

The Irish Education System and the Economy

by Paddy McDonagh



The educational roots of Ireland's economic miracle stretch back more than thirty years. These roots include a concerted national effort to increase participation rates in higher education, and a strategic effort to match the country's education and training programs to the skills needs of global, high-tech companies. Such efforts have spanned decades, have required substantial investment, and have been sustained across changes in government administrations. Most importantly, such efforts have paid off. Today, Ireland boasts one of the most highly skilled workforces in the world. As Paddy McDonagh pointed out at last year's Governor's Economic Development Conference, Ireland recognized long ago that the development of the education and skills of people is as important a source of wealth as the accumulation of more traditional forms of capital. Today, Ireland is able to build economic success from its human capital by attracting the inward investment of growing high-tech, global companies. 🐉 This article summarizes McDonagh's remarks at the June 14, 1999 Governor's Economic Development Conference. McDonagh outlines the educational strategies and investments of the past thirty years as well as Ireland's plans for the future, which include not only new educational initiatives but also significant investments in research and development.

INTRODUCTION

In just thirty years, Ireland has transformed itself from an agricultural society, to a technologically based economy in which manufactured goods now account for 70% of merchandise exports. Today's Ireland is a bustling, high-tech, business-friendly country, driven by competitive and innovative companies experienced in international business at its leading edge. It is an economy that has strategically placed itself as a knowledge-based economy. The acquisition of knowledge and the accumulation of knowledge capital is a process that involves many actors and requires linkages between them. The formal education system, industry-education links, workplace education, further education, basic and applied research, all contribute to the appreciation of knowledge capital.

The main thrust of this article is to consider the role of education in Ireland's economic success, both in the part it has played in underpinning development, and in the ways it has adapted to meet the changing needs of a modern society, including maintaining the momentum of the state's economic strategy.

THE ECONOMIC BACKGROUND

The Irish economy grew by an average of 7% per year from 1988 to 1998, and by more than 60% since 1990—compared with around 11% in the United Kingdom and a European average of around 15%. Historically, Irish Gross Domestic Product (GDP) levels have been well below the European Union (EU) average. However, Ireland's dynamic economic performance of the 1990s has resulted in average economic growth rates double the EU average. Per capita GDP has been increasing steadily, achieving parity with the EU average in 1997 and, at this stage, it is expected that it will continue to increase and exceed the EU average.

Additionally, the rate of unemployment has dropped from more than 16% in 1988 to 6.2% in November of 1999. It is projected to fall further. We are approaching a situation of full employment. Further strong growth in investment and employment should ensure that Irish unemployment moves even further below the

EU average. Currently, we are experiencing a situation where Ireland has become a net immigration economy as opposed to the historical reality of severe emigration.

Ireland also has managed to overcome the high inflation of the past, consigning figures of 14% per year throughout the 1970s to the annals of economic history. In 1995 Ireland's inflation figure stood at 2%; in 1996, 1.1%; and in 1997, 1.4%. This figure was around 1% lower than both the EU average and that of the United States during the same period. Year-on-year inflation figures for the period to August 1999 show an inflation rate of 2.4%. Perhaps the single biggest inflationary influence is the soaring price of housing in Dublin.

In effect since January 1, 1999, Ireland has adopted the euro as its official currency. Active participation in European integration, including membership in the European Monetary Union (EMU) is, and has been, a strategic objective of successive Irish governments. Ireland's experience of the past twenty-five years has shown that such active participation has been of considerable benefit to the country in both financial and economic terms.

The establishment of the euro is expected to yield significant further benefits for Ireland, as part of the wider European economy. Membership in EMU offers Ireland the prospect of stable economic conditions, based on price stability and transparency



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across the eurozone. Although at an early stage, and having had a less than auspicious birth in terms of exchange rates, it is expected that the adoption of the euro will consolidate the gains already achieved through the single market and will lead to the creation of a large and very liquid financial market, which will be similar in size to the United States domestic market.

Competitiveness in Ireland, as elsewhere, is decided by a variety of factors, such as skill levels, costs, infrastructure and quality. In recent years, Ireland's competitive position has been strong. Ireland has risen swiftly from being an economic also-ran to a situation in which, in 1998, it was ranked as the world's eleventh most-competitive economy by the International Institute for Management Development.

1998 was a remarkable year for exports. Despite difficult trading conditions among our main trading partners, particularly in the latter half of the year, merchandise exports grew in value by 27% to a record level of £44.9 billion. [At a current exchange rate of 1.3, £44.9 billion (punts) is equal to roughly \$58.4 billion United States dollars.] Export prices increased by 2.6%, implying volume growth of some 23.9%

which have transformed the manufacturing base and greatly enhanced industrial capacity.

Ireland has a young, growing, well-educated and adaptable workforce with high-level skills and a strongly customer-focused attitude. It uses the most advanced logistics for physical distribution; it has speedy and reliable transport links with Europe and the wider world. It talks to the world through a digital communications network. The advances made have brought a new prosperity to the country and the hope of an even better economic future for succeeding generations.

EDUCATION PROFILE

The educational roots of Ireland's economic miracle stretch back more than thirty years. At that stage, third-level education (higher education in the United States) was largely the preserve of the more affluent section of society. However, over the last three decades an extraordinary expansion has occurred in third-level education and in participation rates. In the mid-1960s, third-level student numbers were less than twenty thousand compared with almost 112,000 in 1998-99.

In 1984-85, 40% of eighteen-year-olds were engaged in full-time education.

Ten years later that figure had risen to 64%. Among those aged nineteen, the rate of participation had increased from 24% to 48%—a twofold increase in the span of a decade.

In international terms, Ireland had an above-average rate of enrollment for

those aged 18-21. In 1995-96, 31.4% of those aged 18-21 were enrolled in third-level education, compared to an Organization for Economic Cooperation and Development (OECD) country mean of 23.2% (partly the result of the younger age of new entrants in Ireland). In 1998, the proportion of persons aged 25-34 in the population with degrees was more than three times larger than that for those aged 55-64.

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compared with 1997. Total exports in the period January-May 1999 were worth £20 billion, an increase of 14% over the corresponding period in 1998. There was modest growth in the more traditional sectors. However, once again, growth was strong in the high technology sector, most notably in chemicals and electrical engineering. This performance reflects the strong flows in recent years of foreign direct investment,

Participation in tertiary education increased significantly in the early 1990s. The total number of students enrolled in tertiary programs grew by 51% in the first five years of the decade. Third-level expectancy (a proxy for the total number of years that a person will, on average, be enrolled in tertiary education during the course of his or her life) increased by 0.8 years over the last five years to 2.2 years at present. A growth in demand, reflected in higher participation rates, is the main factor that drove expansion in tertiary enrollments, with the change in the size of the youth cohort only contributing slightly.

The effects of the increase in availability of and participation in third-level education are demonstrated by the fact that, in 1995, Ireland had an above-average ratio of graduates (certificate, diploma, degree, and master's degree awards) to the population at the typical age of graduation and had a higher number of persons with science-related qualifications relative to the size of the young labor force (aged 25-34) than in all other OECD countries—including Japan.

In addition, between 1990 and 1995, public spending on tertiary education institutions and on financial aid for students increased by 33% in Ireland. We have gone much of the way to meeting the demand for places, but are still conscious of the need to further expand opportunities for participation in third-level education.

It is widely recognized in Ireland that in the global economy of the early twenty-first century, the development of the education and skills of people is as important a source of wealth as the accumulation of more traditional forms of capital. Time and again they have been identified as one of the critical sources of economic and social well-being in modern society. According to the OECD, investment in education is as effective a form of capital accumulation as increases in physical capital. The competence of a nation's workers is coming to be at least as important to the success of a state as are other factors, such as the availability of land and capital. In other words, investment in people and in people's futures plays a critical role in economic and social progress.

At an individual level, the advantages of improved education and improved access to education and train-

ing are immediately obvious. For those already in employment, there is the prospect of higher earnings from better qualifications. OECD figures clearly show that in Ireland, the pay differential between those who have gone on to higher education and those who have not, is substantial and above average.

There is a strong positive relationship in OECD countries between educational attainment and earnings. University-level graduates earn substantially more than upper-secondary graduates in all countries. In 1996, for men in the same age-range (30-44), the premium ranges from 26% in the Netherlands to 87% in the United States, with Ireland's premium at 69%. For women in the same age-range, the premium ranges from 29% in New Zealand to 97% in Ireland and the United Kingdom (i.e. Irish women graduates aged 30-44 could expect to earn double that of women who had left education following the Leaving Certificate). University education enhances earnings relative to secondary-level education more for women than for men in Canada, Ireland, the Netherlands, Norway, Spain, Switzerland, Turkey and the United Kingdom, whereas the reverse is true for the remaining countries. In Ireland, earnings differentials between men and women narrow with increasing educational attainment, more than in most other countries.

DEVELOPMENTS IN EDUCATION

Given our economic circumstances, our record growth rates, our low inflation and our competitive economy, it would be easy to be complacent. To do this would be to ignore the reality of the modern world. According to a 1994 OECD jobs' study there are three key areas in relation to education and training in which policy should be focused:

- ensuring a sufficiently high standard of initial education;
- facilitating the transition from school to work;
- upgrading skills among the adult population.

Over the last thirty years we have seen significant investment in technological and vocational education. The current level of economic prosperity is due in no small way to this investment, which saw a significant increase in the number of well-equipped workshops and other physical facilities in the Institutes of Technology for the training of highly skilled craftspeople and technicians.

The need for ever-improved standards of education to ensure that those entering the workforce have the requisite skills to compete in an increasingly technological world is widely acknowledged. Employers feel more than ever the need for new employees to be well educated in the broadest sense, adaptable, multi-skilled, good communicators, capable of making decisions and potential lifelong learners. The days of cramming an individual with facts and sending them out to perform a specific task are long gone. The key today is adaptability.

POST-PRIMARY LEVEL

It is with this in mind that significant improvements have been made to the education system through the restructuring of the senior cycle for students at second-level. The system has been adapted and tailored to meet the needs and abilities of the individual student, providing them with valuable insights into the working world, and preparing them for the demands that the job market will place upon them.

The final examination at the end of second-level remains the Leaving Certificate. However, in order to respond better to the abilities of the student body and to give more flexibility to those undertaking it, it has been developed from the unidimensional program.

For example, the Leaving Certificate Applied focuses on preparation for work, work experience, enterprise and communications, life-skills, the development of mathematical and information technology skills and the practical skills necessary for specialist areas such as tourism, business, horticulture, engineering and technology. The Leaving Certificate Vocational Program provides students with the opportunity to develop their potential for innovation and enterprise with modules

on enterprise education, preparation for work and work experience. These modules are activity-based; they involve the organization and management of mini-enterprises, visits to businesses and industry and investigations of the local community. A transition year to the senior cycle also was introduced, which actively forges links between schools and employers, and gives students the opportunity to experience the working environment and to have their strengths and weaknesses assessed by an employer. All of these initiatives have been welcomed by employers, who see their importance in ensuring that "school-leavers" (students who do not progress to third-level) receive as good and as well-rounded an education as possible, and that the transition from school to the workplace is as smooth as possible.

LIFELONG LEARNING

It is important to bear in mind that the learning process does not come to an end when an individual embarks on a career. For many, it may only just be beginning. In recent years, the concept of lifelong learning has become the subject of intense debate. All over the developed world, governments, businesses and educators are realizing the importance of an educational process that does not come to an end when an individual leaves school or college. This, in effect, means an overarching system of education and training that addresses needs from childhood through adulthood.

It is estimated that 80% of the Irish workforce of 2008 is already working. Changing economic and technical conditions demand that we strive constantly to update our skills, our knowledge and our competencies. Many of those already in employment have relatively low levels of educational attainment and skill and, therefore, it is essential to the economic future of Ireland that barriers to their educational progress are removed. Many of the root causes of these low skill levels can be traced to the relatively late introduction of free second-level schooling to Ireland. This has resulted in a higher proportion of the population having only a basic level of education than is commonly found in either the OECD or EU.

It is for this reason that the concept of lifelong learning is considered to be of such importance in the Irish context. In recognition of this, in November 1998, the government issued a report on adult education in an era of lifelong learning. The report proposes an approach that recognizes adult education as a component of an overall lifelong education system with a fundamental objective of promoting the well-being of all citizens, as a key contributor to social and economic cohesion and as a participative and empowering process which strengthens the democratic system.

RECENT MAJOR FUNDING INITIATIVES

Continued economic successes will depend on our ability to respond quickly and flexibly to the skills needs of the economy. Closely associated with this is the need to ensure that Ireland is fostering an environment that enables top-class research and development (R&D). The third-level sector is crucial in this regard. From a pragmatic, and business-oriented view, the development of such an environment will provide benefits to indigenous industry and also to foreign direct-investment enterprises, enabling this latter group to put down deeper roots. Because of the mobility of multinationals in sourcing the most cost-effective resources, an attachment to a particular location will depend on the value-adding capability of that location. It is against this backdrop that Ireland is aiming to move economic activity further up the value chain thus enhancing its attractiveness to multinationals. Recent government action to address Ireland's skills and R&D needs has resulted in unprecedented funding being targeted at these particular areas:

- In 1995, a joint public/private program for capital funding was established. The government provided £30 million with the stipulation that the universities leverage an equivalent amount in private support. Over the period 1996-2000 the program provided for the creation of 6,200 additional third-level places in agreed upon areas of priority, such as computer science, engineering, mathematics, science and business studies.
- In late 1997 the government established a £250 million Education Technology Investment Fund, which included the following provisions for third-level:
 - £80 million for infrastructure and equipment for the Institutes of Technology;
 - £60 million to provide degree and technician courses in third-level colleges for computer software;
 - £30 million for equipment renewal in universities and technological colleges;
 - £15 million for research and innovation to assist third-level colleges to support industry needs;
 - £20 million for accommodation and equipment for tourism training in the Institutes of Technology.
- In November 1998, the minister for Education and Science announced the provision of £180 million for research in third-level institutions. This level of funding represented a step change in R&D funding for the sector. The funding is predominantly capital and, again, is a public/private joint venture with 50% of funding coming from the Exchequer. The funding allocation is supplementary to the existing sources of funding for research and development and is part of a strategy to promote a strategic and planned approach by third-level institutions to the long-term development of their research capabilities. The process involved in allocating the funds to individual projects was based on competitive bidding evaluated by an international panel of experts. When announcing the

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results of the successful institutions in July 1999, the minister announced that he had secured an increase in Exchequer funding of the order of £20 million and that this would be matched by private sector funding giving a total allocation of £220 million.

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- Arising out of earlier work in relation to skills needs, an expert group involving government departments and agencies, third-level institutions and business and trades union interests was convened to consider future skills needs. This group reported in early 1999 and, on foot of their recommendations, £75 million was allocated to provide an increase of 5,400 places in degree and sub-degree programs in third-level institutions. These places are predominantly in the engineering and computer hardware and software areas.
- The government's National Development Plan for the period 2000-2006, published in November 1999, builds further on the strategic state support for R&D. A provision of £1.9 billion has been made for Research, Technological Development and Innovation (RTDI). Of this, £550 million is for direct investment in research at third-level. A significant element of the balance is also likely to support other research activity in the sector.

In the past Ireland's position in terms of funding R&D activities has not been as competitive as it should have been. In 1995, for example, Ireland's gross expenditure on R&D was 1.4% of Gross Domestic Product

compared to a European Union average of 1.84% and an OECD average of 2.16%. The percentage of the gross expenditure on R&D financed by the government in 1995 was only 23% compared to a European Union average of 36% and an OECD average of 35%. The above funding initiatives are a recognition that

improvements have to be made to these comparisons in order to underpin our continuing economic development and to continually seek to improve our competitiveness.

It is clear that R&D in higher education is absolutely crucial to maintaining and attracting knowledge-based industries to Ireland. It is also vitally important in the context of the development of the institutions themselves. The value to the educational system of feedback through teaching duties by researchers is generally considered to be particularly significant.

Support is also provided for outstandingly talented individual researchers and teams within the institutions and co-operation between researchers both within the institutions and between institutions within Ireland, the European Union and internationally is encouraged.

BUSINESS-EDUCATION LINKS

We are conscious of the role that business can play in helping us to develop an education system which is tuned into and consistent with the state's economic strategy. We have established partnerships between government and industry to examine potential education and training initiatives. A joint Industry/Education Task Force has developed and introduced an accelerated eighteen-month program to accredit technicians in the technological sector. The program involves an initial six months in college followed by a six-month placement in a sponsoring company and a final six months in college. The course specifically targets those who have ability, but who perhaps lack the qualifications usually necessary for entry into higher

education. It gives them a second chance, offering a career in a high-technology industry. Its first participants were recently awarded the National Certificate in Manufacturing Technology. A number of further accelerated courses in the technological sector have been developed and are expected to come on stream for applicants in January 2000. Among these new courses are a National Certificate in Biomedical Engineering and a National Certificate in Industrial Science.

Similarly, a series of summer courses in information technologies was established in 1998, to take place in several centers around the country. The program was expanded to more centers in 1999. The courses are aimed directly at non-standard applicants, perhaps those who lack formal qualifications, who will benefit from the opportunity to acquire fundamental knowledge and skills. It is hoped the experience and qualifications they gain from the courses will assist them in progressing to higher qualifications and developing a career in the information technologies area.

Other partnerships have been established between academia and business. The Council of Heads of Irish Universities (CHIU) and the Irish Business and Employers Confederation (IBEC) recently agreed to establish a co-operative forum. The directors of the Institutes of Technology have also agreed to a formal cooperation with IBEC.

Initiatives such as these have the potential to lead to new ways of interaction between industry and institutions in the third-level sector. Just as importantly, the new certificate course initiatives provide a second chance for people to acquire technical qualifications and to upgrade their existing skills. Therefore, they subscribe very much to the lifelong learning philosophy, which is now so much a part of educational thinking. Perhaps most importantly of all, they help to address one of the clear areas where skills are needed in the economy.

SCIENCE

Concerns have been expressed in recent times about the decline in the number of students taking natural science subjects at second- and third-level.

To address these concerns and taking both a medium- and long-term view, initiatives have been taken at both primary- and second-level.

SCIENCE IN THE REVISED PRIMARY CURRICULUM

The revised national curriculum for primary schools includes a subject block known as Social, Environmental and Scientific Education (SESE). This will comprise the three subject areas of history, geography and science. Science will hold equal standing with the other two areas and will be given an appropriate weekly time allocation. It is intended that the program at primary-level will lay the foundations for the further study of science at second-level.

SCIENCE AT SECOND-LEVEL

A £15 million plan to develop the teaching of physics and chemistry in second-level schools is being implemented. The plan will run over three years and will involve:

- modernization of school laboratories;
- revision of the science syllabi;
- in-career development programs for teachers;
- additional per-student payment for schools to provide material for the teaching of physics and chemistry at senior cycle.

A review of science facilities in all second-level schools has been undertaken by the Department of Education and Science and data obtained from this review are currently being analyzed. When this analysis is complete schools will receive direct grants to address identified needs. These grants will include provision for the purchase by schools of equipment specifically for use in the teaching of science subjects. In addition to these grants, a special annual per capita grant will be paid to schools in respect of each pupil studying physics or chemistry at Leaving Certificate.

New syllabi in Leaving Certificate Physics and Leaving Certificate Chemistry have been finalized. Revision work is also underway to base the format of the ordinary-level examination papers for Junior Certificate Science, Leaving Certificate Physics, and Leaving Certificate Chemistry on the current syllabi.

An in-career development program will be introduced early in the next school year. The program will address the needs of teachers of physics and chemistry at both junior- and senior-level and will include support for the introduction of the new syllabi in Leaving Certificate Physics and Leaving Certificate Chemistry.

TACKLING DISADVANTAGE

Though greatly eroded, Ireland's unemployment problem still remains a real economic and social burden. In Ireland, as in other countries, unemployment represents a huge waste of human potential, one which weakens the cohesion and stability of society. Young people, in general, are vulnerable to periods of unemployment or unstable employment, but the odds are particularly weighted against those who fail to attain a minimum level of educational achievement. Nearly 40% of Ireland's long-term unemployed have no formal qualifications and the relationship between education and the ability to obtain employment has been shown to be particularly marked among the younger age group. As educational attainment increases, unemployment rates fall sharply—employment rates among our graduates have reached record levels—and we recognize that more needs to be done to catch those who slip through the net.

An important objective is the improvement of retention rates in second-level education in order that unemployment and disadvantage can be tackled effectively. The present target is that 90% of Irish young people will remain in second-level education until the end of senior cycle. Currently, the retention rate of students to the Leaving Certificate is 81%.

For those who fall out of the mainstream education system, programs have been devised to identify all young people who leave second-level education with

few or no qualifications and remain unemployed. Known as Youthreach, the program has been successful to date, with some two-thirds of participants going on to further education or employment. In recognition of this, the program is being expanded.

Another scheme has been instituted to target early school-leaving in the 8-15 year age group. Funded by the government and the European Social Fund, the scheme allocates financial support to voluntary and statutory agencies seeking to encourage at-risk children to continue in education.

In addition, the Department of Education and Science has moved to provide a range of early childhood intervention programs, including pre-school initiatives, special supports and home-school liaison, to address, at the earliest possible stage, the effects of adverse socio-economic circumstances.

For those who may have been out of education for a longer period, the Vocational Training Opportunity Scheme enables long-term unemployed adults to re-enter the formal education system or pursue a range of vocational training options, and a range of adult and community education measures.

There is confidence that education and training initiatives such as these will benefit individuals by providing them with the opportunity for a more active role in Irish society, while also laying the foundations for a better economic future.

CONCLUDING COMMENTS

Throughout the state's economic boom years, the economic return from education, and the importance of education in boosting the economy, has been clearly demonstrated. Third-level institutions have become increasingly important in the effort to increase labor productivity. The electronic and pharmaceutical sectors are highly competitive, providing high-quality specialist services and a pool of workers with advanced skills.

It is clear that a strong educational base is a necessary prerequisite to the attraction of high-level, high-technology industry. It is also clear that this educational base must produce individuals who are capable of

adapting to differing circumstances and to the ongoing process of change in contemporary business; in other words, well-rounded individuals with the capacity to think for themselves.

Once this base is in place, the ability to supply adequate numbers of individuals with the requisite skills becomes important, as does updating the skills of those already at work. Lifelong learning allows the individual to adapt to developments in technology and work practices and continually advance the level of skill they can offer. By co-operating with industry and business interests the continuing relevance of the education system to business needs can be ensured, and those individuals served by our education system are capable of competing in the job market.

The economic return from education is significant, both from the perspective of the individual, who is likely to be better-remunerated, but also from that of society as a whole. An economically successful society, which provides opportunities to people at all levels, is a society which will be both inclusive and cohesive. Government realizes the need to provide all of the citizens of the state with the means to secure a more economically secure future for themselves and their families. The responsibility is to ensure that the new prosperity of the state is open to all who are willing to adapt themselves and to be educated in ways that will allow them to work for a better future. Access to education for all will bring new opportunities for all, and society in general will reap the benefits. 

