

Expert Group on Future Funding for Higher Education

The Role, Value and Scale of Higher Education in Ireland

**Discussion Paper for
Stakeholder Consultation**

January 2015

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Foreword

As a country, we are again at a turning point as we seek to transition out of a deep crisis, revive development and lay the foundations for future prosperity, balanced growth and greater social cohesion.

As a people, we need to rebuild and enhance our capabilities at the personal, inter-personal and institutional level to address these challenges and opportunities. This will require significant investment in education, including higher education, further education, apprenticeships and other post-second level opportunities.

This requirement for further investment in education is coming at a time when, despite a stabilisation of the national finances, public resources and household incomes remain stretched and we are facing multiple conflicting choices.

It is also coming at a time when the current funding of higher education is not sustainable given our demographics and the funding requirements of increased demand. Indeed there is a growing level of risk for students, their families and the higher education institutions that these funding pressures will damage the quality of provision.

However, before deciding on the future funding requirements of higher education and the options for funding those requirements, we need to achieve broad consensus about what we are funding. We need to be clear about the value of higher education and its different contributions to our society and economy. We also need to spell out what is required from the sector if these contributions and their continued worth is to be maintained and enhanced.

These requirements include:

- graduates who can understand our past, engage with the present and imagine the future;
- active research across the full spectrum of humanities, social sciences and STEM in ways that contribute to our further economic and societal development;
- people with the knowledge and capabilities to meet the changing needs of our society and economy in the medium and long-term, and,
- equitable access to the opportunities for higher education especially for under-represented groups, as a core part of this country's social contract.

To serve these purposes and deliver value, higher education institutions must be deeply and continuously engaged with people and organisations in society, the economy, local regions and the public realm.

The overall future system of funding higher education should be designed to meet each of these requirements in a sustainable way.

As parents, students, higher education providers, taxpayers, employers, social activists and public representatives, we require a shared understanding of the role and value of higher education and some level of consensus on implementable future funding options. This is the start of a consultation process to develop this understanding and consensus. I hope all interested parties will avail of the opportunity to engage fully and openly with this process.

Peter Cassells,

Chair,

Expert Group on Future Funding for Higher Education

Executive Summary

Nature and Purpose of Higher Education

The purpose and value of higher education is its ability to add to the understanding of, and hence the flourishing of, an integrated social, institutional, cultural and economic life. It contributes both to individual fulfilment and the collective good. Higher education is also an end in itself, through its pursuit of knowledge, understanding and meaning. Its contribution reflects both the distinctive disciplines—arts, humanities, social sciences and STEM—and the overlap and cross-fertilisation that takes place between them. The increasing interpenetration and convergence of inquiry and knowledge is reflected in current thinking on the role of higher education, innovation and research. Instead of a linear process, in which new scientific knowledge drives innovation in industry, there is increasing focus on the way four spheres—university, business, government and civil society—overlap and interact to address the complex economic, technical, social and environmental challenges that are now widespread.

Higher Education In Ireland

There are 36 publically-funded higher education institutions: 7 universities, 14 Institutes of Technology and 5 colleges and 10 smaller colleges. There are over 210,000 students and 22,500 staff—around 60 per cent of which are academics. The annual funding cost—of core activities, research and ancillary activities—is approximately €2.7bn, of which 74 per cent is provided by the state. Within publically-funded higher education institutions the reliance on state funding has been reducing since 2008, as a series of increases in student contributions, and corresponding reductions in state grants, have been implemented. But about half of full-time students have their student contribution paid by the state through the grant system.

Contributions of Higher Education

Economic Growth and Prosperity

The expansion of higher education is one of the key factors that enabled the Irish economy to grow strongly in the past four decades. Graduates form an increasing share of the workforce, where their knowledge and capabilities enhance productivity. Research and knowledge generated in higher education underpins prosperity. Higher education institutions are engines of regional and local economic development. A higher education has a strong positive impact on life-time earnings and employment prospects.

Social Development

Investment in higher education makes a number of significant contributions to society. The state gets a high return on its investment in higher education through the higher tax contributions and lower call on welfare benefits of graduates. Graduates make major contributions to social and economic development as skilled professionals in the public

sector, in NGOs and as self-employed professionals. The expansion of higher education has enhanced social mobility through providing opportunity, though access remains unequal for lower socio-economic groups. Higher education provides graduates with skills for life and leads to better social outcomes, increased voting and volunteering.

Culture and Civic Engagement

Higher education is widely viewed as having a critical role in enriching Ireland's cultural life, nurturing our understanding of our own national identity and that of other cultures and belief systems. Through civic engagement, higher education institutions contribute to the understanding of societal challenges, both nationally and globally. Higher education also contributes to the development of critical thinking and creative practices which benefit individuals, wider society and business. It has an important impact on citizen deliberation and participation in civic and political life.

Future Scale of Higher Education

Ireland's demographic structure gives a significant advantage in terms of talent availability and attraction of investment, in contrast with many EU economies which have ageing workforces. There will be a continuing rise in the school leaving population to 2030. Even if participation rates in higher education remain unchanged, at 56 per cent, the numbers enrolling will increase significantly, with new entrants in 2028 projected to be one third higher than in 2013. Labour market demand also shows continuing strong demand for graduates, of 20,000 new graduate jobs per year over next 8 years. This demand could be for four times that number when all job openings (new and replacing people leaving labour market) are considered.

Maintaining and Enhancing the Contributions

Before we can begin to consider the future funding requirements of higher education and the options for funding those requirements, we need to first fully understand what it is we are funding. The analysis of the nature and contribution of higher education, and of the increasing numbers of students in coming decades, allows us to identify a number implications and challenges that need to be discussed and addressed. Hence among the questions for consultation are:

- i. How to ensure a high quality student experience, which is the single most important way in which higher education serves its students and the public good, with the projected increase in student numbers?
- ii. How can we enhance the contribution of higher education to the changing process of economic, social and cultural innovation?
- iii. How can higher education continue to develop people with the knowledge and capabilities required by the economy, society and public system?
- iv. What measures are necessary to further advance the access to higher education of less represented social groups?

Introduction

The purpose of this paper is to set out the many contributions of higher education to the economy and society; and how these can be maintained and enhanced. This will provide a basis for further work and consultation on the future funding of higher education. Appendix 1 provides an overview of the role and membership of the Expert Group on Future Funding of Higher Education.

Section A sets the basic understanding and assumptions which guide our discussion of the purpose and role of higher education.

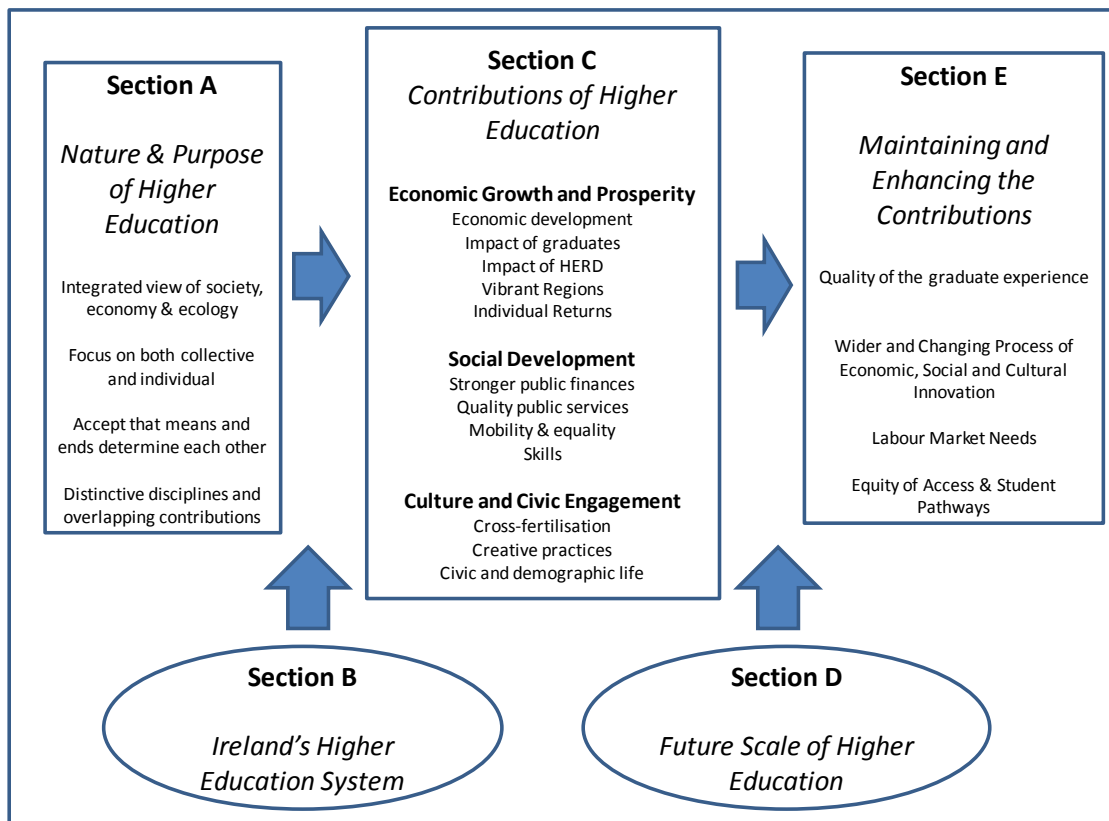
Section B provides an overview of Irish higher education in terms of the numbers of institutions, students and staff. It also outlines the main sources of funding.

Section C examines the contributions of higher education to Irish economic growth and prosperity, the private returns and the positive impact on public finances. It also highlights the contributions in relation to social mobility, skills for life, cross-fertilisation, innovative and creative practices and civic and democratic life.

Section D outlines the likely future scale of the sector based on positive demographic trends and strong and increasing labour market demand. This underlines the fact that the existing funding system is insufficient to maintain quality and is, in consequence, unsustainable.

Section E identifies four issues on which wider consultation is required. These are related to the quality of undergraduate experience; wider and changing processes of innovation; meeting labour market needs and equity of access.

This diagram provides a guide to the structure of the paper.



Section A: The Nature and Purpose of Higher Education

1.1 An Integrated Perspective on Economy, Society and Ecology

Our ideas on the purpose, value or worth of higher education reflect our understanding of the society and economy which they serve. We understand the society and economy to be mutually dependent, with the economy embedded within society, institutional arrangements and culture. This integrated view resists the tendency to draw a sharp line between the economy and society, and between the world of man-made things and the world of ideas and values. Indeed, it is increasingly recognised that society and economy sit within, and are mutually dependent on, environment, which itself is strongly shaped by human activity. This integrated view of society, economy and environment is the only reliable basis of a clear view of the purpose and value of higher education: higher education has value because it greatly adds to understanding of, and hence the flourishing of, our integrated social, institutional, cultural and economic life.

One important implication of the integrated view is that it contains, at its heart, a focus on both the collective good and the individual. In our kind of society the collective success of society and economy cannot be separated from the opportunities and flourishing of the individual. Our idea of the public good is one that sees individual fulfilment, achieved through higher education and other activities, as contributing to public life and the public good. This is the core idea that underpins Ireland's long-standing drive to widen access to higher education. Of course this general perspective leaves many specific connections—between society, economy and environment, and between the collective and the individual—to be identified, and many balances to be struck. But this integrated view is the only basis upon which the historical, current and future contribution of higher education can be understood and evaluated.

A further implication of this integrated view of society, economy and ecology is that, in thinking about the purpose and value of higher education, we accept that means and ends are mutually determining. Higher education is both a means to various ends—in society, professional practice, the public sphere and the economy—and, through its pursuit of knowledge, understanding and meaning, an end in itself. Indeed, it has so shaped our understanding and capabilities, and is so integral to them, that it would be impossible to define the purpose of higher education prior to, or independent of, consideration what it actually does. Thus, it is impossible to even discuss, never mind evaluate, the purpose of any one branch of higher education, such as science and scientific research, without using the methods and knowledge of all its main disciplines, including the humanities and social sciences. This is evident in the rest of this paper, where we analyse the contributions of higher

education (Section C), its likely future scale (Section D) and the challenge of ensuring its continued worth and contribution (Section E).

1.2 The Distinctive Characteristics of Humanities, Social Science and STEM

Each of the three broad sets of disciplines in higher education—humanities, social sciences, and STEM disciplines—has distinctive characteristics and makes a distinctive contribution to both the flourishing of society and economy and addressing the grand challenges that confront both Ireland and international society¹. Yet, as we note below, there have long been overlaps and crossovers between them, and the benefits of engendering greater and deeper interactions is now widely accepted.

The distinctive contribution and work of the humanities is exploration of the meaning making processes in our culture, defined in the widest sense to include practices of ordinary life, artistic and creative activity and science and technology². Many of these disciplines reflect the fact that much of human knowledge, wisdom and meaning is embedded in, and developed through, story telling. The humanities tend to value qualitative above quantitative reasoning and pay attention to the specificity of individual perception and response while exploring the culturally embedded nature of values and attitudes. They highlight the relevance of the historical and comparative dimensions and framing of contemporary social and economic problems. They contain a strong emphasis on the skills of interpreting and reinterpreting the culture to meet the needs and interests of the present. Arts and humanities, in both their main location—in the ordinary life of the society and economy—and in higher education, make a vital contribution to individual flourishing and the happiness of large groups, both directly and reflectively. The humanities can make an important contribution to the maintenance and health of democracy through the study and practice of the skills of critical reasoning, debate and evaluation of ideas—though all the disciplines in higher education foster critical reasoning. The skills developed in the humanities play a role in the contemporary innovation process noted above and discussed further in this paper. This is so because graduates of the humanities are trained to synthesise, organise and interpret diffuse material, can speak, listen, write and visualise ideas effectively. One of the gifts of historical, cross-cultural, language and literary studies, of particular relevance in current national and international conditions, is that they particularly require their students and

¹ Higher education of technology and research subjects can be categorised in various ways. In the classification used here humanities includes philosophy, history, literature, languages, archaeology, and all related sub disciplines, plus, in most classifications, the creative arts and design disciplines such as architecture, music, drama and art. The social sciences include economics, sociology, anthropology, political science, geography, law, psychology, international relations, a range of business disciplines, social policy, social work, education, health studies, planning, actuarial science and, in some classifications, mathematics. The STEM disciplines include, operational research. The STEM disciplines include natural sciences, technology, engineering and mathematics.

² This account draws on Helen Small *The Value of the Humanities*, Oxford University Press, 2013 and Poul Holm, Arne Jarrick and Dominic Scott *Humanities World Report 2015*, (Palgrave, 2015).

graduates to engage and take imaginative and informed action in the face of ambiguity, contingency, incompleteness and instability³.

The distinctive character and contribution of the social sciences derives, in the first instance, from their focus on the study of contemporary human societies, economies, organisations and cultures, and their development⁴. Within this broad mission a range of methodologies are used and continuously adapted. One element of the social sciences is the formulation of theories, using logically consistent models. At the same time, since social scientists are part of the reality they seek to understand—and social and economic life is shaped by ideas about society, economy and politics—there is a recognition of the normative dimension and the need for interpretation and not just explanation. In seeking to progress knowledge and understanding, the social sciences focus a great deal on systematically collecting data and information using rigorously defined methods, with most branches, though not all, making use of quantitative data. All the social sciences seek patterns of association and causation in economic, social, political and organisational life that make sense theoretically and can be evaluated by careful empirical investigation. Without losing sight of its embeddedness within society, most of the social sciences seek to share the standards of good science and effective scholarship developed in the physical sciences, stressing the importance of carefully checking not only the source but also the meaning of data, analysing it rigorously, with critical testing of evidence and theories. Most social science research is a collective endeavour and does not lend itself to the ‘unique discovery’ image of research commonly attributed—incorrectly, as Bastow et al emphasise—to research in STEM disciplines.

An important aspect of the social sciences is that in studying patterns of association and causation attention is paid to the role of context and the ways in which it shapes social action. The differences in context—whether national, institutional or other—are studied both to increase understanding and to explore how re-designing context can alter outcomes. Thus an important contribution of the social sciences is to alert policy and other actors to the limits of seeking to replicate apparently effective policies, investments and models developed elsewhere; and the social sciences suggest methods of problem solving and institutional design that can yield more effective policy solutions taking account of complex contextual factors. Some social sciences disciplines, and some within each discipline, prioritise more qualitative work, narrative, multiple methods of study, a focus on holistic phenomena, close attention to meanings as well as behaviours and frequent triangulation of different kinds of evidence.

The distinctive attributes of the physical sciences (including medicine), technology, engineering and mathematics, the so-called STEM disciplines, lies in their development and use of the scientific method to discover ‘law like’ relations in nature and their creation of methods and technologies to put these to use in the service of humanity. The experimental method—narrowing the focus to isolate causal factors and identify their role—is, both historically and to this day, one of the remarkable contributions of science to human

³ Mangum, T. (2014) *The Future of the Academic and Public Humanities: The Changing Academic Environment in the UK*, UCD Humanities Institute, The Future of Humanities Lecture Series, November 28th, 2014.

⁴ This summary of both the social sciences and STEM disciplines draws significantly on Bastow, Dunleavy and Tinkler, *The Impact of the Social Sciences: How Academics and Their Research Make a Difference*, Sage, 2014.

knowledge and endeavour. But different sciences use experiment and other methods in varying degrees, with some, like geology, having a significant interpretive dimension. In many areas the application of scientific method involves undertaking careful field investigations in complex multi-causal environments. The ability to do this depends on professional training, socialisation and organisational design, the fostering of which is, consequently, an important collective element of scientific endeavour. Both laboratory experiments and fieldwork depend on development of reliable measurement and statistical analysis, necessary to identify what is causing what. The physical sciences and technology have played a profound role in increasing human productivity and prosperity ever since the first industrial revolution. But almost all scientific work is incremental and only a tiny proportion of it can be patented as ‘intellectual property’ (IP). But, as noted in a recent review, ‘the exceptions that can, and the industrial implications of the most successful patents, still dominate professional, government and university thinking. As well as being inevitable, it is a good thing that the vast majority of knowledge spreads widely and flows freely through the economy and society. It is one of the reasons why Irish policy has long favoured increasingly wide access to higher education.

These distinctive characteristics and contribution of the humanities, social sciences and STEM disciplines tell us not only the purpose and value of higher education but go a long way towards identifying the activities which should be given priority within it.

1.3 Overlap and Mutual Dependence of the Disciplines

Changes in the economy of developed countries over the past half century—notably the greatly increased role of service sectors in business, the decreasing role of heavy manufacturing and utilities and the scale of public services and state use of professional services—have brought the three sets of disciplines into closer relationship with one another.

This emerging shift towards interdisciplinary research has been well documented and forms an intrinsic element of the new EU research funding programme Horizon 2020. This comes from a general acceptance that addressing many of the grand challenges facing today’s society will require input from a broad spectrum of expertise and knowledge.

Reflecting on these trends Bastow et al show that ‘both current economic and technological trends essentially call into question the woefully inadequate contrasting of ‘natural’ or ‘physical’ or ‘hard’ sciences with human-focused or ‘soft’ sciences inherited from earlier periods’ (*ibid.*:20). Instead they suggest a three-fold distinction:

- *Natural systems* are aspects of the physical environment that do not involve or are not significantly affected by human interventions and actions. They argue that fewer systems are totally ‘natural’; only in fields like astrophysics and pure maths do scientific disciplines have a fully ‘natural’ focus.
- *Human-influenced systems* are those physical domains that are largely autonomous, but where there are significant human interventions aimed at prediction or a degree of control, such as in climate, weather and earthquakes;

- *Human-dominated systems* include all aspects of social and economic organization, human physiology and medical/health sciences interventions plus all the systems created by humans, including cities, markets, organizations, firms, government institutions, agriculture, transport, infrastructure systems, IT, communications and data systems.

Consequently, only a small subset of STEM disciplines focus on purely natural systems. The social sciences focus mainly on the study of human-dominated systems (which include not only traditional areas of economic and social inquiry, but also IT, engineering, medicine, health science and various forms of risk management). But the social sciences and the humanities also have a critical role in the study of human-influenced systems, such as climate and ecology. Thus, there is increasing recognition of the ways in which ‘social science approaches of many kinds interpenetrate and inform STEM disciplines, creating knowledge of organisational arrangements, organisational cultures, ‘soft’ technologies, citizen and consumer demand, social behaviour in complex systems, critical self-awareness of potential biases, collective action and co-ordination problems, behavioural science and ‘nudge’ insights, and so on’ (*ibid.*: 21). But the insights and capabilities developed in the humanities also have a key role in any attempt to understand and improve these human-dominated and human-influenced systems. These systems throw up many questions concerning sense-making, practice, interaction and translation across communities and professions, historical precedents and culturally embedded values and attitudes. Thus the value of each of the three sets of disciplines to society is highly dependent on how they are combined.

This profound trend towards interpenetration, cross-fertilisation and convergence is reflected in the way in which cutting-edge thinking on the role of higher education, innovation and research is now developing. Instead of a linear process, in which new scientific knowledge drives innovation in industry, there is increasing focus on the way four spheres—university, business, government and civil society—overlap and interact. This ‘quadruple helix’, found in leading firms such as Intel⁵ and the most effective national innovative systems, involves networks of cooperation addressing the kind of complex economic, technical, social and environmental challenges that are now widespread.

We believe that the Irish discussion of the future scale and funding of higher education should be informed by both an appreciation of the distinctive characteristics of the three sets of disciplines—humanities, social sciences and STEM—and an awareness of the changes that are occurring both within these disciplines and in how they combine and interact.

1.4 Maintaining and Enhancing the Quality and Contribution of Higher Education

This basic understanding of the purpose and value of higher education has a number of implications for the way in which it should be developed and organised and it poses a number of questions that need to be discussed and addressed. We identify these here and discuss them further in Section E of this Consultation Paper.

⁵ Martin Curley VP Intel Labs , Presentation, to IIEA, Dublin Castle, November 2012, www.iiea.

- i) **Providing a high quality student experience** remains the single most important way in which higher education serves its students and the public good populating society with those who can understand its past, engage with its present and imagine its future.

This requires high quality teaching, the active research and scholarship of academic staff across the full spectrum of humanities, social sciences and STEM disciplines and a high level of engagement with students.

- ii) **Higher education must support innovation in its broadest sense—including economic, social and cultural innovation.**

This requires that the two elements of Ireland’s higher education research system—the broad foundation of research and scholarship across the humanities, social sciences and STEM and targeted business-orientated investments—be funded and developed in a complementary manner, that each be monitored and adapted to reflect the closer relation between disciplines and the changing nature of innovation and that fruitful learning and cross-fertilisation between them be explored.

- iii) **The knowledge and capabilities of graduates must meet the advancing needs of the economy, society and public system.**

This requires that, as well as developing deep cognitive and analytical skills, the system focus on enhancing the employability of graduates, providing high-quality career advice and support in both secondary and higher education and a balanced development of Ireland’s higher education and further education and training (FET) systems.

- iv) **Equitable access to higher education is a core part of the social contract** and essential to ensuring that higher education delivers maximally for our economy and society.

This requires an appropriate funding model, a focus on preparation at secondary level, effective use of the additional resources provided to colleges to support access and creation of a range of pathways to learning through the reforms of the FET system currently underway.

Section B: The Higher Education System in Ireland

2.1 Introduction

Like higher education institutions around the world, the higher education institutions that comprise the Irish higher education system now serve society in a range of diverse ways, with each individual institution within the system performing multi-faceted but complementary roles. Institutions now cater for a growing and more diverse student body, and are being asked to engage with a range of stakeholders on a community, regional, national and international basis as key actors in modern economic and societal development. As in many other countries, new structures and arrangements for the higher education sector are being implemented in Ireland to recognise this evolving role and a new relationship between institutions and the state is under development.

This section provides a basic description of the higher education system in Ireland and an overview of its current funding base.

2.2 The Higher Education Sector—A Snapshot

At present there are 36 higher education institutions in receipt of ongoing public funding—26 are funded by the Higher Education Authority (HEA) including 7 universities, 14 Institutes of Technology, and 5 colleges of which 3 are colleges of education. There are 10 smaller institutions in receipt of some direct funding from the Department of Education and Skills.

The total recurrent income of the HEA-funded sector currently stands at €1.68bn per year, 68 per cent of which is provided by the exchequer. A further €460m of contract research funding is provided to these institutions—78 per cent of which is provided by the state or state agencies.

The sector employs around 17,500 staff on core activities, over half of which are academics with the remainder comprising support staff in laboratories, library and computer services, student support services, estates and administration. In addition a further 5,000 contract research staff are employed of whom 60 per cent are academic.

The total enrolments in HEA-funded institutions are just over 210,000 students—over half (54 per cent) of all students are in universities, with 40 per cent attending institutes of technology and 6 per cent attending colleges. 81 per cent of students are full-time students, and 19 per cent are part-time—the number of part-time undergraduates has doubled since 2007. Undergraduates account for 82 per cent of the student body with 18 per cent postgraduates. 70 per cent of undergraduates are enrolled on programmes at honours degree level and 30 per cent are enrolled on programmes at Level 6 & 7. Over two-thirds of postgraduates are on taught programmes and one-third are pursuing research degrees. Table 1 provides a detailed breakdown of the student numbers institution and type of qualification.

Table 1: Profile of Higher Education System—Student Numbers 2013/14

	Universities	Colleges	Institutes	Total
Apprenticeships & Other			2,821	2,821
Undergraduate	83,634	9,032	78,630	171,296
Level 6	5,627	381	8,979	14,987
Level 7			25,665	25,665
Level 8	74,703	8,647	38,333	121,683
Occasional	3,304	4	5,653	8,961
Postgraduate	27,705	2,961	6,850	37,516
Level 8 & 9 Taught	19,230	2,286	5,399	26,915
Level 9 Research	715	92	575	1,382
Level 10 (PhD)	7,033	299	566	7,898
Occasional	727	284	310	1,321
Total	111,339	11,993	88,301	211,633

Note: Level 6 = Certificates and Diplomas; Occasional includes Professional Training; Level 8 & 9 Taught includes MA Taught, Diplomas and Certificates; Apprenticeships and Other include FETAC Certificate and FETAC Adv. Certificate.

The institutions currently admit about 41,000 new entrants to full-time undergraduate programmes each year, 85 per cent of whom progress to second year. These students are spread over a wide range of disciplines as summarised in the following Table 2.

Table 2: Percentage of Students in Each Discipline

Discipline	% of Students
Education Science	3%
Humanities and Arts	20%
Social Science, Business, Law	23%
Science	17%
Engineering, Manufacturing, Construction	11%
Agriculture and Veterinary	2%
Health and Welfare	15%
Services	7%
Combined	1%
Total	100%

One quarter of students are from under-represented socio-economic groups, 5 per cent have a disability and 14 per cent are mature students. Almost 58,000 awards are conferred annually across the range from Level 6 which include those on labour market activation programmes to PhDs at Level 10.

Irish students display a much greater tendency to choose a higher education institution in their local region than students in other countries such as the UK⁶.

⁶ Prof. Rob Kitchin, Presentation to HEA 'Forward Looking Forum', November 2014.

2.3 The Funding of Higher Education

Among the salient characteristics of the Irish higher education system are that over 90 per cent of its students attend institutions predominantly funded by the state. But within these public institutions the reliance on state funding has been reducing since 2008, as a consequence of a series of step increases in student contributions and corresponding reductions in state grants.

The Free Fees Initiative introduced in 1995/96, abolished tuition fees for first-time full time undergraduate students who meet certain eligibility criteria. A standard registration charge continued to apply to cover additional costs over and above tuition, such as the costs of examining and the provision of student services. This charge was initially £150 (€190) and was gradually increased over the years. With effect from the 2011/2012 academic year, a new student contribution charge of €2000 was introduced and replaced the previous charge. This has been increased by €250 each year since then. At present, over 50 per cent of undergraduates students (who qualify for free fees) have all or part of this charge paid for them by the State.

2.3.1 Institutional Funding

Table 3 illustrates the current annual funding of the public Higher Education Institutions.. The overall level of funding of the publicly funded (HEA-funded) higher education institutions has declined since 2007/08. Despite an increase in the student contribution of €1,925 or 233 per cent—from €825 in 2007/08 to €2,750 in 2014/15, total income per student decreased by 22 per cent.

Table 3: Funding of Irish Higher Education Institutions

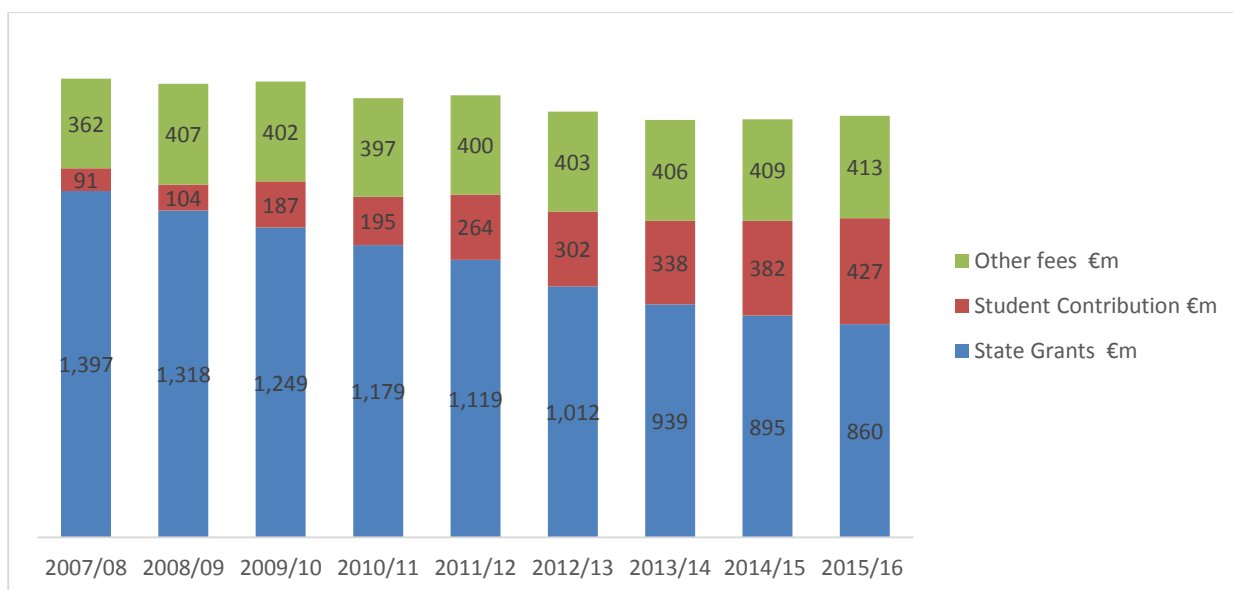
Types of Funding	
Core Funding of Higher Education Institutions	€1.7bn
of which	
direct state grants (incl. 'free fees' grant)	€0.94bn
Student Contribution (51% paid by state grants to students, 49% by students)	€0.34bn
Other Income and Other Fees (e.g. postgrad., part-time, international, repeat fees)	€0.4bn
Contract Research Funding (78% State/State agency, 10% EU, 12% Other)	€0.5bn
Ancillary Activities	€0.1bn
Capital Inflows to higher education institutions (70%-80% State grants)	€0.2–0.3bn
Student Support Grants (100% state)	€0.34bn

Note: There is a double count between Student Grants and Student Contributions of c.€0.16bn—that is, student contributions paid to higher education institutions from state grants to students.

Increases in student contributions along with general reductions in overall state funding have resulted in a steady reduction in the proportion of total recurrent funding for core activities of higher education institutions funded by the State from 78 per cent in 2008 to an estimated 64 per cent in 2016. This compares to an OECD average of 68 per cent.

Figure 1 outlines the movement in funding from public and private sources⁷. Figure 2 shows the changes in student numbers and income per student over the period since 2007/08 and underscore the nature of the funding challenge facing the higher education system. Figure 3 shows the changes in student and staff numbers over the same period.

Figure 1: Income of Publicly Funded Higher Education Institutions



⁷ Figures taken from HEA System Performance Framework. Figures for 2014/15 are pre-REV amounts.

Figure 2: Student Numbers (Full-time Equivalents) and Income Per Student

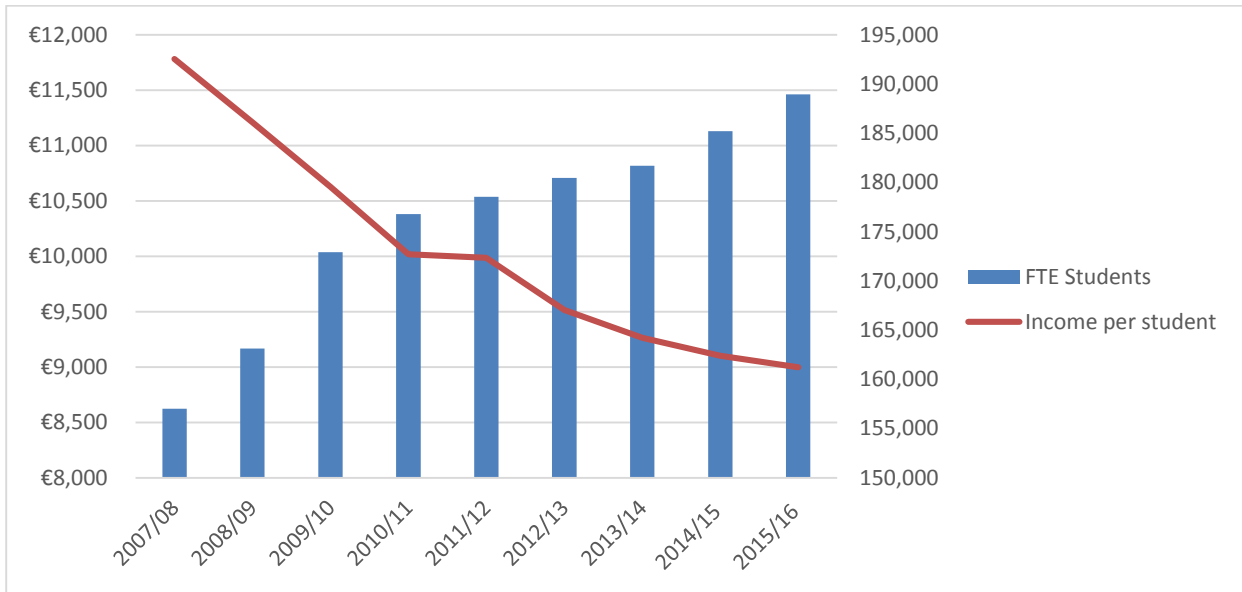
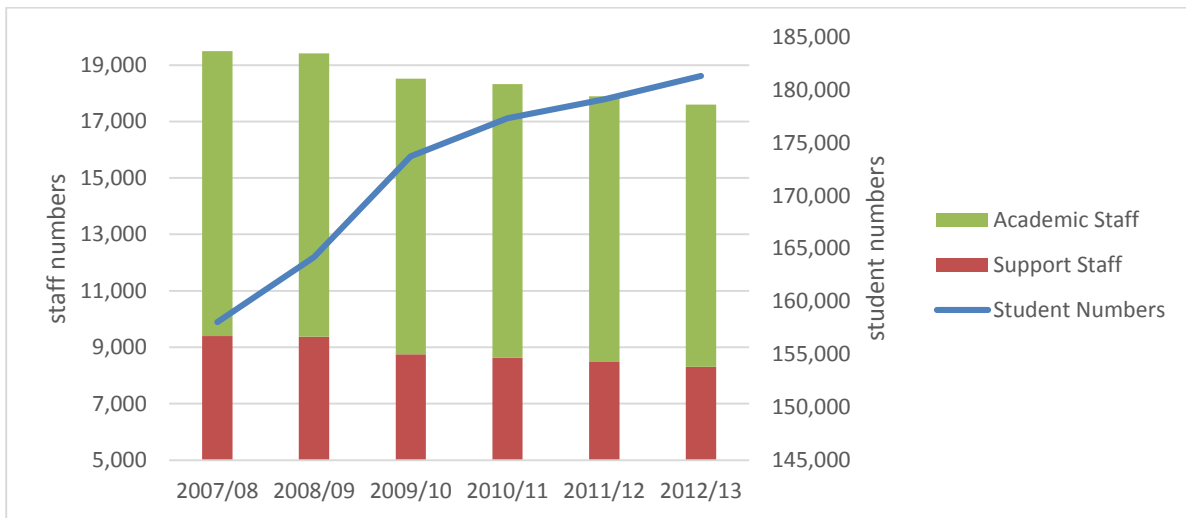


Figure 3: Student Numbers and Staff Numbers 2008-2013

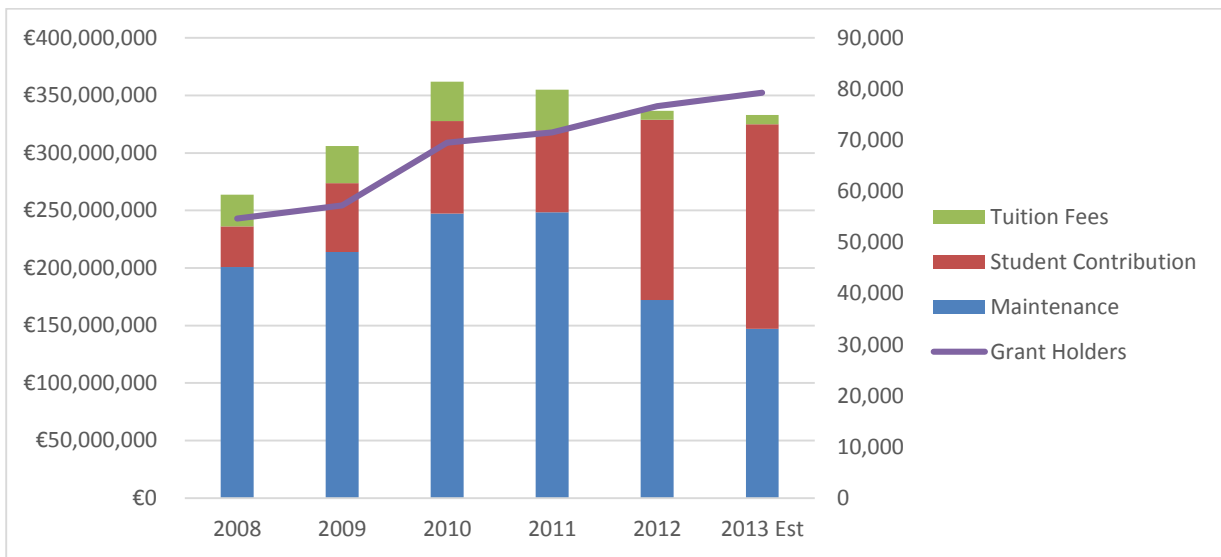


2.3.2 Student Support Funding

Student support funding, otherwise known as student grants, is made up of two components—a maintenance element and a grant to cover the student contribution charge. The level of grant available depends on the means of the student’s family. At present, families with less than four children qualify for some element of support provided the family income is less than €54,000. Families with an income of less than €40,000 qualify for full support.

At the same time the proportion of full-time students requiring higher education grant support to pay the increased fee, rose from 37 per cent in 2008 to 51 per cent in 2013. Student support grants rose by 50 per cent in the three years from 2007 to 2010—from €243m to €362m per year. Following reductions in some supports and some recovery in household incomes this reduced slightly to €337m in 2013 but is again rising as a result of increased student numbers (Figure 4).

Figure 4: Student Grant Expenditure and Grant Holder Numbers



Section C: The Contribution of Higher Education to Prosperity, Society, Culture and Public Life

3.1 Introduction

This section discusses the contributions of higher education and each of the three broad sets of disciplines—humanities, social sciences, and STEM disciplines. It is structured as follows:

- Economic growth and prosperity;
- Societal Development; and
- Cultural life and civic engagement.

3.2 Economic Growth and Prosperity

This section outlines the impact of higher education on Ireland’s general economic development including the impact of graduates, spending on research and development and on the development of vibrant regional economies. It also examines the individual returns in terms of graduate employment and earnings.

3.2.1 Ireland’s economic development

The expansion of higher education in Ireland is widely regarded as one of the key factors that enabled the Irish economy to grow strongly from the mid-1990s onwards⁸. The numbers entering higher education grew from 15,000 in 1980 to 42,000 in 2013. The increased supply of graduates and the quality of their education has been felt across the spectrum of multinational and indigenous companies and produced positive impacts on industry in direct and indirect ways.

Ireland’s inward investment strategies have increasingly hinged on the availability and quality of domestic graduates to maintain Ireland’s relative attractiveness as a location and to encourage existing investors to upgrade their Irish operations and move to more advanced technologies, processes and functions. As knowledge-intensive services have grown their share of Irish exports, multinationals in Ireland have increased their recruitment of graduates from abroad to inject experience, specific technical skills and language skills into their Irish workforces but to complement and not substitute for their recruitment of domestic graduates

Ireland’s indigenous enterprises and the natural resource based sectors of its economy also increasingly rely on graduates and R&D outputs of higher education to enhance their competitiveness, ability to grow markets and use advanced knowledge to innovate. On behalf

⁸ OECD (2004), *Review of Higher Education in Ireland: Examiner’s Report*. OECD Directorate for Education Committee

of both multinational and indigenous enterprise, reports from the Expert Group on Future Skills Needs routinely conclude by linking the skills needs they identify in internationally trading enterprise back to specific courses and programmes that are being or should be run in Ireland's higher education institutions.

The specific impact of graduates on economic growth

By EU standards, the Irish economy is a large employer of graduates, reflecting, in part, the large share of knowledge intensive sectors, the recruitment of skilled migrants to these and other sectors.

Graduates currently hold almost one-half of all jobs (though they make up just over one third of the population of working age). Their share of employment in Ireland is currently 13 percentage points higher than the EU-15 average. This gap with the EU-15 grew by 12 percentage points during the recession and early recovery (2008–2013) as jobs held by graduates in exporting sectors and the public services survived better than others and because graduates were more willing to enter non-graduate jobs. Even before the recession, however, 34 per cent of all employment in Ireland was held by graduates as against an EU-15 average of 27 per cent.

In 2013, the rate of tertiary attainment among Ireland's 30-34 year olds was 52.6 per cent, the highest in the EU and third place in the industrialised world. This reflects the numbers completing higher education in Ireland and Ireland's attractiveness and openness to graduates from elsewhere in the EU and beyond.

The rising share of total employment held by graduates boosts economic growth because they bring high levels of productivity-enhancing knowledge and skills to bear in their workplaces.

Demonstrating the specific impact of graduates is challenging. However, a 2013 growth accounting study of 15 countries undertaken by the UK⁹ finds that 17 per cent of growth over the period 1994-2005 can be attributed to the superior skills graduates bring to the workplace. This finding is based on the assumption that the size of the graduate premium in each country reflects a real productivity differential, i.e., its payment is sustained because higher productivity enables the market to absorb the higher cost. The study also finds that the contribution of graduates to economic growth varies significantly across countries and is typically in third place, after capital deepening and generalised efficiency gains (termed 'total factor productivity'), in boosting labour productivity.

The economic impact of Higher Education Research and Development

A further aspect of higher education of relevance to Ireland's prosperity and economic growth is the research and knowledge generation that takes place in higher education institutions. As noted earlier, a wide spectrum of disciplines generate knowledge and capabilities that contribute to economic prosperity. This is reflected in the measurement of higher education

⁹ Department for Business Innovation and Skills (BIS), 2013, 'The relationship between graduates and economic growth across countries'. BIS Research Paper No. 110. UK

spending on research and development (HERD), which encompasses science, engineering, social sciences and humanities. Ireland's expenditure on HERD increased strongly during the period of economic growth, from €204m in 1998 to €750m in 2008. In 2013, there was 30 spin-out companies, 115 licences and 129 patents from Irish higher education institutions.

A major development from the late 1990s was the development of a more focused and heavily funded science and technology policy and a decision to concentrate public investments in research in the higher education system. This included significant investments in research infrastructure through the Programme for Research in Third Level Institutions. The creation of Science Foundation Ireland and the Research Councils, a range of enterprise-facing supports through Enterprise Ireland, and sectoral funding through agencies such as the Health Research Board. As noted in Section 2.3, publicly-funded research is now a major element of the overall funding received by higher education institutions in Ireland.

Since the onset of the economic crisis in 2008 there have been important further developments in research and innovation policy. A large proportion of public research investments are now targeted at specific priority areas.¹⁰ Furthermore, policy makers wished to ensure that public funding of research had more direct and visible impact on business performance and job creation and this was reflected in the criteria used by research agencies in allocating research grants. There is also now, a much greater focus on collaboration between higher education institutions, measures to encourage knowledge transfer from research to business and action to create a new regulatory and taxation regime for intellectual property (IP).

To date there is limited and mixed research evidence on the economic impact—direct or indirect—of Ireland's increased research spending and of the changes in approach adopted in the past five years¹¹. In its evaluation of the various research and innovation spending programmes, Forfas argues that the results of investment in innovation will often materialise over a fairly long-term period¹².

A critical issue for both Irish economic development policy and for research itself, with important implications for higher education policy, will be careful assessment of the impact of the approach to research funding and innovation adopted in recent years. We discuss this in Section E, where we consider the challenge of protecting and enhancing the contribution of higher education to Ireland's economic, social and cultural life.

More vibrant regional and local economies

Higher education institutions exercise a significant influence on regional and local economic development. Such a role is, in fact, a specific requirement of Institutes of Technology. The presence of one or more higher education institutions in a region is a major asset helping indigenous enterprise to expand locally and attract inward investment. The development and consolidation of the greater Dublin area as a major metropolitan region at the European level

¹⁰ National Research Prioritisation Exercise, 2012.

¹¹ See Justin Doran, D. Jordan and E. O'Leary (2014), *Effects of R&D Spending on Innovation by Irish and Foreign-Owned Businesses*, JSSISI, vol .XLII, 2012/2013, Hazelkorn (2013).

¹² Forfas (2013) *Evaluation of Enterprise Supports for Research Development and Innovation*.

and the development of Cork, Limerick and Galway as major Irish and important European urban centres relies heavily on their endowments of higher education institutions.

A higher education institution retains young people in a region who would have gone elsewhere to study and also attracts students from outside the region. Its presence can stimulate more young people and adults to seek a higher education. It can provide local firms with consultancy services, undertake research beneficial to them and tailor learning opportunities for their management and employees. Senior staff and academics can become important participants in local and regional economic development coalitions and assume a significant leadership role. In employing large numbers of high-skilled staff and by buying in large volumes of locally provided services and other inputs, they have high expenditure multipliers and generate additional local demand for a wide diversity of businesses.¹³

US research goes further and suggests that local concentrations of high-skilled workers (such as a university) helps create five times the number of jobs in other activities and that these indirect jobs in local services are for both professionals (e.g., in finance, insurance and real estate) and non-professionals (e.g., restaurant and retail workers) in an approximate ratio of 2:3. The analysis also found that the low-skilled workers are higher paid in regions that have high concentrations of high-skilled jobs than they are elsewhere.¹⁴

3.2.2 Individual returns to investment in higher education

The positive contributions of higher education to Ireland's economic development reflects the fact that a higher education leads to the large majority of graduates being employed more continuously and earning at a higher level. In the large majority of instances the economic benefits of higher education are simultaneously public as reflected in overall prosperity, and private as reflected in individual careers and earnings. The exception to this is when graduates pursue careers abroad on a long-term basis, remain without employment or are employed in jobs that people without a higher education could do equally well. The OECD publication *Education at a Glance* provides evidence across a number of indicators of the individual returns arising from a higher education qualification.

Graduate employment

In Ireland the employment rate for graduates is currently 80 per cent while for the population at large it is 61 per cent (Table 4). Within the graduate population itself, employment rates rise with the level of the qualification in question. PhD graduates are the most likely of all to be in employment but they are a very small group (1 per cent of total employment). The largest shares of employment are held by graduates of Honours and Masters' Degrees (30 per cent) and of Higher Certificates and Ordinary Degrees (16 per cent) respectively.

The current employment rates of graduates at different ages shows the lifetime employment prospects for graduates—one reason why most individuals seek higher education. In Ireland a tertiary education is consistently associated with an employment rate at least 10 percentage

¹³ Zhang, Lucey et al, 2014.

¹⁴ Moretti, 2013

points higher than for those who completed secondary education only. This is a large employment advantage compared to the rest of the EU.

At the same time, the employment experience of graduates in Ireland continues to be marked by the recent recession: graduates aged 35 and older have lower employment rates than graduates in Europe. This is because, between 2005 and 2012, their employment rate in Ireland fell by 7 percentage points (from 87 per cent to 80 per cent), but only by 2 points on average in the EU 21 (from 85 per cent to 83 per cent).

Table 4: Labour Market Status of the Population 15-64 by Educational Attainment (Q4, 2013)

Highest Educational Attainment	Total Population	% All 15-64	Participation rate	Employment rate	Unemployment rate	% Total Employment
Primary or lower	263,000	9%	35%	27%	23%	4%
Lower secondary	462,000	15%	49%	40%	19%	10%
Upper secondary	755,000	25%	68%	59%	14%	24%
Post-secondary non tertiary	359,000	12%	79%	66%	17%	13%
Tertiary	1,080,000	36%	86%	80%	7%	47%
of which						
Higher Cert/Ordinary Degree	388,000	16%	83%	76%	8%	16%
Hons. Degree/Masters	672,000	30%	87%	82%	6%	30%
PhD	20,000	1%	95%	90%	5%	1%
Grand Total (inc. not stated)	3,019,000		70%	61%	12%	

Source: SLMRU analysis of CSO QNHS data (Behan, 2014)

Graduates' earnings

A third level education in Ireland is strongly associated with a higher hourly pay rate, a premium that actually increased during the recession, particularly for males.¹⁵

Graduates in Ireland with a honours degree or higher earn 100 per cent more than adults whose highest educational attainment is a Leaving Certificate or equivalent; the average across the OECD is that graduates earn 70 per cent more.¹⁶ The earnings of those with a Higher Cert or Ordinary Degree were 31 per cent higher and close to the OECD average (27 per cent). Taking tertiary graduates as a whole, there is a significant gender difference in Ireland, with the earnings advantage of women being significantly ahead of men (90 per cent as against 69 per cent).

This earnings advantage, often called the graduate premium, is relative to the earnings of those with upper secondary education. This means it is affected by the level of earnings graduates of different ages and those of the comparator group (workers with upper secondary). The earnings of the comparator group are heavily influenced by national labour market institutions (minimum wage laws, the strength of labour unions, the coverage of collective-bargaining agreements, etc.) as well as by the strength of demand for lower skilled labour.

The scale of Ireland's graduate premium would seem to reflect that higher education increases both educational attainment and skill levels. The premium in Ireland reflects an increase in individuals' levels of competency in literacy, numeracy and digital problem-solving.¹⁷ In this sense, the Programme for the International Assessment of Adult Competencies (PIAAC) work suggests that employers are not just paying for educational attainment they are rewarding an improvement in individuals' skills and what they can do. The returns to those skills in Ireland are the second highest of the 22 countries in studied, after the USA, despite the finding that the skills levels of Irish adults in general are below (just) average and that this holds for Irish graduates.

The financial return to a third level education

A different way to look at the benefits of higher education is to calculate the return on investment. The private return on a tertiary education in Ireland—relative to an individual with non-tertiary education—is currently the highest in the 29 countries studied for men and the fifth highest for women, at 30 per cent (OECD average 14 per cent) and 21 per cent (OECD average 13 per cent) respectively (See Table A1 in Appendix 2). Compared to the averages for each item, the direct private costs (net of grants) of a tertiary education in Ireland are low (but close to the EU 21 average), the level of earnings foregone by being in education is near average, while the increase in gross earnings is double the average for the 29 countries (but heavily taxed—income tax and social insurance contributions take 47 per cent of the gross

¹⁵ Bergin, Kelly and McGuinness (2012), *Explaining Changes in Earnings and Labour Costs During the Recession*. ESRI Economic Renewal Series, 009

¹⁶ *OECD Education at a Glance 2014*, Chart A6.1.

¹⁷ E. Hanushek et al (2014), *Returns to Skills around the World: Evidence from PIAAC*. CESifo Working Paper Series No. 4597

earnings benefit of a tertiary education in Ireland as against, for example, 33 per in the UK or 54 per cent in Denmark)) and the unemployment effect (earning saved by unemployed less) is 4.5 times greater.

More and better opportunities abroad

At any one time around 10 per cent of undergraduates in higher education have the intention of pursuing opportunities abroad.¹⁸ The recent recession increased the scale of graduate emigration. The proportion employed overseas within nine months of graduating more than doubled from 5 per cent in 2008 to 12 per cent in 2013 (HEA 2014)¹⁹. While involuntary emigration by graduates will decline as the economic recovery strengthens, and some who left will return, the element of voluntary emigration is likely to remain significant and even increase. Over the six-year period 2006–12, the majority (60 per cent) of graduates who emigrated left jobs and only a minority were unemployed before departing (23 per cent), and more left to travel and gain experience abroad than to find another job or gain experience that was unavailable to them at home.²⁰

The steady—indeed, rapid—improvement in the educational profile of Irish emigrants has undoubtedly contributed to a major shift in how they are perceived and welcomed abroad. The international literature is clear that skilled migrants generate significant net benefits for their host countries. The employment opportunities for Irish graduates abroad are particularly attractive in the large high-income economies of the English-speaking world (UK, USA and Australia) and where populations and workforces are ageing (e.g., Germany).

At the same time, employment opportunities in Ireland for graduates *from* overseas, who have experience in specific fields as well as linguistic skills, remain strong and are likely to grow. Within the European skills pool from which Irish employers now recruit, there is a significant distinction between graduates with experience and new graduates. It is possible that more Irish graduates will emigrate to acquire experience while more are recruited from abroad (Irish and other nationals) for their experience.²¹

3.3 Societal Development

3.3.1 Introduction

This section examines the impact of higher education on Irish society. It highlights the impact on public finances, the quality of public and social services, social mobility and equality of access. It also highlights the role of higher education in developing skills for life and bringing about better social outcomes.

¹⁸ McGuinness et al (2012), A Study of Future Demand for Higher Education in Ireland. ESRI.

¹⁹ HEA (2014), What do graduates do? The Class of 2013: An analysis of the Universities and Colleges of Education First Destination of Graduates Survey 2014.

²⁰ Glynn et al (2013), Irish Emigration in an Age of Austerity. UCC.

²¹ Hays Ireland recruitment agency, *Irish Independent*, 22/11/14

3.3.2 Stronger public finances

Because becoming a graduate results in a person being in employment for more of their lives and earning at a higher level, the public finances also benefit and not just the individuals concerned. The size of the return to the State depends on the extent to which graduates in each country pay higher income taxes and social insurance contributions and receive less unemployment benefit.

This fiscal benefit is the return the state gets on its 'investment' from funding a third level place, providing a student grant and foregoing taxes on earnings while the individual is in education. In Ireland the state gets a cumulative return of 27 per cent over a forty year span on its costs of supporting a male graduate and of 17.5 per cent in the case of a female graduate (See Table A2 in Appendix 2). This is the single highest net public return on a tertiary education for men in the OECD (average 12 per cent) and the third highest for women (OECD average 10.5 per cent). The total financial costs to the state of people attaining a tertiary education in Ireland are near the OECD average.

3.3.3 Higher quality public and social services

Graduates make major contributions to social and economic development as employees in the public sector, in NGOs and as self-employed professionals.

The public sector continues to be the largest single sector employing graduates. In early 2014, and some 9 months after graduating with an Honours Bachelor Degree, 31 per cent of the 'Class of 2013' were employed in non-market services in Ireland as against 24 per cent in Business, Finance and Insurance; the corresponding figures for 2007 were 38 per cent and 27 per cent respectively²².

The availability and quality of graduates has been instrumental in enabling health, education, public administration and other services to grow in line with demand and, in many instances, to improve qualitatively. The range and sophistication of treatment available in public hospitals and to medical card holders, for example, are far superior now to what was available 20 years ago. This role of graduates in maintaining and improving social and public services tends to receive less attention than the skills needs of internationally trading enterprises. Yet a sophisticated and dynamic private sector needs graduates of high calibre to be at work in central government and the public sector.

Graduates facilitate increased provision of a wide range of technical functions provided by public bodies to support the economy and society. These include agricultural services, telecommunications, transport, energy, environmental and other regulatory functions. These are indispensable foundations for overall economic growth and prosperity and social progress. A diverse set of well-designed and well-managed public services creates a critical part of the operating environment of family life, social integration and the private sector.

²² Annual HEA First Destination Surveys

3.3.4 Social mobility and equality of opportunity

The traditionally high esteem in which education is held in Ireland was, in effect, transferred from secondary to higher education once the completion of upper secondary education became practically universal. This underpinned the rapid expansion of higher education.

The proportion enrolled in higher education whose parents did not even complete upper secondary education is high, as is the gap between the tertiary attainment rates of the younger and older adult generations. This confirms the rapid pace of educational expansion in Ireland in recent decades. In most instances, this upward educational mobility is experienced by the individuals and families concerned as a major achievement. The type of intergenerational educational mobility of the recent past cannot be expected to be maintained at the same pace, given the steadily higher educational attainment of those who are now becoming parents. In 2012, the proportion of young people enrolling in higher education who had at least one parent a graduate was 51 per cent; the OECD average was 55 per cent and in 8 countries the proportion was over 60 per cent.²³

However, neither the rapid expansion in higher education nor the removal of tuition fees have significantly reduced the most glaring inequities in access, namely, the under-representation of the lower socio-economic groups and the small share of mature students. Targets were set in 2008 that by 2013 31 per cent and 20 per cent of full-time new entrants would be from these two groups respectively; but rates of only 21 per cent and 14 per cent were achieved. The variation of participation rates in higher education across Dublin post codes is particularly evocative of the challenge—they range from 15 per cent in Dublin 15 to 99 per cent in Dublin 6.²⁴

Within the higher education system equity of access continues to be explored and it is clear that an equal opportunity for all members of Irish society to develop themselves through higher education is widely regarded as a fundamental part of the social contract.²⁵ It is integral to the case for publicly funding higher education and of growing importance to national economic development by broadening the pool of talent on which the economy can draw to attain and maintain full employment and high living standards.

In an international comparative context, the degree of equity that characterises access to higher education in Ireland may be described as above average but well behind best practice. As in other countries, what can be achieved within and by the higher education sector itself depends on how reforms in secondary education and earlier can contribute by improving young people's preparedness for higher education.

²³ OECD, 2014

²⁴ HEA (2014), *Towards the Development of a New National Plan for Equity of Access to Higher Education*. Consultation Paper.

²⁵ HEA (2013), *How Equal? Access to Higher Education in Ireland*.

3.3.5 Skills for life and better social outcomes

For students, higher education is recognised at its best as a force for individual growth, societal progress and cultural development. It is *how* graduates learn, as well as *what* they learn, that equips them for later success in the world of work, in civic and social participation, and in their personal lives.

The same aspects of higher education learning, which initially make the transition to third level difficult for many students, prove later to have formed the very skills with the widest application and of most long-term value, e.g., learning to be self-directed in study, to think for oneself, to be the agent rather than the receptacle of learning, etc. In this context, it is not surprising that young people who enter higher education are much more likely to say they have ‘realised their aspirations’ and less likely to ‘regret’ their choice than their school peers who took other routes²⁶.

Generally, a wide body of research suggest that having ‘more’ education (measured in a several different ways) is associated with a higher quality of life and individual well-being. For example, the more educated individuals are the more likely they are to live longer, enjoy better health, avoid behaviours harmful to health, have stable families, give their children a better start in life, participate in civic and social life, trust and tolerate others, and express greater satisfaction with their lives. In all these areas, and others, international research finds a clear link between higher level of educational attainment and more desirable social outcomes.

Some of what has been established internationally has been replicated in research on Ireland with researchers finding—controlling for the effects of individuals’ jobs and higher incomes—a strong association between educational attainment and:

- life expectancy and education²⁷
- family stability and children’s well-being²⁸
- higher propensity to volunteer²⁹
- trust in others and to believe one has a say in government.³⁰

Of course, the finding that ‘more’ education is better for a host of social outcomes does not of itself settle what levels of educational provision might be increased. For example, the potential scale and duration of effects arising from improvements in early childhood education for adults’ foundation skills are established by research to be of a high order

²⁶ McCoy et al., 2014, Leaving School in Ireland: A Longitudinal Study of Post-School Transitions. ESRI Research Series No. 36

²⁷ FitzGerald, Byrne and Znyderl, 2012, “The Impact of Changes in Educational Attainment on Life Expectancy in Ireland”, JSSISI, Vol XLII

²⁸ Fahey, Keilthy and Polek (2012), Family Relationship and Family Well-Being: a Study of the Families of 9-Year Olds in Ireland. UCD/FSA.

²⁹ Timonen, V.Kamiya, Y. and Maty, S. (2011) Social Engagement Of Older People,.In Barrett, A. Savva, G. Timonen, V. and R. A. Kenny (Eds.) Fifty Plus in Ireland 2011. First results from the Irish Longitudinal Study on Ageing (TILDA).

³⁰ Education at a Glance 2014: OECD Indicators.

3.4 Cultural Life and Civic Engagement

3.4.1 Introduction

Irish writers, poets and dramatists have long made a significant contribution to world literature in both the Irish and English languages and higher education has had an important role in cultivating and nurturing this. The global impact can be seen in the achievements of Irish people in literature, music, and the arts, and in the extent to which Ireland benefits from its reputation in these areas. More recently Ireland has received global recognition for its animation and games industries, which continue to grow and create new jobs underpinned by higher and further education institutions and programmes. This is a significant strength, given 'the centrality of the arts to creating a national identity, building international relationships and creating cultural and economic capital.'³¹

Higher education is widely viewed as having a critical role in enriching and develop Ireland's cultural life, beyond the individual benefits that graduates may experience: the very sense of what it is to be Irish is nurtured and sustained.³²

This section looks at ways in which higher education contributes to cultural development:

- Cross-fertilization and global challenges
- Creative practices
- Civic and democratic life

3.4.2 Cross-fertilisation and societal challenges

Through increased civic engagement, higher education institutions and practices may find novel and innovative ways to meet global and societal challenges. Ireland's Innovation Taskforce highlighted the potential of the sharing of diverse ideas, insights and approaches across the full spectrum of disciplines as the key to making the greatest progress in meeting a range of social and economic challenges.

A key role specifically for the humanities and social sciences in this is helping to provide basic and in-depth insights into the ongoing challenges faced by our society, through the knowledge of past challenges and the diverse responses they have engendered, and through the ability to imagine alternative futures.³³ In particular they help reinvent communities and commitment to the common good' through interdisciplinary collaboration and a problem-based approach that many see as critical to our planetary future. This role is emphasised in Horizon 2020, in which a challenge-based approach seeks to bring together resources and

³¹ Sisson, E. (2014) Research visibility and the 'emergent' practices of Creative Arts and Media. In Conroy, J. and Kelleher, M. (Eds) Restating the Value of the Humanities, Dublin: Humanities Service Irish Society Consortium.

³² Duncan, M. And Rouse, P. (2014) Creating Ireland: Research and the Role of the Humanities and Social Sciences. Irish Research Council. P. 12

³³ Kelleher, M. (2014) Understanding the value of AHSS: International Evidence, unpublished text.

knowledge across different fields, technologies and disciplines, including social sciences and the humanities.

One example of such cross-fertilisation is that of an anthropologist working with a mechanical engineer to understand the failed take-up of a solar cooker in Rajasthan³⁴. The reasons were cultural, social and practical and pointed to the value of embedding technological and scientific solutions studies of and engagements with local cultures). Other work highlights the value of the socio-cultural factors and employee networks in understanding innovation in an organisation.³⁵

In Ireland, such cross-fertilisation seeking to address global challenges can be found in research projects across Irish universities. One EU funded example is SOFTCITY, ‘the Programmable City’, research project in Maynooth University, which draws from disciplines of geography, urban studies, sociology and software studies to examine how cities and software interact drawing on ethnographic methods, interviews, surveys, discourse analysis.³⁶

3.4.3 Creative practices

Higher education has a key role in contributing to the development of a dynamic, fair, productive and creative society. Creativity as a form of capital is often undervalued. There is growing recognition of the importance of critical and inquiring minds and creativity as graduate skill.

The Innovation Taskforce’s report refers to skills in critical and analytical thinking, cultural awareness, communication and broader perspectives as being much sought after by employers in innovative industries and businesses for their contribution to a more flexible and multi-skilled person. However, there is also recognition that a more focused approach may be required to enhance creativity and that supports for practice-based research and creative arts may need to be enhanced.³⁷

The impact of writers, artists and musicians in Ireland, many of whom work in our higher education institutions, is also a source of creative practice and innovation of benefit to many individuals and the wider society. Examples include mentoring young musicians and artists; artists advising industry; art historians writing material for exhibitions; knowledge and insights of artists being used to inform and help preserve historic sites and make possible their renovation; artists directing films or theatre and helping improve animation skills; Irish music

³⁴ Mangum, T. (2014) *The Future of the Academic and Public Humanities: The changing Academic Environment in the UK*, UCD Humanities Institute, The Future of Humanities Lecture Series, November 28.

³⁵ Whelan, E., Parise, S., de Valk, J. and Aalbers, R. (2011) ‘Creating Employee Networks That Deliver Open Innovation’, *MITSloan Management Review*, September, 2011. Accessed on 9th January from <http://sloanreview.mit.edu/article/creating-employee-networks-that-deliver-open-innovation/>

³⁶ The Irish Research Council (2014) Connecting Communities: Future Opportunities Conference, 19 November, 2014. ; http://cordis.europa.eu/news/rcn/35787_en.html

³⁷ Jackson, N. (2006) *Creativity in Higher Education: ‘Creating tipping points for cultural change’* SCEPTRE Scholarly Paper 3: March 2006; HEA (2013) *Review of the Provision of Creative Arts Programmes in Dublin*. Dublin: Higher Education Authority.

being used to enhance the visitor experience in historic properties.³⁸ New approaches, ideas and methodologies evolve through these practices and can be folded back into teaching and learning. Nurturing culture is of course not confined to the arts, as the Science Gallery in Trinity College Dublin demonstrates so well.

Higher education institutions also contribute more generally to the creative development of social and cultural life in cities and towns. A pilot study by Dublin City University outlined its potential socio-cultural impact through a range of activities from active civic engagement, leadership practices, social inclusion and supporting creativity and innovation.³⁹

3.4.4 Civic and democratic life

Higher education institutions play an important role in promoting and facilitating citizen deliberation and participation. The type and extent of democratic engagement varies and can include collective political deliberation, contestation and action. There is enormous potential for participatory approaches that bring citizens into the higher education institutions and links higher education into the community to facilitate exploration of important long-term social, economic and political challenges.

The critical reasoning skills developed across higher education, and the associated capacity to debate and evaluate ideas, make an important contribution to democratic life. This civic mission of higher education is recognised in Irish policy as one of the three interconnected roles of higher education. However, to maximise civic benefits, such engagement needs to be cultivated, recognised and embedded in higher education institutions, funding models and performance measurement.

In the United States, the benefits of higher education is viewed as contributing to the operation of civic institutions essential to democracy, human rights and political stability, as well as contributions to the operation of the criminal justice system, to crime reduction, to poverty reduction, to environmental sustainability, and to the creation and dissemination of new knowledge).⁴⁰

Graduates and researchers within higher education contribute to societal debate in the form of public consultations, community engagement, jury duty, media and social media and all forms of democratic participation. Our public institutions, governance and judiciary rely on the quality of graduates and post-graduates equipped with necessary legal, medical, administrative, scientific, creative and problem-solving skills.

Finally, higher levels of education is associated positively with various citizenship dimensions, especially in terms of more interpersonal trust and volunteering as well as positive attitudes

³⁸ Duncan, M. And Rouse, P. (2014) *Creating Ireland: Research and the Role of the Humanities and Social Sciences*. Irish Research Council. p. 39

³⁹ Boland, T. (2014) *Capturing the Economic and Social Value of Higher Education: A Pilot Study of Dublin City University*.

⁴⁰ McMahon (2009), *Higher Learning, Greater Good: The Private and Social Benefits of Higher Education*. Maryland: The John Hopkins University Press.

towards immigration) and participation in arts and cultural activities. Higher education may have a key role in informing identity and promoting multicultural tolerance and interaction.

Section D: The Future Scale of Higher Education

This section considers the likely future scale of higher education. It examines three key drivers:

- demographic patterns;
- labour market needs; and
- participation rates.

At a very broad level, population estimates project a continuing rise in the school leaving population to 2030, and there continues to be a high level of desire for a higher education qualification. Similarly, Irish labour market demand for graduates is strong and growing.

4.1 Demographic Patterns

Ireland is unique in the EU in terms of its favourable demographic structure and this gives us a significant advantage in terms of talent availability and attraction of investment. Many EU economies have ageing workforces. While there are cost implications already being felt in the school system, this should not take away from the fact that this places Ireland in a very positive position.

Irish people value education, and educational attainment levels are now on a par with the most advanced societies. The introduction of free second level education in 1967 led to a steady increase in the numbers attending higher education since the 1980s. The numbers entering higher education each year have grown from 15,000 in 1980 to 42,000 in 2013. This has been driven primarily by rising participation levels of school leavers in higher education, with the participation rate increasing from 20 per cent in 1980 to a current rate of 56 per cent.

The higher education participation rate has been relatively steady over the last number of years, and any future rise in the higher education student cohort will be driven primarily by growth in the school population. High birth rates in Ireland over the last 15 years have led to a substantial increase in the numbers going through the school system. Both increased numbers and an increase in retention rates in second level result in projections for second level enrolments growing from 338,000 in 2014 to a peak of some 405,000 in 2025⁴¹.

As a result, the latest available projections suggest that by 2028 the number of new entrants to higher education will increase by 29 per cent over 2013 levels.⁴² (Figure 5) These projections are based on the participation rate remaining constant a 56 per cent over the

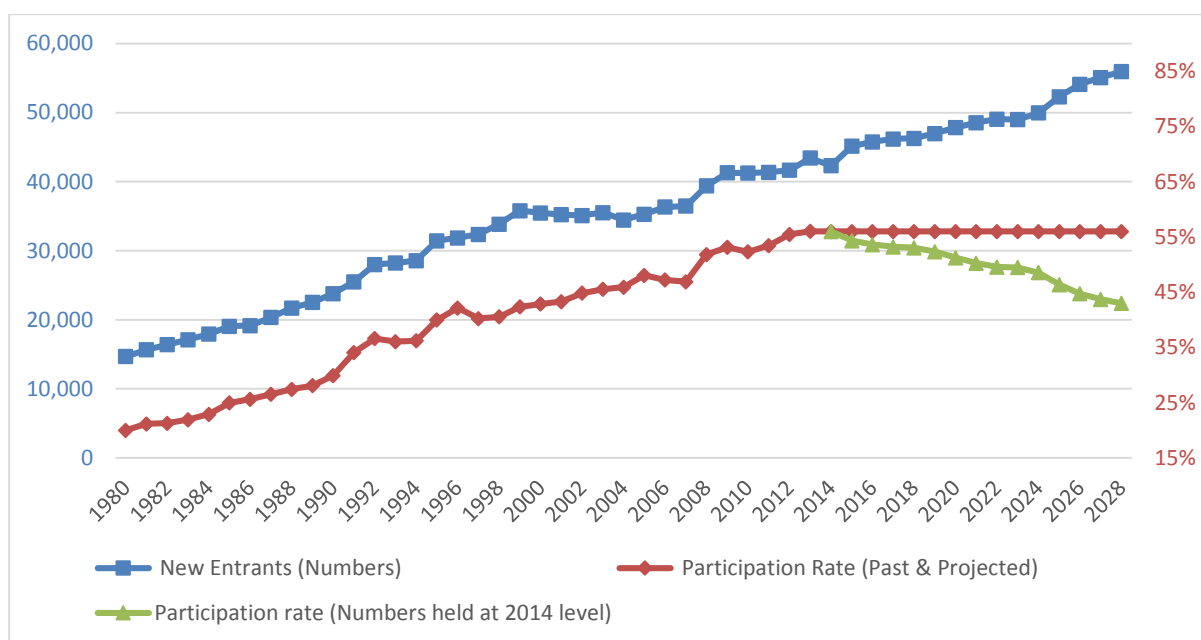
⁴¹ Projections of Full-Time Enrolment—Primary and Second Level 2014–2032, DES

⁴² Projections of Demand for Full Time Third level Education, 2014–2028, July 2014, DES

period. The growth in numbers is represented in the Figure 5 as the top blue line while the corresponding movement in the participation rate is shown in red.

For illustrative purposes, the impact on the participation rate of holding the number of students entering higher education at current levels has been modelled. As can be seen from the green line in Figure 5 this would result in a fall in the participation rate back to 2000 levels, again highlighting the scale of the growth in the school population.

Figure 5: New Entrants to Higher Education



4.2 Labour Market Demand

Even though graduate numbers have increased substantially, graduates continue to have high employment rates, low unemployment levels and to be paid a significant wage premium in the Irish economy compared to non-graduates. These trends were maintained during the recent recession. This reflects the economy’s strong demand for the knowledge and skills that graduates bring to employment.

Occupational projections prepared in 2012 show the labour market’s demand for graduates continuing to grow to 2020. Under the best case scenario termed ‘recovery’ an additional 160,000 graduates will be at work in 2020 or an additional 20,000 a year over the eight-year period.⁴³

This growth in demand is based on comparing the projected education profile of employment in 2020 with the actual profile in 2012. Assuming that the educational shares observed within occupations in 2012 remain the same, 46 per cent of the jobs that will be new in 2020 are projected to be graduate jobs. On the assumption that the educational attainment within occupations continues to rise as it did between 2007 and 2012 57 per cent of jobs that are

⁴³ Cedefop Skills Forecasts Published in 2014

new in 2020 will be for graduates. Both scenarios show employment rising for workers at *each* level of educational attainment.

In labour market projections a useful distinction is made between new jobs likely to be created (expansion demand) and job openings arise as people retire, change career, emigrate, become ill or withdraw from the labour force (replacement demand). It is estimated that some 8,000 graduates in employment will have to be replaced each year due to retirement alone.⁴⁴

Projections suggest that 48 per cent of job openings in the Irish economy to 2025 will be for graduates⁴⁵. Giving replacement demand equal attention to expansion demand nearly quadruples the number of people needed to fill jobs that are high skilled. The future outlook for jobs that require intermediate and lower skills is even more transformed.

A 2012 study by the ESRI deals in an integrated manner with both expansion and replacement demand⁴⁶. It projected future labour market demand for graduates on the basis of where recent graduates had found employment in the economy (making no distinction between jobs that were new or replacement jobs). It mapped this demand against the supply of graduates that would result from maintaining existing participation rates for the growing population of young adults. The study found that, overall, demand and supply for graduates in Ireland should broadly meet and that the likelihood of a small surplus was wise to maintain given the types of uncertainty involved—though the year, 2009, might not have been the most reliable guide for extrapolation.

It should be noted that over-qualification is a common feature of modern labour markets and Ireland has particularly high rates of over-qualified workers at 27per cent compared to international averages of 20-22per cent⁴⁷. However, the 2012 ESRI study also took account of this and adjusted its projections of labour market demand for graduates for identified levels of under-utilisation.

Finally, the share of third level graduates increased in almost all occupations between 2007 and 2013, even in those for which the entry requirement is not a higher education qualification (e.g., general clerical and customer care)⁴⁸. While this may represent increased knowledge intensity across the occupational spectrum, it is also possible that an excess supply of third level graduates characterises certain fields. Graduates of some fields of study appear more likely to be in non-graduate jobs than others at the same time as there are sectors of the economy experiencing shortages of graduates in specific fields. This suggests scope for a greater alignment of the composition of graduate output with labour market needs.

⁴⁴ SOLAS (2014), Quantitative Analysis for Higher Education Funding Group.

⁴⁵ Cedefop Skills Forecasts Published in 2014

⁴⁶ A Study of Future Demand for Higher Education, ESRI, December 2012

⁴⁷ European Working Conditions Survey, Cedefop, 2010, Quintini, G. (2014), *Skills at Work: How Skills and their Use Matter in the Labour Market*. OECD Social, Employment and Migration Working Papers, No. 158

⁴⁸ SOLAS

4.3 Factors Influencing Participation in Higher Education

The projections cited above assume that the level of participation of school leavers will remain stable at current levels. It is not possible to accurately predict patterns of participation and there are many factors that will have an influence. The availability of alternative options for school leavers, especially other forms of post-second level education and direct entry to the labour market, must be taken into consideration. The recent recessionary period has highlighted the impact that economic circumstances have on student behaviour. The collapse in employment opportunities and apprenticeship places for school leavers has led to an increase in demand for both further and higher education. PLC numbers grew from 30,000 in 2007 to 38,500 at the height of the recession. The numbers entering higher education increased from 36,500 to 41,500 in 2011/2012. As the economy recovers, it can be assumed that some of the recent growth in demand for both sectors will be reversed.

Significant reforms are underway in the further education and training sector to develop it into a more coherent and focused offering. SOLAS has been established as the Further Education and Training authority and has developed a five year strategy for the sector, and the former VECs and FAS training centres have been amalgamated into 16 Education and Training Boards (ETBs). These reforms aim to transform the sector into a strong pillar in Irish education and training which will have equal standing to the other elements of the education system and which can provide a valued alternative to higher education for school leavers and other learners.

There are also a range of national policy imperatives that can influence the entry rate to higher education. In particular, increasing the proportion of students from under-represented groups remains an cornerstone of national higher education policy and national social policy more generally. Recent reports have shown that participation of school leavers in some areas of Ireland and amongst some socio-economic groups remains significantly below average despite the progress made over the last 15 years through targeted support for access. Further progress in achieving more balanced participation is needed and a new national access plan is under development which will provide a framework for this. Lifelong learning has also become embedded in higher education policy, and measures are in place to encourage greater participation from mature students and for higher education institutions to offer more provision on a part-time and/or flexible basis. In the past, access to higher education has become more equal for these groupings alongside increases in the overall participation rate. If measures to increase participation of under-represented groups are successful it may require further increases in the overall higher education participation.

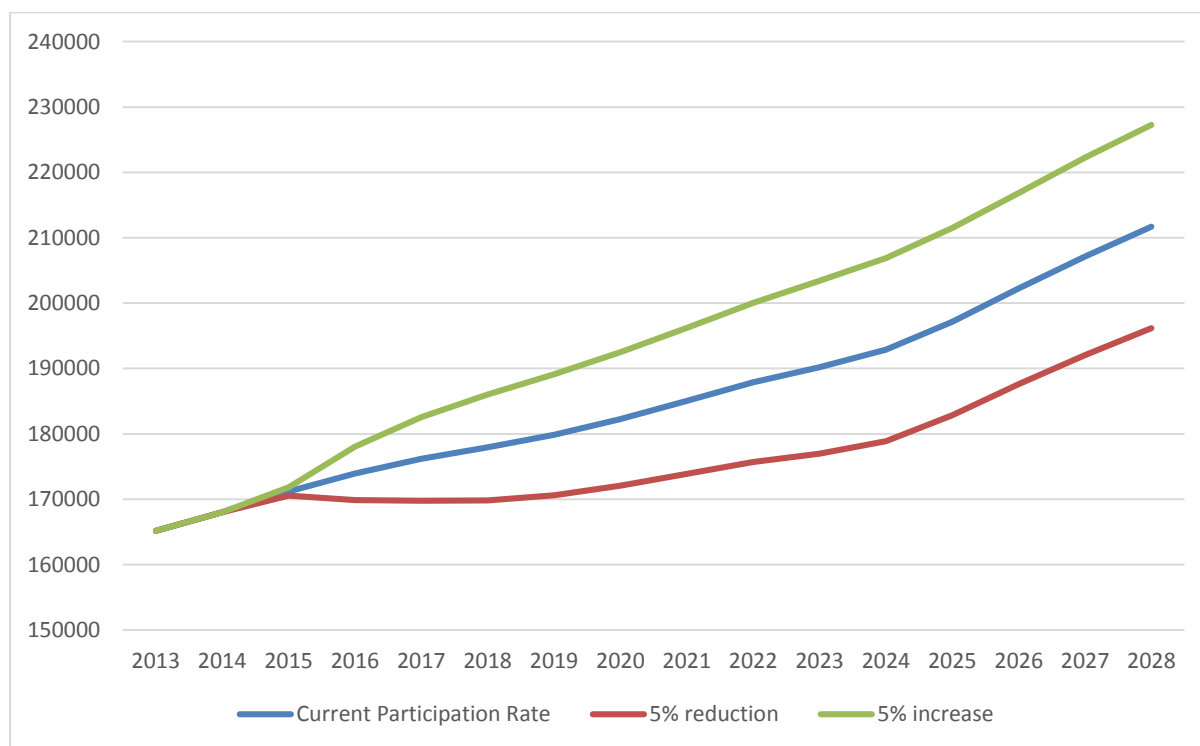
International students form an important element of the student body across most higher education systems and Ireland is targeting a doubling of the number of international student numbers attending Irish higher education institutions by 2020. While international student places are generally fully funded by the students themselves, the increase in this cohort has the potential to place pressures on the system and could lead to displacement issues.

Finally, it is important to compare Ireland's position with other countries. The most recent OECD data shows that entry rates to higher education in Ireland are close to the average OECD rate. The 2014 OECD Education at a Glance reports shows that Ireland is slightly below the

OECD average for a young adult to enter higher education over their lifetime. Ireland is slightly above the average in terms of entry rates for those under 25.

For illustrative purposes, projections for total demand for full-time higher education (total enrolments) for the scenarios of a decrease and an increase in the participation rate of 5 percentage points have been modelled (Figure 6). Based on the new entrant participation rate remaining at 56 per cent, total full-time enrolments in 2028 are projected to increase to 212, 000 or by 28 per cent. In the case of a 5 per cent reduction in the participation rate, enrolments would stand at 196,000—representing a 19 per cent increase on 2013 levels. If the participation rate was to increase by 5 per cent, enrolments would grow to 227,000—a 38 per cent increase on 2013 levels. Current demographics mean that even in the event of a significant drop in the participation rate, the system is still facing considerable growth in numbers.

Figure 6: Projections of Total Enrolments in Higher Education 2013-2028



Section E: Challenges in Maintaining and Enhancing the Quality and Contribution of Higher Education

5.1 Introduction

The basic understanding of the purpose and value of higher education, set out in this paper, has a number of implications for the way in which it should be developed and organised. Projections of increased demand for higher education from both a student and labour force perspective, place greater emphasis on these implications.

This section outlines four issues we see as crucial if the contributions are to be maintained and enhanced.

5.2 The Quality of the Undergraduate Experience

Our account of the nature and contribution of higher education underlines that the central requirement for the system is to provide high-quality undergraduate programmes across the humanities, social sciences and STEM disciplines. The various trends and factors noted above—in overall funding, student and staff numbers and research conditions—mean that the quality of the undergraduate experience is under unprecedented pressure and the system is struggling to maintain it.

It is *how* graduates learn as well as *what* they learn that supports them in being subsequently successful in the world of work, in civic and social participation and in their personal lives. Frequently, students have to adjust their style of learning when they enter higher education and become more self-directed and responsible for their learning. These capabilities are seen to develop best when undergraduates have a sense of belonging in the institutions where they are studying, an outcome that hinges particularly on the level and manner of engagement that academic staff have with undergraduates.

The increased enrolment in recent years has been funded from internal efficiencies and by other cost-cutting measures that, by and large, have been exhausted. As noted in Section B, core funding per student in Ireland fell by 15 per cent in the six year period to 2014. While the deteriorating ratio of academic staff to students is a crude indicator, it becomes telling if it results in less supervision of project work, less one-to-one engagement, less feedback and less time to accommodate diverse learning styles. US research has found that reduced resources per student in higher education is strongly associated with reductions in the number of students attending and completing⁴⁹. Extensive US experience with on-line learning technologies demonstrates their potential to help students and staff in multiple

⁴⁹ Bound and Turner (2007), “Cohort Crowding: How Resources Affect Collegiate Attainment”, *Journal of Public Economics* 91 (June).

ways, but underlines the continuing need for personal interaction and a high-quality campus experience.⁵⁰

In some programmes and some institutions, non-progression rates are high and deteriorating. The adoption of best practice to reduce them requires greater support for students entering first year, more expert monitoring of their attendance to identify students at greater risk of drop-out, and higher levels of support from academic staff for vulnerable students. Yet a growing range of pressures can reduce the availability of academic staff to meet these requirements.

To ensure that Ireland's degree programmes are of really high quality, it is vital that Ireland undertakes and supports research across the full spectrum of humanities, social sciences and STEM—which, as argued throughout this paper, is also necessary to maximising the contribution of higher education to the economy, society, culture, public administration and democratic life. Students benefit from being taught by lecturers who are active in research and the application of rigorous analysis and inquiry to problem solving in partnership with actors in business, community, public administration and cultural spheres.

It will also be important to maintain and improve the graduate experience of students from overseas as their numbers increase. It is aimed to have international students at 15 per cent of the total by 2015, but this growth needs to be carefully balanced with an emphasis on quality assurance and student support. Ireland is making slower progress in encouraging Irish students to undertake part of their studies abroad, and is only half way to the EU target of 20 per cent.

These threats to the quality of the graduate experience have the potential to impact negatively not just on individuals but on the overall contribution of higher education to national economic development, society and culture. If graduates are not stimulated and guided by academic staff into becoming active learners, they are unlikely to acquire the capabilities that are at the heart of this contribution. The international reputation of Ireland's talent pool, which is a major factor in attracting inward investment, could also be affected.

In addressing the issue of higher education funding it is important to consider what measures are necessary to ensure the quality of undergraduate education. Among these is certainly the use of the Irish Survey of Student Engagement which will capture student feedback on a national basis and will support the identification of and dissemination of best practice across the sector, the work of QQI in monitoring the quality of higher education qualifications and the National Forum for the Enhancement of Teaching & Learning as a shared resource for all higher education institutions. The National Employer Survey on Graduates will also provide important insights on employers' views of the quality and skills of graduates. What else is required to ensure that Ireland's undergraduates receive a learning experience and qualifications that are among the best in the world?

⁵⁰ Pope, J. (2014), "What are MOOCs good for?" *MIT Technology Review*, 15 December.

5.3 Enhancing the Contribution of Higher Education to Economic, Social and Cultural Innovation

Higher education must support innovation in its broadest sense, especially recognising the changing nature of innovation. Instead of a linear process, in which new scientific knowledge drives innovation in industry, there is increasing focus on the way four spheres—university, business, government and civil society—overlap and interact. This ‘quadruple helix’, found in leading firms such as Intel and the most effective national innovative systems, involves intense cooperation to address the kind of complex economic, technical, social and environmental challenges that are now widespread.

This is also reflected in the profound trend towards interpenetration, cross-fertilisation and convergence of disciplines. Changes in the methods of inquiry, in technology, the economy and society have brought the three sets of disciplines into closer relationship with one another in the study and, indeed, creation of human-influenced and human-dominated systems.

In identifying and assessing possible future models for Irish higher education a critical consideration is enhancing the contribution of higher education to the overall process of economic, social and cultural innovation.

To begin exploration of this it is helpful to lay out some of the existing realities and to identify the challenges posed to them by the dominant trends in knowledge creation and innovation.

The National Strategy for Higher Education envisaged a two-pronged approach to funding research in higher education:

- (A) **The higher education foundation:** As noted above, the distinctive characteristics and contribution of the three broad sets of disciplines in higher education—humanities, social sciences, and STEM disciplines—define the nature and value of higher education. It follows that the first priority should be high quality undergraduate teaching and student engagement, reflecting the active research and scholarship of academic staff across the full spectrum of humanities, social sciences and STEM disciplines. Public funding of work of this kind is the foundation not only of Ireland’s higher education system but is also a central requirement for innovation and economic and social upgrading. Core higher education funds are an important element in supporting this priority.
- (B) **Targeted investments:** In the past decade and a half Ireland has developed a prioritised approach to research, especially in science and technology areas focused on work that aims to have an impact on business and employment and is increasingly concentrated in research centres funded mainly by SFI, IDA and EI. Other important investments have taken place in sectoral areas should as health, agriculture and energy.

These two—the broad body of research and teaching and the targeted investment pillar—provide the elements out of which Ireland can build its system of economic, social and cultural innovation.

Developments noted above relating to the changing nature of innovation and the growing importance of interdisciplinary research define the context within which each of these two elements of Irish higher education must progress. Indeed, they pose important challenges that need to be embraced in shaping the future development of each and the interaction between them.

The implications of these two developments for the two inter-related elements of Ireland's research and innovation system need to be explored. That exploration will need to include consideration of at least three dimensions:

- i) Funding;
- ii) Monitoring, assessment and adaptation to greater reflect the new possibilities for creative innovation; and
- iii) Ways in which each of the two elements might learn from and influence one another.

Here we identify some of the issues that need to be explored in each of these areas in the case of both the broad foundation and the targeted-investment pillar as described above. These are issues that will also fall to be considered during the development of a new national research and innovation policy.

First, both the broad foundation and the targeted investment pillar need to be funded at an appropriate level and in appropriate ways. To support deliberation on this it will be useful to track the trends in funding of each element and consider potential sources of future funding, as well as drawing on the kinds of assessment discussed below. In deliberating on future funding a primary consideration should be the impact of past trends and future options on the overall higher education system itself, particularly the role in supporting the creation of knowledge and capabilities across the three disciplinary areas humanities, social sciences and STEM.

Second, monitoring and assessment of outcomes of both the broad foundation and targeted-investments needs to take greater account of the closer relationship between disciplines and the new possibilities for creative innovation. Is Ireland's approach in tune with the changing nature of innovation and is it appropriately engaged with the kind of quadruple helix innovation system? To address this, cognisance must be taken of the different objectives of both types of investment and appropriate methodologies must be developed to define, track and measure impact. The following elements seem relevant.

At a more fine-grained level there is a need to explore the relation between publicly funded research in the selected priority areas and the trends in innovation and business development in various sectors of indigenous and inward investment business. This should include the distinct roles of research prioritisation, research-industry links, talent creation and commercialisation of IP, reflecting the experience and achievement of the key development agencies (EI, IDA, Bord Bia etc) and research institutions.

This exploration will also need to look in some detail at research and skill development in various disciplines and problem areas. Among the indicators will be instances of problem-based research and collaboration with firms, communities and public bodies as well as

interdisciplinary projects using the widening range of technologies. This suggests that the internal systems of performance measurement and assessment in higher education institutions need to be attuned to the various ways in which the different disciplines create value and contribute to the understanding and resolution of problems and challenges.

These processes of monitoring, assessment and adaptation should, of course, be continuous, rather than a one-off exercise.

Third, in exploring ways in which the broad foundation and targeted-investment pillar might learn from and influence one another a number of aspects might be explored:

- In the case of the broad foundation of research across the humanities, social sciences and STEM, it may be possible to learn from the focus on evaluation, outreach and team-based inquiry which characterises the prioritised policy programmes and institutions;
- The targeted-investment pillar might also learn from, and engage with, the work undertaken in the other areas of research and inquiry. The trend towards interpenetration, cross-fertilisation and convergence, combined with the role of diverse disciplines in innovation, including technological innovation, might influence the horizon of the overall approach. The engagement with community, cultural and public sector partners and networks, found in many areas of research, might complement the focus on linkages with firms that characterises the science and technology policy. The power of research and knowledge which does not issue in commercial IP (which is, in fact, the vast majority of research, even in STEM disciplines) to assist in problem solving, through diverse channels, might help in thinking through the balance and boundary between supporting academic research, economic impact and building networks with firms and others.

But these are only indicative, since the real possibilities for cross-fertilisation between the broad foundation and the focused pillar of Ireland's research funding and system can only be identified in intense, contextual, engagement in specific areas.

5.4 Meeting Labour Market Needs

There is an ongoing challenge to protect and enhance the contribution of the higher education system to meeting the skill needs of the Irish economy. Projections of those skill needs were reported in Section C above. These showed likely strong demand not only for graduates of the higher education system but also for those with qualifications from the FET sector.

On several fronts, the higher education system has responded effectively to the crisis and realigned itself more closely with the skills needs of the economy. But there is evidence that a growing minority of graduates are encountering difficulties in accessing appropriate employment, difficulties from which not all will recover. Conversely, there remains some niche areas where vacancies cannot be filled. While it must be accepted that some jobs will

always require expertise from abroad it is essential that we have the structures in place to analyse labour market requirements and that institutions are flexible and responsive to emerging needs while also maintaining a long term perspective. The work of the Expert Group on Future Skills needs and the Skills and Labour Market Research unit in Solas play an important role in informing programme development and mix of provision.

The large earnings premium associated with a third level qualification in Ireland, as in all countries, is an average. Some graduates earn much more and some much less. Behind Ireland's high premium, there is a particularly wide dispersion. Almost 14 per cent of graduates earned at or below half of median income as against an OECD average of 9.3 per cent, while 37 per cent earned more than twice median income (OECD average 27.6 per cent) (OECD, 2014). In part, this reflects the fact that more graduates entered lower skilled jobs (that could have been filled by people with lesser qualifications). For example, the numbers of graduates in elementary occupations and in service and sales occupations increased sharply after 2008 and are high by EU standards. They were already high in 2007, partly because of the inflow of graduates from the accession states of Central and Eastern Europe (McCoy *et al.*, 2014)

In thinking about protecting and enhancing the role of higher education in matching and responding to the future skill needs of the economy, and in identifying any implications for future funding, it seems relevant to focus on at least three factors:

- Ways in which higher education can enhance the employability of its graduates while providing them with an in-depth grounding in specific disciplines and modes of inquiry;
- High-quality, informed, career advice and support to students in secondary education and in both higher education and FET; and
- The balanced and complementary development of Ireland's higher education and FET systems.

On the last of these, success by SOLAS and the new Apprenticeship Council in increasing and improving vocational routes to quality employment in the Irish economy would benefit the higher education sector itself and not just the young people who take these routes and employers. In the medium to longer term this would support improved efficiency in the use of resources and greater two-way flows between the sectors. The importance of regarding, and planning for, higher education and FET as a continuum of tertiary provision has been articulated by the HEA and others. The preparation and implementation of a new National Skills Strategy is an opportunity to advance this strategic requirement.

5.5 Equity of Access and Student Pathways

In discussing possible future funding models for higher education an important consideration must be the challenge of further improving the access of those from disadvantaged backgrounds. This is to be addressed also in the in the third National Plan for Equity of Access, currently in preparation.

Even without any further rise in the overall participation rate in higher education, the current inequities in access will be challenging and resource-intensive to address. As overall participation has grown, the ‘persistence’ factor, whereby parents with a higher education are more likely to have their children in higher education, has grown. The recession has widened social inequalities and households with lower incomes and greater exposure to the ‘low pay no pay’ cycle are less likely to be able to support a member in higher education (or, indeed, further education or training also). There is strong evidence that financial constraints and individuals’ simple inability to forego opportunities to maximise immediate earnings and absorb the full set of costs associated with ‘going to college’ are growing and not lessening in importance.

The parts of the higher education sector that have the largest proportions of disadvantaged and mature students (programmes at Levels 6 and 7 in the Institutes of Technology) are currently having the least success in retaining them—their non-progression rates are more than 3 times higher than those in Level 8 university programmes. Embracing a greater share of mature students entails greater provision of flexible and tailored staff contact times that work around their work, household and other commitments.

It is important to discuss and analyse the lines of action that can help to further improve access. Funding is clearly important, but there are many ways in which it might be deployed to reduce the inequality in access. Higher education institutions already receive additional funding for students from disadvantaged backgrounds and it might be interesting to study and compare the ways that the different colleges use this. The quality of career information, advice and support provided in schools seems an important factor; but so do pedagogic reforms earlier in the education system, particularly at secondary level, that improve ‘academic preparedness prior to entry’ (McGuinness *et al.*, 2012: 31). Indeed, the major reform of FET currently underway may also have an important role by providing more pathways to learning and work, putting some in a stronger position to choose higher education at a later stage, after several years in employment and as mature students⁵¹.

⁵¹ McCoy, S., Smyth, E., Watson, D. and Darmody, M. (2014), *Leaving School in Ireland: A Longitudinal Study of Post-School Transitions*. ESRI Research Series No. 36;

5.6 Conclusion

As stated at the beginning of this paper, before we can begin to consider the future funding requirements of higher education and the options for funding those requirements, we need to first fully understand what it is we are funding.

The analysis of the nature and contribution of higher education, and of the increasing numbers of students in coming decades, resulted in a focus in this section on a number of implications and challenges that need to be discussed and addressed. This suggests that the following are among the questions for consultation:

- i. How to ensure a high quality student experience, which is the single most important way in which higher education serves its students and the public good, with the projected increase in student numbers?
- ii. How can we enhance the contribution of higher education to the changing process of economic, social and cultural innovation?
- iii. How can higher education continue to develop people with the knowledge and capabilities required by the economy, society and public system?
- iv. What measures are necessary to further advance the access to higher education of less represented social groups?

APPENDICES

Appendix 1: Role of the Expert Group on Future Funding for Higher Education

The *National Strategy for Higher Education to 2030*, published in January 2011, restated the important role of higher education in Ireland's future economic and social development. It also recognised the need for significant changes in the structure, governance and funding of our higher education system if it is to optimally serve the broad range of national needs and priorities into the future. The Strategy articulated a new policy framework for the Irish higher education system and a series of Government decisions since its publication have advanced the implementation process. At the heart of this policy framework is the decision to invest in the development of a high quality system of mission diverse, well-coordinated institutions. Significant developments have already taken place since the publication of the Strategy:

- **New performance management system:** A system performance framework has been put in place for the sector which articulates Government priorities and key objectives for the higher education system (Box 1). In tandem, a new system of strategic dialogue with institutions has been established and three year performance agreements have been agreed with each institution.
- **A reconfiguration of the system is underway:** A series of institutional mergers are in progress in the teacher education sector, the process of mergers in the IOT sector and potential designation as technological universities is advancing, and five regional clusters of collaborating institutions have been established.
- **New governance structures:** These are being designed for both higher education institutions and the HEA and will be legislated for in the coming years.

Box 1: Higher Education System Performance—Objectives

The national strategy for higher education provides a roadmap for reform of Irish higher education. It includes a system performance framework. The national objectives for 2014-2016 for the system and the core higher education institution activities required to achieve are:

- 1) To meet Ireland’s human capital needs across the spectrum of skills by engaged institutions through a diverse mix of provision across the system and through both core funding and specifically targeted initiatives.
- 2) To promote access for disadvantaged groups and to put in place coherent pathways from second level education, from further education and other non-traditional entry routes.
- 3) To promote excellence in teaching and learning to underpin a high quality student experience.
- 4) To maintain an open and excellent public research system focused on the Government’s priority areas and the achievement of other societal objectives and to maximise research collaborations and knowledge exchange between and among public and private sector research actors.
- 5) To ensure that Ireland’s higher education institutions will be globally competitive and internationally oriented, and Ireland will be a world-class centre of international education.
- 6) To reform practices and restructure the system for quality and diversity including a requirement for every institution to engage in the establishment of regional clusters and in the agreement of cluster targets that will contribute to regional development.
- 7) To increase accountability of autonomous institutions for public funding and against national priorities.

The Strategy recognised that the current funding of higher education was not sustainable in the context of the funding requirements of increased demand and the contraction in public funding, and it articulated the need for an equitable and sustainable funding system that supports and reinforces this new policy framework. The strategy stated that the key parameters of quality, quantity, and the level and sustainability of funding would have to be “creatively and expertly managed to ensure balanced development in pursuit of national objectives”.

The funding system has arguably become less sustainable since the national strategy analysis was undertaken. While a series of increases in direct student contributions were subsequently introduced, they had to be brought in as part of the overall programme of reform of the public finances and not as a source of additional funding for growth as originally envisaged. Over the period 2008 – 2014, total current income to the sector (excluding research) fell by 9 per cent. Staff numbers reduced by 11 per cent while an extra 25,000 student places or 16 per cent were added to the system. This has resulted in a 22 per cent decrease in expenditure per student and a drop in the staff – student ratio from 1:16 to 1:19.5⁵². At the same time the proportion of students requiring higher education grant support to pay the increased fee, rose from 41 per cent in 2009 to 52 per cent in 2013.

⁵² Higher Education System Performance Framework 2014 – 2016, HEA

Despite a stabilisation of the national fiscal environment, public resources remain stretched and current demographics will place further pressures on the higher education system. The *Higher Education System Performance Report* published by the HEA in June 2014 cautioned that there is now a high and growing level of risk that significant continued (unfunded) expansion in numbers participating in higher education will damage the quality of provision. The HEA advised that the development and implementation of a comprehensive policy on funding of higher education was an urgent priority.

Establishment of Expert Group

As a response to this, the Minister for Education and Skills announced the establishment of an expert group to examine future funding policy for higher education in July 2014. Its terms of reference outline six distinct modules of work as follows:

1. **Demand.** To spell out the anticipated demographic growth in the Higher Education sector, drawing on work previously undertaken by the HEA, DES, ESRI and elsewhere. To review projected labour market requirements for graduates and the resulting implications for provision of places.
2. **Benefits.** To identify the benefits of higher education to the individual graduate and to the wider Irish economy and society – with reference to relevant research already underway. This work to include analysis of the economic and social benefits of greater levels of equity of access to higher education.
3. **Income/expenditure.** To establish the total funding available to HEIs from the state, students, the EU, research bodies, philanthropy etc. The work will also establish the current cost base, encompassing pay, non-pay and capital expenditure.
4. **Efficient and Effective Sector.** To report on efficiencies achieved by the sector during the 2009-2014 period, and to assess the potential for additional efficiencies to be achieved through the 2014-2019 period, and beyond.
5. **Measuring financial performance.** The work will identify benchmarks of financial performance, including a consideration of the merits of operating a unit cost approach. These benchmarks will be designed to inform future analysis of institutional performance via performance compacts.
6. **Long Term Funding.** The final module will provide an assessment of the long term funding requirements of the Higher Education sector, along with a set of funding options for consideration by the Minister for Education and Skills.

The Group has been meeting since July and has agreed a work programme on the basis of these six modules. In its initial deliberations the Group has been focusing on the first two aspects of the terms of reference: the benefits and value of higher education to both the individual and to the wider Irish economy and society and the future demand for higher education from both the societal and labour market perspective. This paper has been developed to support an initial consultation process on these two very important aspects of the Group's overall remit.

The Group is continuing its work on the other aspects of its terms of reference. It will meet throughout 2015 and will hear from a range of experts, both national and international. The

Group will also hold a number of further stakeholder consultation events during the course of this year. A final report to the Minister will be submitted by end 2015.

Membership of Expert Group

Peter Cassells	Independent Chairperson
Mary Doyle	Deputy Chairperson—Department of Education & Skills
Ronan Powell	Professor of Finance, DCU
Tim Creedon	Former President of IT Tallaght
Joe O'Connor	Outgoing USI President
Brid Horan	Deputy Chief Executive, ESB Ireland
Sara Cantillon	Equality Studies Centre, UCD
Tom Boland	Higher Education Authority
Seán Rowland	President of Hibernia College
Neil Ward	Adviser to the Minister for Education & Skills
John Burke	Department of Public Expenditure & Reform

Appendix 2: Costs and Benefits of Tertiary Education

Table A1:: Private Costs and Benefits for a Person Attaining Tertiary Education (2010)

Man

	Direct costs	Foregone earnings	Total costs	Gross earnings benefits	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Grants effect	Total benefits	Net present value	Internal rate of return
Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ireland	(6,478)	(42,453)	(48,931)	684,820	(259,751)	(58,953)	-	131,625	5,412	503,154	454,224	29.9%
United Kingdom	(20,162)	(47,655)	(67,817)	413,163	(89,124)	(49,107)	(4,303)	40,284	5,225	316,138	248,332	14.0%
United States	(61,135)	(44,678)	(105,813)	628,922	(210,898)	(55,768)	-	100,046	27,162	489,463	383,649	15.4%
Denmark	(4,509)	(75,357)	(79,866)	314,158	(143,348)	(26,897)	(8,763)	17,765	29,411	182,326	102,460	8.4%
OECD average	(29,256)	(44,929)	(74,187)	575,635	(186,591)	(54,609)	(1,434)	90,652	12,600	436,252	362,068	19.8%

Woman

	Direct costs	Foregone earnings	Total costs	Gross earnings benefits	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Grants effect	Total benefits	Net present value	Internal rate of return
Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ireland	(6,478)	(48,135)	(54,612)	456,714	(129,055)	(63,508)	-	39,212	5,412	308,775	254,163	21.0%
United Kingdom	(20,162)	(47,080)	(67,241)	351,526	(79,076)	(43,645)	(12,831)	55,550	5,225	276,748	209,506	12.3%
United States	(61,135)	(47,732)	(108,867)	416,147	(107,923)	(35,416)	-	47,389	27,162	347,358	238,491	12.9%
Denmark	(4,509)	(78,578)	(83,087)	175,082	(61,404)	(15,158)	(9,772)	10,710	29,411	128,869	45,782	6.5%
OECD average	(10,558)	(40,176)	(50,734)	249,434	(63,945)	(32,082)	(2,428)	24,052	6,181	179,932	129,198	13.2%

Table A2 Public Costs and Benefits for a Person Attaining Tertiary Education (2010)

Man

	Direct costs	Foregone taxes on earnings	Grant effects	Total costs	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Total benefits	Net present value	Internal rate of return
Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ireland	(28,066)	(1,409)	(5,412)	(34,887)	231,031	49,600	-	38,072	318,703	283,816	26.9%
United Kingdom	(6,798)	(2,591)	(5,225)	(14,615)	82,483	45,366	4,303	10,381	142,534	127,919	26.1%
United States	(34,787)	(5,989)	(27,162)	(67,937)	189,603	48,143	-	28,922	266,667	198,730	10.8%
Denmark	(85,578)	(35,496)	(29,411)	(15,485)	137,397	24,140	8,763	7,708	179,007	28,522	3.8%
OECD average	(24,742)	(8,400)	(6,181)	(38,044)	99,852	35,062	777	8,699	144,390	106,346	11.9%

Woman

	Direct costs	Foregone taxes on earnings	Grant effects	Total costs	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Total benefits	Net present value	Internal rate of return
Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ireland	(28,066)	(1,598)	(5,412)	(35,076)	123,230	60,647	-	8,686	192,563	157,487	17.5%
United Kingdom	(6,798)	(1,128)	(5,225)	(10,895)	70,396	38,718	12,831	13,607	135,553	124,658	36.4%
United States	(34,787)	(6,398)	(27,162)	(68,347)	99,860	31,811	-	11,668	143,339	74,993	7.4%
Denmark	(85,578)	(37,013)	(29,411)	(152,002)	58,528	13,964	9,772	4,069	86,334	65,668	0.4%
OECD average	(24,723)	(7,999)	(6,181)	(37,624)	60,264	29,405	2,428	6,358	98,456	60,832	10.5%

Source: OECD (2014) *Education at a Glance*.