that the level of education is an indication of behavioural traits that employers are looking for. Human capital theory is an analysis of the relationship between the functions of education and economic growth. Education enables people

to develop analytical skills and cognitive abilities. Education teaches children to analyse information and to utilise this acquired knowledge.

These skills enable the labourer to increase his productivity in two ways. Firstly, a labourer can use his existing working capital more efficiently. Welch (1970) argues that education increases the worker's speed and quality due to increased knowledge and understanding of the specific tasks within the context of a larger firm structure. In addition the worker makes better decisions about the allocation of resources. Secondly, this acquired knowledge can then be utilised to innovate and to create technological developments. Positive changes in technology will improve the production of materials and the communication of information. An educated labour force will be able to adapt to technology change. Therefore this human capital investment will reduce the costs of production and increase firms' production possibilities.

Figure 1: Positive relationship between education and earnings



Schultz (1961) claims that the improvement in the capabilities of the labour force will generally have a positive income effect. Workers not investing in education (UU) will have the same earnings throughout their career as higher paid employment requires education. Workers investing in education (TT) will receive higher wages in the long run. The line T'T' adjust the life income take to take into the loss of earning during the education and the cost of education. It still exceeds the income of the uneducated worker (UU).

A well-educated labour force will attract highly paid employment. These skills are rare compared to the ability to undertake menial tasks. This means that a highly skilled labour force will receive higher wages in the long run than had they not invested in education as illustrated in figure 1. These higher earnings will increase the consumption possibilities of the labour force. Human capital investment increases production and consumption, two components of economic growth.

“The heart of the whole process of industrialization and economic development is intellectual: it consists in the acquisition and application of a corpus of knowledge concerning technique[s]” (Landes, 1980:111).

The benefits of education are not in dispute; the signalling theory asserts that education distinguishes and identifies workers' abilities. This is a key benefit from investment in education. As Stiglitz (1975:283) points out, important information for the economy is the knowledge about “the qualities of factor or a commodity”.

Skills required for most jobs are specific to that industry or even that particular job. Education consists of teaching general cognitive abilities. There is a mismatch between the demand and supply of certain skills. The signalling theory argues that education is a socialisation process. Education instils behavioural traits of persistence, punctuality and ability. The usefulness of education to the economy is not the material students learn at school or university. This work simply demonstrates the students' capacity to learn.

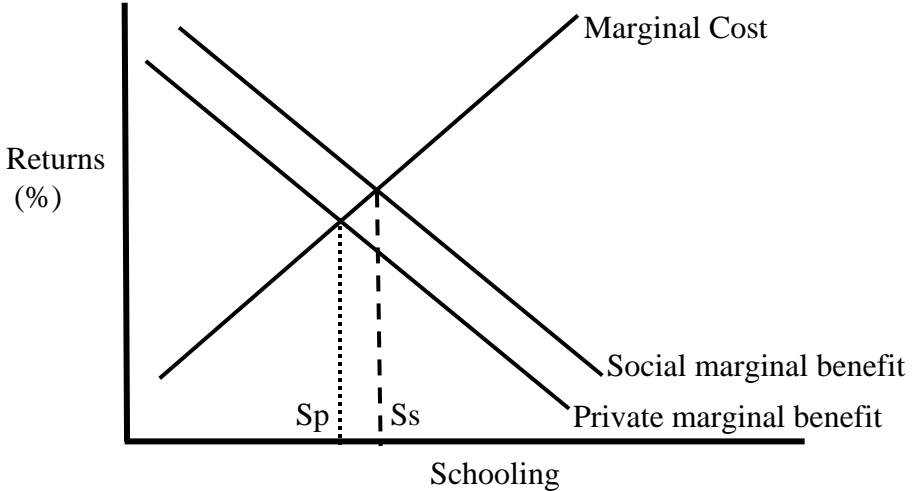
Employers act under a degree of uncertainty about the abilities of prospective employees and their suitability to the vacant positions. In most cases, it is too costly for employers to directly observe the abilities of all the applicants. Employers' experience of the labour market indicates that workers with a high degree of education are likely to have these behavioural characteristics. Employers use education as a proxy value for behavioural norms required to work in an organisation. Employees signalling these behavioural characteristics will increase their chances of acquiring employment and wage increases. These employees are perceived to be

reliable and successful. Schooling theory has the same result as the Human Capital theory but the underlining process is different, the “relation between education and wages is a result of productivity-identifying role (instead of the productivity-augmenting role in the human capital theory) of education” (Groot & Hartog, 1995:34).

The two theories are not mutually exclusive and a synthesis probably explains better the role of education. Blaug (1985:19) explains that firms are looking for a “combination of particular personality traits and certain cognitive achievements”. In the economy the different sectors prioritise between the human capital approach and the behavioural approach. Engineering firms generally require applicants to have studied engineering at university while business companies employ students from a wide range of backgrounds. Business companies use the level of education as a signal of the motivation and ability of its prospective employees.

Rationale for Government Intervention

The purpose of government interference in the education market is that there are positive externalities associated with investment in education. The government should consider all benefits to make a Pareto optimal allocation of investment in education (Weisbrod, 1962). Weisbrod identifies three different types of benefits: residence related benefits, employment related benefits and benefits to society in general. Residence related benefits are the intergenerational effect and the neighbour effect. The intergenerational effect is the informal education of the children in the homes of those who have received education. The neighbour effect is the dispersion of social and educational values into the local community. An example of the employment related benefits is the educated worker allocative decisions on the rest of the production process and how this increases the productivity of each labourer. There is also dispersion of knowledge in the personal interaction at the place of employment. The benefits to society are the increased communication of information, increased competitiveness within the market economy and the spread of democratic values.

Figure 2: Private and social optimum levels of schooling

As figure 2 shows individuals fail to take these externalities into account and will make investment decisions about education based only on private benefits. Society will under invest in education because it fails to recognise the social benefits of education. Also individuals might suffer from an imperfect capital market and asymmetric information about education (Arrow, 1993). This will hinder their ability to participate in the education system.

Friedman (1955) argues that the state should subsidise those purchasing education and tax those that receive the benefits including external benefits, the welfare of both groups will be improved. This ensures a more equitable distribution of opportunities and is the least expensive way of enforcing minimum standards of education. The absence of state provided education would lead to a more unequal distribution of wealth and increase labour market segregation (Levin, 1991).

On the basis of this rationale, the Irish government provides significant funding for all levels of the education services. The government is constitutionally bound to provide education for all its citizens. The Irish government's white paper on education "Charting our education future" was launched in 1995 and the white paper set out ambitious targets to improve

the Irish education system. It aims to achieve equality of opportunity for each individual in the education system and to increase Ireland's knowledge capacity to achieve economic prosperity (Department of Education, 1995).

Primary education

Primary education is the key to producing a more equitable Irish education service and the white paper recognises the importance of primary education. In Ireland, more students are enrolled in primary education than in either secondary or third level education (Department of Education, 2003). Primary education has more students from a disadvantaged backgrounds and the lack of investment in primary education is reproducing this inequality. The quality of primary education influences individuals' ability to complete secondary and third level education.

“Primary education provides the foundation for all subsequent advancement in the education system. The most formative years in a young person's development are spent at primary school” (Department of Education, 1990:5).

Primary education teaches the basic skills of communication, literacy and mathematics. These skills are essential to achieving possible employment, personal interaction and a reasonable standard of living (OECD, 1992). At the time of the white paper's publication, there was a minority of students in primary schools who did not obtain basic literacy or arithmetic skills. The white paper's objective was that there are no students with literacy or numerical problems by the year 2000 (Department of education, 1995). In literacy, 3.1 percent of 15 year olds are below level 1 on the OECD PISA literacy proficiency scale in 2000 (OECD, 2003). At literacy skills, Ireland is ranked fifteen in the OECD. The Chief Examiner's Report on the Junior Certificate History Paper compared the ordinary level papers of 2001 to 2005 and found that basic literacy standards have declined. This is a stark indicator that not only is the white paper's objectives not being achieved, but in addition the quality of education is deteriorating.

In mathematics, 4.7 percent of students are below level 1 on the OECD PISA mathematics proficiency scale in 2003 (OECD, 2005). Performance below level 1 means that the students are not able to use literacy or mathematics as a tool to acquire further knowledge and skills. The OECD reports show that the white paper has failed to meet its target objective of eliminating illiteracy and basic numeracy difficulties. Irish

education is failing to equip all its pupils with the necessary social and cognitive skills to be effective workers in the economy. A good primary education system should have a low pupil-teacher ratio (Carnoy, 1995). Pupils receive more individual time in a smaller classroom particularly pupils with special needs. Small classrooms make it easier for pupils to interact in the classroom, thus improving their social capital. The white paper restates the government's commitment to reduce the pupil-teacher ratio, though it gives no specific target.

Table 1: Ratio of Students to Teachers in Primary Schools

	2003	2001	2000	1998	1996	1995
Ireland	18.7	20.3	21.5	22.6	22.6	23.6
OECD Average	16.5	17	17.7	17.1	18.3	18.2

Source: OECD education indicators

As Table 1 illustrates there has been a reduction by more than twenty percent in the pupil-teacher ratio in the last eight years. However, Ireland still exceeds the OECD average ratio. The Scandinavian region is a model of best practice for the provision of merit goods, like education.¹ The Scandinavian average ratio in 2003 is 12.9 (OECD, 2005). Ireland still requires a significant reduction in the pupil-teacher ratio to meet the OECD average. A reduction would lead to more effective teaching at primary school and would help students with literacy and numerical difficulties and students with special needs. A policy approach to reduce pupil-teacher ratio to a specific target that is similar to the Scandinavian average would create a more equitable primary education.

The high pupil-teacher ratio reflects the high level of underinvestment by the government in primary education. The white paper outlines the history of primary education expenditure. Real expenditure per pupil in primary education increased more than threefold from 1965 and 1995. Though over the last few decades, government has prioritised secondary and third level education at the expense of primary education. In 1966, 56 percent of expenditure on education went on primary education; in 1992 it was 37 per cent (O'Flaherty, 1993). The white paper calls for adequate funding of primary education and for this to be a priority (Department of Education, 1995).

¹ Merit goods are things that society deems necessary for every individual to have (Begg, Fisher & Dornbush 2003).

Table 2: Annual Expenditure on Primary Education per Student U.S. dollars converted using Purchasing Power Parities

	2002	2000	1999	1998	1995
Ireland	4180	3385	3018	2567	2144
OECD Average	5313	4381	5629	5760	3546

Source: OECD Education Indicators

The government has almost doubled its expenditure on primary education per student. This is significant progress towards the white paper aim of providing adequate resource for primary school teachers and administrators. Nevertheless, Ireland has undergone tremendous economic expansion over the last decade and the fact that Irish expenditure is still significantly below the OECD average is disappointing. In 2002 Irish expenditure on primary education per student was only 60 percent of the Scandinavian average. Fuller (1986) argues that spending per pupil is an indication of the quality of the education service. In this regard, Ireland needs to increase investment to improve the quality of primary education and ensure equality of opportunity for every individual in primary education.

The low level of government's support for primary education is a factor in Ireland's performance at the later stages of education. The fact is 10.5 per cent of all those enrolled in third level education in 1998 came from households where the head was unskilled or semiskilled, despite making up nearly 20 percent of households nationally (Clancy, 2001). This outcome can be partially attributed to the lack of investment in primary education. Primary education, as the starting point for the education system, is the key to connecting young people with education and providing equality of opportunity.

Knowledge capacity and economic prosperity

Knowledge is crucial in securing employment, foreign investment and economic prosperity. Multinational companies seek skills in science, mathematics and foreign languages. Companies will locate their research and development departments where there is a high standard of scientific knowledge. These departments are costly to relocate so this is a long-term investment by these multinationals. Research and development means relatively secure employment. The white paper establishes a new scientific

programme at primary level, which emphasises problem solving and critical thinking. In the junior cycle of the secondary level, the white paper made science part of the core required programme.

Some success has been achieved in improving the popularity of science amongst students. In fact, at third level the proportion of third level graduates in science exceed the OECD average (Expert Group on Future Skills Needs, 2003). Nevertheless, the science quality indicators explain better the situation rather than the quantity of students. In this regard, Ireland's mean score in the top two percentiles is below the OECD average in the scientific literacy of 15 years olds in 2000 (OECD, 2003). The percentage of Irish students achieving the highest level of mathematical proficiency on the OECD PISA scale is less than half that of the Scandinavian average and is just more than half of the OECD average in 2003 (OCED, 2005). This underachievement at secondary level has implications for student abilities and choice at universities. The proportion of students choosing science at universities has fallen from 14 percent to 12 percent between 1980 and 1998 (Expert Group on Future Skills Needs, 2003). Ireland is still behind the rest of the developed world in scientific knowledge and the white paper's new scientific programme has failed to promote the expansion of scientific skills.

The instruction time of science for 12 to 14 years old in schools is below the OECD average in 2001 (OECD, 2003). This is the root of the problem as not enough time is being spent teaching science subjects. Government policy should focus on increasing the number of science teachers and the number of hours schools devote to teaching science and mathematics. Science has suffered because the government's expenditure per student in both primary and secondary level of education is below the OECD average.

Ireland's increasing integration with the rest of Europe means languages skills are becoming more and more important. The European Union's public sector requires applicants to be fluent in three European languages. Multinationals operating in the European common market need employees with fluency in different languages. Many business deals and relationships are influenced by communication skills. The white paper's target is that all students should be studying at least one European language.

The implementation of this policy target is to tackle Ireland's low rate of comprehension of foreign languages. Yet in 2001 the instruction time of foreign languages for 12 to 14 years old in public schools in Ireland was less than two thirds of the OECD average (OECD, 2003). Ireland has the highest number of people with no knowledge of a foreign language in the EU. The EU average is 44 percent compared to Ireland's 66 percent (Irish

Independent, 2006). This problem weakens the Irish labour force's ability to compete with the labour force in other European countries.

Ireland's ability to conduct advanced research, particularly in science is critical to building up Ireland's intellectual capital. The investment in this high level of human capital allows for technological development, increases our national competitiveness and attracts pharmaceutical and I.T. companies. In 1995, Ireland's expenditure on research and development as a percentage of GDP was around 1 percent (OECD, 1998). This was below the OECD average in 1995. The white paper establishes a separate budget for research at the third level where additional funding will be available (Department of Education, 1995).

Intel's research and development department in Leixlip demonstrates that these skills create considerable amounts of secure employment. The additional funding from the white paper should enable more dispersion of these scarce research skills. The facts demonstrate that the white paper has failed to substantially increase the number of PhD undertaken in Ireland. Ireland's advanced research doctrines rates of graduation at the typical age cohort for graduation has persistently been below the OECD average from 1998 to 2003. Ireland graduation rate in 2003 is just above 1 percent compared to Sweden's 3 percent, the highest graduation rate in the OECD (OECD, 2005). In fact, the gap between Sweden and Ireland in the number of students graduating from advanced research programmes has increased from 1998 to 2003.

Conclusion

Education is important to individual development, social cohesion and economic growth. As John Dewey (1997:80) states "education is the fundamental method of social progress and reform... through education society can formulate its own purposes, can organise its own means and resources, and thus shape itself with definiteness and [the] economy in the direction in which it wishes to move". This essay mentions the two economic theories of education: Human capital theory and the signalling theory. Education involves the learning of valuable analytical skills and signals the level of abilities of the workers to employees. Externalities associated with the benefits of education make it essential that the government is engaged in the supply of education.

The low level of people from socio-economically disadvantage areas enrolling in higher education means the education system still functions on an unequal basis. This partially reflects the low levels of investment in primary education by the government. The government has

failed to meet its targets in literacy and arithmetic and it has failed to resource primary schools properly. Primary education still has a high pupil-teacher ratio and a low level of expenditure per student compared to other developed countries.

The growing gap between Ireland's intellectual capital and countries like Sweden and the United States is a worrying sign. Despite Ireland's Celtic tiger economy, there has been a lack of resource devoted to fully implementing the white paper targets in science, foreign languages and advanced research. During the last decade, the white paper has failed to meet its targets in equity and human capital. The failure of the white paper necessitates new education policies to provide equality of opportunity and to support economic growth.

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