INTRODUCTION

This report presents some of the key results arising from a pilot study of Dublin City University aimed at measuring the social and economic impact of the university.

There have been many previous studies of the impact of higher education institutions in terms of stimulating economic activity, including studies undertaken in Ireland. However in the wake of the economic crisis even more attention is now being paid to the role of universities in the economy, with a range of research projects looking at this aspect of higher education. Given the ongoing debate about, and policy interest in, universities’ financial importance in the economy, the project team incorporated into this report an input-output analysis of the university’s expenditure impact. Input-Output analysis is an internationally recognised methodology and the Central Statistics Office regularly produces sets of input-output tables for the Irish economy. Members of the current team have been the leading proponents of input-output analysis of higher education expenditure impact in the UK going back over 20 years. They also have continuing working relationships with one of the first developers of input-output analysis in the Irish context (at UCC) and were able to work with him on a DCU-specific analysis using an Irish input-output model. The results of the analysis show Dublin City University as an enterprise and significant economic player in its own right, generating jobs and contributing to Irish GDP.

However an expenditure impact analysis - while important in showing that investment in universities does not ‘go into a black hole’ but generates further activity in the economy - does not capture the value of the actual work undertaken by a university. Arguably it is the broader value to society of the work undertaken by a university that is of most importance, in terms of its impact on education, health, cultural and social well-being, including its role as part of civic society. However much of its broader value is generated more diffusely and is less easily ‘measured’ or quantified. This can lead to it being overlooked or undervalued.

Hence the key innovation of this particular study is to explore and apply a holistic approach to capturing the broader economic and social value generated by universities, with Dublin City University as the initial test bed exemplar. Extensive data was collected across the university on aspects of its broader external engagement, in particular ‘non-market’ activities. We then adopted an economic valuation approach, using cost-benefit analysis techniques to make estimates of the economic and social value being generated by a range of DCU engagement initiatives.

This is a new approach to assessing the value generated by a university and crucially it seeks to ensure that the broader social and cultural value aspects of the university’s work, are not overlooked. This was a pilot study and was inevitably only able to include some of the aspects of the university’s work. We would hope that the examples given here can lay the ground for further extension of this approach to cover all of the outputs of a university and, indeed, act as a preliminary but decisive step towards developing an overall understanding of not just the costs, but also the benefits generated by our universities.

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2 In Ireland this includes the Tionchar project, funded by the Irish Research Council and led by Professor Brian Lucey at TCD. There has also been extensive work in the UK on the impact of higher education, including by members of the current project team, going back to the early 1990s. This includes research undertaken for Universities UK and as part of the Economic and Social Research Council programme The impact of higher education institutions on regional economies (2007 - 2011), which was also coordinated by one of the current project report team members.
3 Central Statistics Office (2014), Supply and Use and Input-Output Tables for Ireland 2010, CSO, Ireland
4 See most recently The impact of Universities on the UK economy, Kelly, McNicoll & White Universities UK (2014)
ACKNOWLEDGEMENTS

Thanks are due to all of the DCU staff who kindly gave up their time to participate in the data collection exercises and to comment on aspects of their work. Thanks are also due to the staff of the Office of Civic Engagement, including Joanna Ozarowska and Ailbhe Garvey who provided extensive assistance in the course of the project. Maria Johnston at Invent assisted on the innovation front and John Kilcoyne from Finance helped clarify the accounts. Dr Deirdre Kelly assisted with the analysis and refinement of the extensive data collected. Dr Richard Moloney of the Centre for Policy Studies at University College Cork gave access to his input-put model of Ireland for economic modelling purposes and conducted modelled analysis for the project.

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The Irish university is multi-faceted and its teaching and learning, research and innovation and industry and civic engagement activities take many different forms and combine in different ways. Yet within that diversity there is an overarching mission to add value to society and the economy.

At Dublin City University we have always been the antithesis of the ‘ivory tower’ university and have actively engaged with enterprise and the community. We are thus very happy to support this research project which seeks to capture the economic and social value of the university from a holistic perspective.

Higher education in Ireland-as elsewhere-is under severe pressure through the scissors effect of diminishing resources and increasing student numbers. It is thus vital that we seek to capture the full economic and social value of higher education, something that needs to be more openly acknowledged and celebrated in public and political discourse.

Dublin City University is proud to have facilitated this pilot study and we hope it will provide a benchmark and inspiration for further work in this area.

Professor Brian Mac Craith,
President, Dublin City University
CAPTURING THE ECONOMIC AND SOCIAL VALUE OF HIGHER EDUCATION
A PILOT STUDY OF DUBLIN CITY UNIVERSITY
The higher education sector in Ireland consists of seven universities and fourteen institutes of technology with a combined overall income of €2.6 billion, teaching 180,500 students. This sector is under severe pressure from steadily decreasing resources and increasing student numbers. Between 2007 and 2011 the state grant decreased by 25% overall, or, put differently, from 39% of the total income to just 28%. During that same period student numbers increased by 26% and it is estimated that total numbers will reach 200,000 by 2020. In the period since 2011 the ‘scissors effect’ of this dual process has continued to be felt as staff numbers decline. With the decrease in the state grant income we have seen an increase in tuition fees as a source of income, accounting for 31% of the total in 2011. Research grants and contract income had also increased from 9% in 2007 to 21% in 2011 for the university sector. While the operating surplus has declined by nearly 50% over this period, overall expenditure is slightly up. The funding gap is clear but also higher education is a sizeable economic sector in Ireland as elsewhere.

The Higher Education Authority in Ireland recognises the importance of collating and presenting accurate data on the performance of the higher education system (HEA 2013). In some areas of teaching and research activity, metrics and KPI’s are well established. However there is still a need to develop a methodology to evaluate and benchmark engagement activities and their impact. The social responsibility of the higher education system is enshrined in the 1997 Universities Act which requires universities “to promote the cultural and social life of society” and similarly in the 2006 Institutes of Technology Act. Thus, to develop a performance evaluation framework for Irish higher education it is necessary to develop a better understanding of the economic and social value of higher education from a holistic perspective which covers the teaching, research and social engagement activities of the sector. The importance of higher education for economic prospects and quality of life is now well recognised. What is needed is a methodology to capture the full economic and social value of higher education with robust and credible metrics.
THE VALUE OF DUBLIN CITY UNIVERSITY: A HOLISTIC APPROACH

Dublin City University is an important economic and civic player in the city of Dublin. With over 1,200 staff it is a major employer in the city and one of the largest in North Dublin. It is an important catalyst for economic regeneration and community development in the local area, particularly Ballymun which is one of the most deprived parts of Dublin. It conducts teaching and research across the Faculties of Humanities and Social Sciences, Science and Health, Engineering and Computing, together with the DCU Business School. As well as proactively encouraging and supporting local and non-traditional students (around 30% of DCU students are from ‘non-traditional’ backgrounds without a history of entering higher education), it is also an export earner for the country with a strong international outlook. 10% of its students come from outside Ireland. Most recently (2014) it was recognised in the Times Higher Education World University Rankings as being among the top 100 ‘young’ universities (under 50 years old) in the world, with particular importance being placed on its international perspective and profile.\(^5\)

The university’s strategy for the future is based around 4 core principles:

- Transformation – transforming lives through education
- Enterprise – as a University of Enterprise fostering an entrepreneurial culture
- Translation – translation and application of knowledge for society’s benefit
- Engagement – building relationships with the local, national and international community

This report presents some of the key results arising from this pilot study. The study sought to explore and apply a holistic approach to capturing the value generated by universities with Dublin City University as the initial test bed exemplar. It combines highlighting the importance of the university as a major enterprise in itself, attracting and anchoring investment in its host community together with exploration of ways to capture and evidence the wider economic value of Dublin City University and the benefits it generates for Irish society.

The report comprises 3 main parts. Firstly, in order to put the university into context, the university’s commitment to enterprise and innovation is presented. The second part shows how the university is a significant economic enterprise in itself, with analysis of some of the key economic characteristics of the university, its revenue, employment and expenditure. Modelled analysis was also undertaken of the impact of the university’s expenditure on the Irish economy (together with the impact of the expenditure of the university’s international students) and the results from this analysis are also presented. The university’s impact on Ireland was modelled using a type II input-output model of Ireland.\(^6\) This analysis shows how the university generates economic activity in other sectors of the economy - creating jobs and contributing to Irish GDP.

Thirdly, the report addresses the issue of the university’s wider impact and value and applies a new approach to capturing aspects of broader value. This was undertaken bearing in mind the increasing need for universities to find credible and methodologically sound ways to evidence their social and cultural value to society as well as their financial value.\(^7\)

Challenges to valuation

There are many challenges to assessing the overall impact or value of the work of a university to the economy and to society. As a complex organisation producing many different outputs there are several dimensions to university impact, dimensions that are financial and socio-cultural as well as educational. In considering the broader impact of any university there is also the challenge of finding ways to reflect the value.

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\(^6\) Economic modelling of Irish impact was undertaken for the team by Dr. Richard Moloney, Centre for Policy Studies, UCC, using the national input output tables 2010 (CSO, 2014) and regional input output tables 2005 (Macfeely, 2011).

\(^7\) It should be noted that the results from part one and part two should not be added together. Without going into technical detail, methodologically this would be equivalent to double counting the gross benefits, which is clearly wrong.
of non-monetary or non-market benefits generated by universities. Dublin City University is a case in point. It is a not-for-profit organisation, like other Irish universities, and there are many areas of its work which are not intended to be commercial ventures or to generate profit. Such activities (e.g. providing free legal advice clinics for local residents) are an important part of the university’s ethos of civic engagement but it can be difficult to capture or assess the value of these activities alongside others that have clearer financial flows associated with them or which give a financial return.

We address these challenges by presenting a framework that would enable holistic economic valuation of all dimensions of the university’s work. We contend that the university can be considered ‘in the round’ and its overarching economic value and impact arises from the interaction of all aspects of its work. This holistic framework is presented in Figure 1.
The underlying methodology for this framework has previously been elaborated in detail in a number of reports and associated papers. A key point is that this vision of holistic impact assessment and valuation is rooted in the principles of welfare economics and involves the application of cost-benefit analysis techniques to higher education outputs. The methodological approach follows accepted theory and practice for economic appraisals and programme evaluation - as used by the World Bank and the UK’s HM Treasury as well as being compatible with the analytical techniques recommended by the Irish Government’s Central Expenditure Evaluation Unit. The valuation concept is relatively straightforward, although the entire valuation task (covering the entirety of the university) would be an extensive one for a single organisation to tackle and could not be undertaken within the parameters of the current pilot project. However the key goals of this pilot project were:

- to lay the ground work for further development by practical application of the theoretical approach to at least some aspects of the university’s work
- to consider the lessons learned in the course of the pilot and make recommendations for next steps towards achieving holistic valuation
- to consider, in particular, the steps required to develop credible evidence and metrics for assessing some of the ‘non-market’ aspects of the university’s work such as civic engagement.

Part Three of this report gives a number of exemplar case studies where we are piloting the output valuation. Reflections on the lessons learned from the pilot study and the next steps that could be undertaken to usefully extend the analysis are included in the last section (Conclusions and Reflections) of the report.

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11 The task would be made considerably easier if a sector-wide approach was adopted to economic valuation, with an agreed ‘master list’ of university outputs on which data should be collected and a sector-wide set of ‘shadow-prices’ were independently developed e.g. by the HEA or other sectoral level body. We discuss this in the final section of the report.
Dublin City University sees itself as Ireland’s University of Enterprise, a distinctive, innovation driven and research led third-level institution. One of Ireland’s youngest universities and radical in its strategy from the outset, it has always been particularly responsive to the needs of business and industry, both in its educational programmes and in its research. It is characterised today by a focus on innovation and entrepreneurship and its ability to move quickly and to effect change.

The commercialisation of research plays a leading role in the university’s strategy. DCU has an excellent track record in commercialising research and in 2001 it established Invent, a centre whose mission is to transform knowledge into commercial success and to provide the critical link between the university and the marketplace. It supports and encourages the transformation of cutting edge research into innovative and commercially exploitable products and services. Since 2001, DCU has spun out 30 companies and negotiated 120 licences, options and assignments to industry. DCU has been the leading Irish university for each of the last five years in terms of licensing technology to both indigenous companies and multinational corporations in Ireland. In 2013 DCU academics, working with external entrepreneurs, founded seven spin-out companies accounting for 20% of all research based spin-out from universities and institutes of technology in Ireland. These impressive statistics are due to the industry relevance of DCU’s translational research strategy and the strong pro-business outlook of the researchers and the technology transfer team at Invent DCU.

Invent DCU also provides incubation space for technology start-ups and offers early stage and developmental business support services. To date, over 180 start-ups have benefited from the range of supports available in Invent has assisted these companies to develop new products and services targeted at the international marketplace. Entrepreneurs and client companies also benefit from access to the sophisticated research environment at DCU, which include its world-class research centres.

Invent DCU is proactive in providing training opportunities for postdoctoral students who may have an idea for a technology business that they would like to explore. This Tech Venture Programme has been running since 2010 and takes researchers through the process of evaluating their idea by identifying and discussing all the issues encountered in spinning out a new technology company. Since 2010, 45 researchers have completed this programme.

DCU’s capacity to work on a larger scale with industry has now been enhanced by the opening of DCU’s Innovation Campus close to the main campus in Glasnevin. The Innovation Campus has been established as a new national centre for innovation. It will be a location of choice for innovative technology led SMEs and larger companies, expected to drive significant economic growth in the greater Dublin region. The Innovation Campus will leverage the capabilities of DCU teaching and research in renewable energy, sustainability, green finance, ICT, big data/smart cities and sensor technology among others. DCU will drive its regeneration as a facility aimed at developing a cluster of next generation innovative companies that are focused on ICT, clean technologies, as well as goods.
DCU is also actively encouraging its students to start companies, and in 2013 launched USTART. This is DCU’s student entrepreneur start-up competition, open to all DCU students, including undergraduate, graduate, postdoctoral and part-time students. This competitive 4-month summer programme allows students to work individually or in groups and receive training, mentoring and funding to develop their new ideas. To date, 37 students have participated in this programme run by the DCU Ryan Academy and some students have progressed to both national and international enterprise competitions.

Finally, DCU is a partner in a unique approach to business creation called VITAL. This programme distinguishes between the originator of a business idea and the SME/entrepreneur who can commercialise the idea. It therefore provides a novel option for the idea owner who may not have the time, resources, knowledge or commercial expertise to make it happen. It can also allow the idea owner to profit from market success. Similarly it can give those in need of new business opportunities access to evaluated knowledge based ideas and support with the commercialisation process. This innovative business creation model is led by DkIT in collaboration with QUB and DCU. The aim of the project is to identify our region’s best knowledge-based ideas, connect them to new and existing businesses and create a positive economic impact in Northern Ireland and the border counties.
PART TWO: THE EXPENDITURE IMPACT OF THE UNIVERSITY

While the university seeks to stimulate and support entrepreneurship and enterprise, it is also a significant enterprise in its own right. It is a major employer in North Dublin and many local and national businesses depend on the university for trading.

The key overall characteristics in terms of income and expenditure are as follows:

**Income**

The university’s consolidated accounts for 2012/13 report an overall income of €177 million. This includes core state funding support in the form of state grants but also money from other sources such as money to undertake contract research and consultancy as well as academic fees paid by individuals and by organisations.

Figure 2 shows Dublin City University to be a large enterprise, with income recorded in the consolidated accounts of €177 million in the study year.  

Source: Dublin City University Consolidated Accounts 2012/13

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12 Income and expenditure in the consolidated accounts include a figure (€29.3 m) relating to pension liabilities – all Irish universities are required to include an estimate of these in their accounts as part of the arrangement whereby the State has taken responsibility for covering pension liabilities. However the subsequent economic analysis will disregard this element as it is an accounting issue.
It is worth noting that the university does not receive all of its income from public sources, but has a relatively diverse income base, earning income from both Irish public and private sources as well attracting export earnings. Estimates were made of the overall make-up of the income base and this is presented in Figure 3. Public sources include the core state grants as well as fees and contracts supported by other public authorities and research bodies (e.g. the Irish Research Council or Science Foundation Ireland). International sources include international fees as well as some income for research undertaken for international organisations (including the EU.) Irish private sources included money paid as academic fees as well as research contracts and other earnings e.g. for residence and catering activity. This analysis shows that 60% of the university’s income came from public sources, with 40% from private sources and overseas. However it is also worth highlighting that circa 35% of ‘public’ funding (around 20% of the whole) was made up of research funding from state and Semi-State organisations. This is almost always competitively won funding rather than being a core grant. Hence the ‘core’ state funding may be closer to 40%.

![Figure 3: Dublin City University Income by Broad source](image_url)

13 Source: Based on Dublin City University Accounts and Finance Office estimates

13 This income figure excludes the pension element (for reasons previously explained)
Employment

The university is a major employer, directly providing over 1220 full-time equivalent jobs. It is worth highlighting that while the majority of posts are academic, the university also employs a wide range of support staff – administrative, technical, professional and ancillary staff. The university also has a large estate to maintain with offices, labs, a sports centre, university residences and cafeteria. There are a further 214 FTE jobs (over 400 people) provided by campus companies14 and overall the university is a source of much needed local employment.

The overall proportion of academic staff to support staff (at 60% academic, 40% support staff) is higher than might be expected. For instance the Higher Education Authority (HEA) data for the Irish university sector gives an average of 52% academic to 48% support staff.15 The average for UK universities (which have comparable structures to those in Ireland), is also higher than that for DCU, with the proportion of administrative and support staff to academic staff sitting at around 46% academic staff: 54% support staff.16 This could suggest a fairly high degree of administrative efficiency. Another factor may be that relatively more ancillary support staff are employed through campus companies than directly by the university, which would reduce the university’s own support staff total (but contribute to its ‘knock-on’ employment impact.)

Figure 4: Employment in Dublin City University 2012/13

Dublin City University Staffing 2012/13
Total 1228 full time equivalent staff

Support Staff - 40%
60% - Academic Staff

Source: Dublin City University

14 Campus company staff are employed by the company and are not directly employed by the university. Hence they do not appear here in the direct university employment figure. However their jobs are dependent on the work of the University and will be associated with the knock-on effects of the university.


16 See, for example The Impact of Universities on the UK economy Universities UK 2014 gives an average for the UK of 46% academic: 54% support staff.
Expenditure
In 2012/13 Dublin City University spent €144.4 million. The largest item of expenditure was staff salaries - which is also to be expected, since a university is a labour-intensive enterprise. The university and its staff spend the income earned, which is vital for the economy, generating jobs and output in surrounding industries through secondary or ‘knock-on’ effects.

Knock on effects
The university generates economic impact through its expenditure. Known as ‘knock-on’ effects, this impact is chiefly recognised as occurring in two ways:

• through the university itself buying goods and services from a wide range of suppliers (from books and stationery to legal services, laboratory equipment to catering supplies); the suppliers also have to make purchases in order to fulfil the university orders and their suppliers in turn make other purchases and so on, rippling through the economy.

• through the university paying wages to its employees, who in turn spend their salaries on housing, food and other consumer goods and services. This creates income for employees in other businesses and sectors, who also spend their income and so on.

To undertake an analysis of expenditure, an appropriate and properly configured economic model of the relevant geographical area is required. Through Dr Richard Moloney of University College Cork we were able to access an economic input-output model of Ireland, which was derived from the official CSO input-output tables for Ireland. The impact of DCU expenditure was modelled and the overall results were as follows.

Output generated
The university’s own output (equivalent to income or ‘turnover’) in 2012/13 was €147.9m. Through secondary, or ‘knock-on’, effects an additional €130.2 was generated in other Irish industries. The relevant multiplier for output was 1.88. That is to say, for every €100 of university output, a further €88 of output was generated in other industries across Ireland.

Employment generated
The university directly provided 1228 full-time equivalent jobs in 2012/13. Through the ‘knock-on’ effects of its expenditure it generated around the same number again in full-time-equivalent jobs outside the university, many of which are likely to accrue to the immediate Dublin area. The employment multiplier was 2.0. In other words, for every full time jobs at the university, an additional job was created outside the university by its expenditure.
Figure 5: Output generated by Dublin City University
Output generated by Dublin City University 2012/13
Total €278m

Source: Modelled input-output analysis by Dr R Moloney and Viewforth Team

Figure 6: Employment generated by Dublin City University
Jobs generated by Dublin City University 2012/13 Total 2456 FTE jobs

Source: Modelled input-output analysis by Dr R Moloney and Viewforth Team
**Gross Value Added (GVA)**

The overall importance of the university as a player in the economy can be seen by its generation of significant levels of gross output and employment. However, another key measure of the university's contribution to the economy is the GVA generated. GVA or ‘Gross Value Added’ is a measure of the value created by the university - GVA is the industry level measure of GDP (O). GDP (O) is a production measure of the net change in wealth or prosperity in the economy as a whole over the year. The university’s direct GVA amounted to €105.8 million and through secondary or ‘knock-on’ effects it generated a further €70.9 million of GVA in other Irish industries. The GVA multiplier was 1.67.\(^{17}\)

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\(^{17}\) The multipliers for Dublin City University are derived from the modelling process. Caution should be exercised in making any comparison with multipliers from other HE studies (aside from the obvious caveat if they are for different countries or regions) as different models will have different specifications and different underlying assumptions. However, it still can be noted that results from similar input-output based studies in the UK, using models of the UK economy and regional variants have produced output multipliers for higher education that fall within a range close to those that the Irish I/O modelling process has given for DCU (with output multipliers in a range of 1.88 - 2.26 in different regions of the UK). For instance, a recent study of higher education in Northern Ireland using the Northern Ireland extension to a UK Input-Output model gave multipliers of 1.8 for employment, 1.88 for output, and 1.65 for GVA. (The impact of students on the Belfast economy, undertaken by Viewforth Consulting in 2014 for Belfast City Council.) The UK wide study of all UK higher education impact on the UK published by Universities UK (The impact of Universities on the UK economy, 2014) gave multipliers for impact on the UK as a whole of 2.17 for employment, 2.35 for output and 2.03 for GVA.
Additional impact of international students

We also analysed the impact of the off-campus personal expenditure of international students\textsuperscript{18} i.e. all students from outside Ireland (both from the rest of the EU and from outside the EU.) For this study we analysed only international student expenditure as this is an additional injection into the Irish economy by students attracted to study in Ireland by DCU (whereas domestic student expenditure would have been incurred in Ireland anyway, irrespective of student status, hence is not additional.)

In 2012/13 the university attracted 1090 students from outside Ireland who paid fees to the university as well as spending money on accommodation living costs and personal expenses.

The fees paid by international students to the university are captured in the university accounts and their impact is included in analysis of the institutional impact. Payments to the university for Halls of Residence Accommodation, or money spent in the university cafeteria, bars etc. are likewise captured in the university impact. However, in addition to any fees or other monies they pay to the university, international students spend money off-campus. This can be on private sector rental, food, entertainment, consumer goods, travel etc. In 2012/13 this off-campus expenditure of international students was estimated as €8.7 million.\textsuperscript{19} In this context ‘international’ includes both students from the rest of the EU and non-EU students, as all of their personal expenditure can be regarded as an injection into the Irish economy and are export earnings.

The off-campus expenditure of international students generated €14.1 million of output and around 68 full-time jobs outside the University. The international student expenditure generated €4.2 million of Irish GVA.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure8.png}
\caption{Student Profile of Dublin City University by domicile 2012/13}
\end{figure}

\textbf{Dublin City University Student Profile 2012/13 (Total 10,902 students)}

\begin{itemize}
\item 43\% - Students from Dublin
\item 5\% - Students from the rest of the EU
\item 5\% - Non-EU Students
\end{itemize}

\textsuperscript{18} As defined by permanent domicile
\textsuperscript{19} Estimates based on the financial guidance on living expenses provided by DCU and other Dublin Universities e.g. http://dcu.ie/students/finance/guide.shtml
### Table 1: Summary of Output generated

<table>
<thead>
<tr>
<th></th>
<th>Direct Output</th>
<th>Secondary Output</th>
<th>Total Output Impact on Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dublin City University</td>
<td>€147.9 million</td>
<td>€130.2 million</td>
<td>€278.1 million</td>
</tr>
<tr>
<td>DCU International Students</td>
<td>0</td>
<td>€14.1 million</td>
<td>€14.1 million</td>
</tr>
<tr>
<td>Total</td>
<td>€147.9 million</td>
<td>€144.3 million</td>
<td>€292.2 million</td>
</tr>
</tbody>
</table>

### Table 2: Summary of employment generated (full-time-equivalent jobs)

<table>
<thead>
<tr>
<th></th>
<th>Direct jobs</th>
<th>Secondary jobs</th>
<th>Total Employment Impact on Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dublin City University</td>
<td>1228 fte</td>
<td>1228 fte</td>
<td>2456 fte</td>
</tr>
<tr>
<td>DCU International Students</td>
<td>0</td>
<td>68 fte</td>
<td>68 fte</td>
</tr>
<tr>
<td>Total</td>
<td>1228 fte</td>
<td>1296 fte</td>
<td>2524 fte</td>
</tr>
</tbody>
</table>

### Table 3: Gross Value added generated (GVA)

<table>
<thead>
<tr>
<th></th>
<th>Direct GVA</th>
<th>Secondary GVA</th>
<th>Total impact on Irish GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dublin City University</td>
<td>€105.8 million</td>
<td>€70.9 million</td>
<td>€176.7 million</td>
</tr>
<tr>
<td>DCU International Students</td>
<td>0</td>
<td>€4.2 million</td>
<td>€4.2 million</td>
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<tr>
<td>Total</td>
<td>€105.8 million</td>
<td>€75.1 million</td>
<td>€180.9 million</td>
</tr>
</tbody>
</table>
PART THREE: CAPTURING THE BROADER VALUE OF UNIVERSITY ENGAGEMENT

The previous part of the report highlighted the importance of Dublin City University as a major economic player in the city - generating output and employment and contributing to Irish GDP. However, the analysis stops short of putting any valuation on the impact of what the university actually does. It does not consider the broader value generated by the university's teaching, research or outreach work. For that task a different approach is needed.

This section of the report applies the new and holistic approach to valuation, taking examples of DCU 'non-market' engagement activities and applying economic 'shadow-pricing' techniques to impute the economic value to society of the outputs delivered. Shadow-pricing is a tool used in cost-benefit analysis and is a recognised way to estimate the value of an output where an actual financial flow does not exist or where it is clearly a 'non-market price' (for example it is a 'nominal' or 'administered' price.) Shadow-pricing is about finding ways to impute the underlying economic value of an output which cannot be observed by looking at financial value alone.

There are a range of techniques that can be employed. These include ‘revealed preference’ techniques (which rely on observations about actual behaviour - for example what is paid for something similar elsewhere, or willingness to spend time) and ‘stated preference’ techniques (which seek to impute a value based on what people may be hypothetically ‘willing to pay’ for something if they were required to pay for it). Revealed preference techniques are generally regarded as more reliable20 as they are based on observed behaviour. In this study we have used ‘revealed preference’ measures exclusively.

Another important aspect to using cost-benefit analysis techniques in a holistic framework to assess economic value generation is that it is also legitimate to apply sets of ‘social weights’ to the outcome economic evaluation. (Application of a ‘social weight’ means that a higher value can be imputed to an activity that affects the target group compared to one which affects other groups.) This is in the interests of ‘equity’ and is appropriate when the project, programme or activity being assessed affects higher policy priority social groups. This is particularly relevant in some of the case studies presented, where the DCU initiative is explicitly targeted at priority groups.

In the case study examples where social weights are applied, these have been based on sample distributional weights from the UK Treasury Green Book. The Green Book is a UK government handbook of good practice for policy evaluation and provides guidance on approaches to valuation of non-market impacts. This includes using weights to impute additional value to policies or projects that are targeted at particular priority groups such as low income groups. Sample distribution weights are given in the Green Book, based on income quintiles with positive weights given where the beneficiaries are in the bottom two income quintiles. The top two quintiles have negative weights with the third quintile being neutral.21

20 For a full discussion of the limitations of stated preference techniques see HM Treasury (2011) Valuation techniques for cost-benefit analysis: Stated Preference, Revealed Preference and Subjective Well Being Approaches.

CASE STUDY EXEMPLARS

Case Study: DCU in the Community
DCU in the Community is a university initiative that is intended to act as a bridge between the local community and the university. It does this by delivering community-based educational programmes and guidance that promote widening access and participation in further and higher education; by facilitating community based learning for university students; and by facilitating a range of other community-university projects. All these activities benefit the residents of the university’s host community in North Dublin, and university staff and students alike.

Its community based learning centre is located in the Shangan neighbourhood in Ballymun. DCU in the Community continually seeks to develop partnerships in the community through its advisory board, participation in Campus Engage (the national third level network for the promotion of civic engagement) and its outreach efforts in the community.

Programmes:
DCU in the Community has five core programmes of engagement, all of which seek to promote access to education and widening participation:

- Bridge to Higher Education;
- Provision of FETAC Level 5 Modules;
- Community Maths Programme;
- Project FUTSAL and the Ballymun Football Foundation Programme;
- Summer School

Bridge to Higher Education
The Bridge to Higher Education Program consists of classes that prepare students to apply for admission to further and higher education degree programmes at Dublin City University and other HEIs. Classes comprise 10 - 12 week modules that address basic academic skills and strengthen students’ research and study skills in preparation for certain professional areas of interest. In addition DCU also offers courses to DCU in the Community students that help to integrate them into third level classes at DCU and programs that encourage their participation in campus life. The completion rate of students enrolled in college preparatory modules during 2011 was 70%.

Further Education and Training Awards Council (FETAC) Level 5 Modules
FETAC Level 5 programmes are delivered in partnership with local education and training providers such as Whitehall College of Further Education, Community and Family Training Agency (CAFTA) and Ballymun Men’s Centre amongst others. All FETAC Level 5 component awards offered at DCU in the Community, which have included topics in nursing, marketing, human growth and development, social studies, and working with groups, link with the areas covered by certain DCU modules and degrees.

Community Maths Programmes
The community maths programme (piloted in 2012) is aimed at addressing a range of community needs - from parents who would like to better support their children in learning maths to those adults seeking to enhance their finance and budgeting skills. Courses also help students who are preparing for their Leaving Certificate examinations and those seeking tutoring for undergraduate courses as well as secondary education courses. Some of the maths classes are run within the Bridge to Higher Education programme.
PROJECT FUTSAL and the Ballymun Football Foundation Programme

DCU in the Community is partnered with the Football Association of Ireland, Ballymun Regeneration Ltd. and Whitehall College of Further Education to run one of three pilot FUTSAL (Football Used Towards Social Advancement and Learning) hubs. PROJECT FUTSAL is a joint initiative between the Football Association of Ireland, the Welsh Football Trust and Interreg. The goal of FUTSAL is to provide education and work opportunities for people in disadvantaged areas and support community regeneration via employment and volunteerism in the field of sport.

The FUTSAL programme consists of an academic year of adult education, football coaching education, volunteering opportunities and work placements. Participants study for a range of FETAC accredited modules in the area of General Education, Health, Fitness and Sport in the Community, as well as selected FAI modules, such as Coaching, Referee Education, and Strength and Conditioning. Additionally, the programme has a strong disability coaching and disability studies component. Students from DCU’s School of Health and Human Performance designed a series of Masterclasses for the programme for 2012. In this way, the Ballymun programme draws on DCU’s expertise in Sport, Health and Human Performance to introduce participants to state of the art sports education.

Summer School

DCU in the Community offers summer courses which included topics related to health and wellbeing, digital media, personal development, study skills, and sustainability to name a few. Summer School workshops are delivered by university and community experts.

Other activities

DCU in the Community also regularly offers study support, guidance on further and higher education options, higher education applications and student finance applications. DCU in the Community also operates a student volunteering and community-based learning programme, supports the organisation of the annual DCU Volunteer Fair, and responds to community need for example through offering English Conversation classes for non-native speakers.

Approaches to valuation of DCU in the Community

Three different approaches were applied to shadow-price DCU in the Community activities.

(1) A market-equivalent fee (or ‘parallel price’) was used to impute a value for the full time FUTSAL programme. (Table 4.) To determine a ‘market-equivalent fee’ for the FUTSAL programme we reviewed a range of courses (including FE Colleges) offering similar types of coaching and training activity. The official ‘full economic cost’ of this level of course has been stated by the Department of Education and Skills at €3653. While this is still an ‘administered price’ rather than a ‘market price’, it is likely to reflect the minimum economic value being delivered.

(2) For volunteering work (Table 5), we applied the ‘opportunity cost’ of an hour of volunteer delivery time at minimum wage rates.

(3) The remainder of the activities delivered (Table 6) were priced using participant time-cost (with a rate derived from official sources.) The time-cost approach is frequently used for evaluation of transport initiatives and we drew on the recommended time cost figures used by the Irish Government for evaluation of transport and related projects.

22 http://oireachtasdebates.oirreachtas.ie/debates%20authoring/debateswebpack.nsf/takes/dal/2013092500071
(Statement from Minister of State at the Department of Education and Skills (Deputy Ciarán Cannon))

23 i.e set by government rather than freely in the market

24 Parameter Values for Use in Cost-Benefit Analysis of Transport projects Goodbody Economic Consultants in Association with Atkins 2004. The rates given were 2002 prices. We uprated these to 2012 according to the method recommended, in line with changes in GDP per person employed.
Table 4: Value of one year’s delivery of FUTSAL. This used a market equivalent fee to impute the economic value. Income distributional weights derived from the UK Treasury Green Book were applied to give the ‘socially modified economic value.’

<table>
<thead>
<tr>
<th>FUTSAL Programme</th>
<th>Numbers Enrolled and completing course in 2012 (Year 1 Part 2 and Year 2 Part 1)</th>
<th>Equivalent ‘market-rate’ for annual fee</th>
<th>Imputed Economic Value</th>
<th>Application of social weights (as a targeted programme it is assumed that all participants are from the lowest income quintile)</th>
<th>Socially Modified Economic Value Estimated as being between</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41</td>
<td>€3653</td>
<td>€149,773</td>
<td>1.9 - 2.0</td>
<td>€284,569 - €299,546</td>
</tr>
</tbody>
</table>

Table 5: Valuation of DCU in the Community-facilitated volunteering. This used the opportunity cost of volunteer time at minimum wage rates.

<table>
<thead>
<tr>
<th>Opportunity cost of Volunteer time across a range of DCU in the Community activities</th>
<th>Volunteer numbers</th>
<th>Average hours per volunteer delivered across DCU programmes in 2012</th>
<th>Total Hours delivered</th>
<th>Rate (assumed as minimum wage rate for adult with 2 years’ work experience)</th>
<th>Economic Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>42</td>
<td>13</td>
<td>630</td>
<td>€8.65</td>
<td>€5450</td>
</tr>
</tbody>
</table>

25 Time values are based on official sources: Parameter Values for Use in Cost-Benefit Analysis of Transport projects Goodbody Economic Consultants in Association with Atkins 2004. The values were compiled for use by the Department for Transport. The rates given were 2002 prices. We uprated these to 2012 according to the method recommended, in line with changes in GDP per person employed. The 2013 rates used were €7.33 for 1 hour of Leisure Time and €28.1 for one hour of ‘work’ time. We applied the lower leisure time rate for all non-accredited activities and the work hour rate for the accredited activities, to reflect the higher value of accreditation to individuals.
Social Weighting

The social weighting of volunteer time in this case is neutral because it is assumed that the engagement in volunteering is in itself reflective of the volunteers’ own social weight preferences.

Table 6: Valuation of other DCU in the Community Outputs. This uses the time-cost approach to each hour of participant time spent.

<table>
<thead>
<tr>
<th>Calendar Year 2012</th>
<th>Hours Delivered</th>
<th>Participant numbers</th>
<th>Total Participant Person Hours</th>
<th>Hourly Rate</th>
<th>Economic Value €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge into Education</td>
<td>128</td>
<td>16</td>
<td>1088</td>
<td>7.8</td>
<td>8486.4</td>
</tr>
<tr>
<td>FETLAC 5</td>
<td>75</td>
<td>37</td>
<td>660</td>
<td>28.1</td>
<td>18546</td>
</tr>
<tr>
<td>Digital Media iMac</td>
<td>20</td>
<td>9</td>
<td>180</td>
<td>7.8</td>
<td>1404</td>
</tr>
<tr>
<td>Boxing Clever</td>
<td>24</td>
<td>20</td>
<td>248</td>
<td>7.8</td>
<td>1934.4</td>
</tr>
<tr>
<td>Maths for parents</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>7.8</td>
<td>124.8</td>
</tr>
<tr>
<td>Physics Workshop for older learners</td>
<td>1</td>
<td>12</td>
<td>12</td>
<td>7.8</td>
<td>93.6</td>
</tr>
<tr>
<td>Mentoring (individuals)</td>
<td>112</td>
<td>1</td>
<td>112</td>
<td>7.8</td>
<td>873.6</td>
</tr>
<tr>
<td>Mentoring (Groups)</td>
<td>18</td>
<td>126</td>
<td>2268</td>
<td>7.8</td>
<td>17690.4</td>
</tr>
<tr>
<td>English Conversation classes</td>
<td>20</td>
<td>12</td>
<td>240</td>
<td>7.8</td>
<td>1872</td>
</tr>
<tr>
<td>Drop in pre-prep sessions for mature students</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>7.8</td>
<td>78</td>
</tr>
<tr>
<td>Summer School</td>
<td>26</td>
<td>57</td>
<td>1482</td>
<td>7.8</td>
<td>11559.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>433</td>
<td>296</td>
<td>6316</td>
<td></td>
<td>62662.8</td>
</tr>
</tbody>
</table>

Social Weighting

Discussion with DCU in the Community staff and others indicated that around 90% of their students come from lower income ‘priority groups’. Assuming that the 90% are from the lowest quintile income group, with the remaining 10% of participants from the ‘mid’ quintile (i.e. ‘neutral’ group), the appropriate weighting (1.9) can be applied to the economic value result (reflecting the greater social value being delivered). This would have the effect of giving a socially modified economic value of €113,418 for the activities measured in Table 6.

Taking all of the elements together, the overall value generated by DCU in the Community outputs in 2012) DCU was substantial and confirms the ‘value’ of civic engagement more broadly.

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26 DCU in the Community students range in age from 18 to 75 years of age. Approximately 60% of students come from Ballymun. There are significantly more women attending with the male to female ratio being 3 : 7. Over 90% are unemployed and receiving welfare benefits while the remaining 10% work part time. In addition to their lack of financial assistance, many are returning adults who are balancing the demands of family while enrolled on college courses.
Case Study: Embedded Engagement

Dublin City University was the first Irish university to develop a Civic Engagement Strategy as part of its core mission to transform lives and be a driver of social and economic development in the local, regional and national community. The university has embedded the concept of civic engagement and civic responsibility across its academic programmes, with an awareness among all staff and students that the university is not an ivory tower but is part and parcel of the surrounding community. This has led to extensive civic engagement activity both as part of, and as extensions to, academic programmes. This aims to have a far reaching and positive impact upon the social and economic wellbeing of all Dublin citizens, ranging from the very young to its more mature members as well as those on the margins of the community.

For example, students enrolled in the School of Nursing and Human Sciences engage in a service learning placement with voluntary organisations as part of a module on ‘Marginalisation and health’; they also undertake a health campaign in year 2 and a health action project in their final year. In addition to encouraging volunteer activity and enabling their students to engage in service learning, the School of Nursing and Human Sciences, in partnership with the Dublin Region Homeless Executive, has developed a Graduate Certificate in Homeless Prevention and Intervention. This program is the only one of its kind offered in Ireland and allows students to work directly with homeless individuals and health/social care agencies who provide services to them. Other schools also promote civic engagement linked to their own subject specialisms. Law and Government regularly provide legal advice clinics with both students and staff providing free legal advice to local residents and to refugees (through the Irish Refugee Council) who could not otherwise afford it.

Raising aspirations and increasing participation in higher education from across the community is also a key aim. Many academic schools - such as Physical Sciences, Computing and Fiontar - run regular events and programmes to encourage children and young people to visit the university campus, possibly for the first time. The School of Physical Science hosts a “SciFest fair” (science festival) that includes a competition and exhibition of projects, science demonstrations in the college laboratories and allows students the chance to win prizes.

Table 7: Summary of value generated by DCU in the Community

<table>
<thead>
<tr>
<th></th>
<th>Economic Value</th>
<th>Socially Modified Economic Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUTSAL</td>
<td>€149,773</td>
<td>€284,569</td>
</tr>
<tr>
<td>VOLUNTEERING</td>
<td>€5,450</td>
<td>€5,450</td>
</tr>
<tr>
<td>OTHER ACTIVITIES</td>
<td>€62,663</td>
<td>€113,418</td>
</tr>
<tr>
<td>TOTAL</td>
<td>€217,886</td>
<td>€403,437</td>
</tr>
</tbody>
</table>
“Taster” or ‘fun’ events are held in isolation but linked in to opportunities to allow students to learn more about STEM (science, technology, engineering and math) related careers and engage in “hands on” learning. Students also have the option of enrolling in the Compute TY program through the School of Computing. This course enables students to develop practical computing skills and gain certification from DCU for their work. In addition to Compute TY, the School of Computing is also part of a global volunteer led program, Coderdojo, which allows children of all ages to learn programming and web design in a creative and fun environment.

Other DCU Schools, such as Business, Biotechnology, Mathematics and the School of Electrical Engineering have also formed partnerships with local schools and/or businesses that provide students with opportunities to learn more about these disciplines by engaging them in activities that enhance their ability to work collaboratively with others and arouse their intellectual curiosity. The School of Education’s Intergenerational Learning Program, the Nursing School and the Biomedical Diagnostic Institute (BDI) have collaborated with DCU in the Community by providing writing and science related workshops for mature learners and nursing classes in health and diagnostic testing. The Business School provides students with opportunities to work with organizations in the community in an effort to address particular issues or problems causing difficulties or preventing organizations from making the most of opportunities present in their operating environment. Such collaborative efforts between companies and students allow students to contribute to solutions that provide both economic and social benefit to the community of Dublin and beyond.

Valuation of embedded engagement outputs

When approaching the valuation of the civic engagement programmes that are linked to degree programmes care must be taken to avoid double-counting of outputs. In the ‘ideal’ situation where all of the university outputs are being valued (the ‘holistic’ approach) part of the value of the embedded civic engagement may form an integral part of the value of the degree being followed - certainly if formal course credit is given for the engagement in question. In this case the civic engagement value would not be additional to the value of the degree course but would be subsumed within it (with the full economic value of the degree taking into account these distinctive features.) A line should be drawn to differentiate between placements and projects that are accredited within a course and those activities which are additional or wholly voluntary. Activities that are additional, unaccredited or totally voluntary could be counted separately for valuation purposes.
Likewise activities with schools which may form part of ‘routine’ student recruitment activity should be differentiated from those whose primary purpose is to raise aspirations or increase public understanding of science, maths or of the arts. In the latter case, recruitment of students to DCU may occur as a result but it is not the primary purpose of the activity.

In cases of events / exhibitions it is possible that students could end up being attracted to DCU partly through these events or that DCU may attract other business (research / consultancy etc) as a result of its higher profile in such events. However this is not an issue as long as attracting business to DCU specifically was not the primary purpose of the event.
Valuation examples are given below of two of the sets of outputs related to academic programmes but which are clearly additional.

Table 8: Valuation of the outputs of free Legal Advice Clinics (School of Law and Government)

<table>
<thead>
<tr>
<th>Estimated Number of Hours of Legal Advice Delivered over 1 year</th>
<th>Shadow Pricing applied Sample hourly rates charged by Irish Solicitors</th>
<th>Imputed Economic Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior (Staff)</td>
<td>€220</td>
<td>€11,000</td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior (student/trainee)</td>
<td>€150</td>
<td>€30,000</td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>€41,000</td>
</tr>
</tbody>
</table>

Social weighting

We did not have information on the socio-economic characteristics of advice recipients and have assumed a neutral social weighting i.e. that the social value is equivalent to the economic value. It may also be noted that the willingness on the part of the staff and students to give their time to this activity may also, similar to the general volunteering activity, be reflective of their own social weight preferences.

Valuation of annual Physics ‘SciFest Fair’

There is no entry charge to the ‘SciFest’ so it has no obvious ‘financial value’. However it clearly has broader economic value since it is popular and attracts relatively large numbers. To estimate the broader economic value generated by the ‘SciFest’ we considered some alternative ways to deduce an economic price. These included considering the cost of private, market priced hourly tuition rates, the potential use of ‘time value’ for people’s willingness to spend time and also the prices currently charged (2014) for a range of alternative quasi-educational ‘attractions’ (Museums, Exhibitions, Dublin Zoo, etc.) to which a parent or a teacher could choose to take a child or a group of children. Of the three approaches, the average price of alternative attractions seemed the most appropriate (hourly tuition rates do not take account of the parental time spent; it is also more difficult to assess a value for children’s time.) However parents regularly pay to take their children to a range of ‘attractions’ and schools also take pupils on ‘day trips’. Taking into account the ticket price range of a number of Dublin attractions we arrived at an average entry fee of €10.83 (Child) and €15.60 (Adult).

Table 9: Valuation of ‘SciFest’

<table>
<thead>
<tr>
<th>Number of school attendees</th>
<th>Imputed economic price for participants (using rates for entry fees to ‘alternative attractions’)</th>
<th>Imputed economic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 'SciFest' Annual Fair 1 day event</td>
<td>100 children (&lt; 18 years) + 5 adults (assuming one teacher for every 20 pupils)</td>
<td>€10.83 (Child) €15.60 (Adult)</td>
</tr>
</tbody>
</table>

Social Weighting
We did not have information on the socio-economic characteristics of the participants in the SciFest and hence applied a neutral social weighting, i.e. the social and economic value are the same.

Case Study: The Access Initiative
From its very beginnings as a university, DCU has had the goal of making higher education accessible to all. The Access initiative at DCU dates back to 1990 with the establishment of BITE (Ballymun Initiative for Third Level Education), which was intended to address the low numbers of students from the Ballymun area entering higher education. BITE focussed on preparing students for third level education, helping them with subject choices and providing financial scholarships and mentoring support. The success of BITE in encouraging students to take up higher education led to its expansion into the North Dublin Access programme, working with a wide range of schools in North Dublin. The NDA programme - which also permitted entry to university on fewer points than required through the usual entry system - was expanded nationwide with the collaboration of other higher education institutions. It now operates nationwide as the Higher Education Access Route (HEAR), operated by the Central Admissions Office.

DCU continues to work to improve access to third level education, and the Access Service at DCU has as its mission the goal of:

“empowering and supporting students from socio-economically disadvantaged backgrounds to realise their full potential.”

As well as a comprehensive range of pre-entry programmes – many linked to North Dublin schools - the Access initiative includes practical financial, academic and social support for students through:

- Provision of scholarships
- Tailored orientation programmes
- Networking opportunities for Access students
- Dedicated Access Service with Post-entry support
- One to one mentoring
- Tuition workshops
- Peer mentoring
- Subsidised accommodation

The support provided to Access students through the Access Service has not only meant that the numbers of entrants have increased - with 170 new entrants in 2011 - but also that there is a very low drop-out rate. Since the beginnings of the initiative around 93% of students entering through the Access route have continued to graduation.
The additional social value generated by the Access initiative

When taking a holistic view of the value generated by the university’s work, the economic value generated by the university’s support for Access students would normally be subsumed within the overall valuation of the teaching and other support it delivers through to graduation – which could be reflected by the overall ‘market fee rates’ for studying at DCU. (The ‘economic price’ would, strictly speaking, take account of all of the services and support to which a student has access.)

In determining the ‘market fee rate’ for economic valuation purposes, this would not be the fees currently charged for domestic undergraduate students, which tend to be ‘administered prices’ – i.e. more-or-less fixed by government and not true market prices. The closest approximation to a ‘market fee rate’ is that charged to international non-EU students. This is because international (non-EU) recruitment is taking place in an internationally competitive market and these are the fees that students have shown themselves as being willing to pay in a competitive market.

Therefore the ‘economic value price’ for one year’s tuition to be used is the international fee rate for that subject. This economic value price holds good for the value of one year’s tuition both for Access students and equally for students from less disadvantaged backgrounds.

However, the national policy imperative to increase the numbers of students from socio-economically disadvantaged backgrounds, together with DCU’s own strategic goal in this regard, mean that social weighting could legitimately be applied. The application of relevant social weights would modify the economic value of delivering education to Access students to reflect the higher social policy priority accorded to them. The additional ‘social value’ of providing education to Access students is shown below.

This case study takes the 2011 cohort of 170 Access students. It assumes they are equally distributed between Arts-based and Science based degrees. The applicable international fee rates for DCU range between €10,700 and €15,300, depending on the subjects studied. In this analysis we assume that the Arts-based students are all following courses with the lower €10,700 fee rates and the science based students are following courses with the €12,100 fee rate. All Access students are from socioeconomically disadvantaged groups. This analysis assumes they are equally distributed across the bottom 2 quintiles of income. The social weightings applied are taken from the sample distributional weightings given in the UK’s HM Treasury Green Book. These suggest between 1.9 -2.0 for the policies affecting the lowest income groups and 1.4 - 1.5 for those affecting the second lowest groups.
Table 10: Social Value of one year’s provision of education to Access students

<table>
<thead>
<tr>
<th>2011 Access student entry (170 students)</th>
<th>Economic value Fee rate</th>
<th>Economic value</th>
<th>Social weights (assuming 42 students in the lowest quintile, 43 in the second-lowest)</th>
<th>Socially Modified Economic Value (SMEV)</th>
<th>Additional ‘Social Value’ of providing 1 year’s education for the 2011 entry cohort of Access students (SMEV minus Economic value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>85 Arts-based students</td>
<td>€10,700</td>
<td>€909,500</td>
<td>1.9 – 2.0</td>
<td>€853,860 - €898,800</td>
<td>€644,140 - €690,150</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.4 – 1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85 Science based students</td>
<td>€12,100</td>
<td>€1,028,500</td>
<td>1.9 – 2.0</td>
<td>€965,580 - €1,016,400</td>
<td>€728,420 - €780,450</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.4 – 1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>€1,938,000</td>
<td></td>
<td></td>
<td></td>
<td>€1,254,000 - €1,447,800</td>
</tr>
</tbody>
</table>

This analysis indicated that the additional social value generated by provision of one year’s education to the 2011 cohort of Access students is in the region of between €1.25 million and €1.45 million. (This implies an additional social value premium per Access student of €7377.)

The total value of educating the 2011 cohort to degree level could be estimated by taking the annual fees due each year to graduation (3 years for Arts, 4 for science) applying a time preference discount rate to reflect the numbers of years involved – when the fees would be incurred and when the ultimate ‘benefits’ (graduation) would be delivered, adjusting for predicted drop-out rate.
Case Study: Coderdojo DCU

Coderdojo Mission and Background

Coderdojo is a volunteer initiative promoting IT skills for children. Children aged 5 to 17 enroll in Coderdojo classes where they will learn how to develop web sites, apps, programs and games. Its Cork-based founder James Whelton collaborated with philanthropist and entrepreneur Bill Liao and now Coderdojo is being offered in over 100 cities across the Republic of Ireland and in 30 countries worldwide with 10,000 students as its participants.

DCU began offering Coderdojo during the 2012-2013 academic year, hosting 6 hours of classes on a Saturday. The university provides the program with the necessary physical space, free wifi, computer equipment, insurance and sponsors the Coderdojo Coolest Project Awards. Volunteer Coderdojo mentors are drawn from among DCU students, staff, alumni, local parents, members of the community and corporate partners.

Coderdojo was created with the purpose of making IT fun for kids. Instead of initially focusing on coding, Coderdojo classes teach kids a focused number of skills per class that will allow them to create a website, apps, games or programs by the end of class which enables them to readily apply what they have learned. Anyone can join and there is no charge. Kids can learn how to create programs that will make a football fly across the screen or teach children how to play the piano. Ideally as they complete each class children will develop a more complex understanding of web design complex understanding of computer programming.

Coderdojo at DCU has expanded to include hosting the Coderdojo awards for the “coolest projects”, arranging girls- only Coderdojo sessions to encourage more girls to participate and to engage with technology and exploring the potential for working with schools to offer internet delivery of Coderdojo sessions to enable remote and rural access to Coderdojo classes.

Coderdojo has served as an impetus for secondary schools to add computer coding to its secondary school curriculum. DCU has also linked its Coderdojo hosting to other of its community and schools programmes. Once secondary education students have completed a series of basic and advanced Coderdojo classes they can enroll in a week long course through DCU that will introduce the technologies of web design and programming to transition year second level students.

Valuation approaches to Coderdojo

Coderdojo DCU sessions are provided free of charge, requiring only that the children are accompanied by an adult. But while these sessions are provided free and hence there is no financial value attached to them, they still provide economic value to society, reflected by parents’ willingness to enrol their children and spend their own time accompanying them to the sessions as well as volunteer mentors’ willingness to contribute to the sessions. Alternative ways to deduce an economic price include considering the cost of private, market priced hourly tuition rates, the potential use of ‘time value’ for people’s willingness to spend time and also the prices currently charged (2014) for a range of alternative quasi-educational ‘attractions’ (Museums, Exhibitions, Dublin Zoo, etc.) to which a parent could choose to take a child. Of the three approaches, the average price of alternative attractions seemed the most appropriate (hourly tuition rates do not take account of the parental time spent; it is also more difficult to assess a value for children’s time.) However parents regularly pay to take their children to a range of ‘attractions’. Taking into account the ticket price range of a number of Dublin attractions we arrived at an average entry fee of €10.83 (Child) and €15.60 (Adult).
Socially Modified Economic Value

There was insufficient information available concerning the socio-economic and educational background of the DCU Coderdojo participants and so a neutral social weighting was assumed. If information can be obtained concerning the proportion of participants from ‘policy priority’ groups (e.g. from particular postcode areas which are underrepresented in higher education or low income backgrounds) a positive ‘social weighting’ could be applied to the relevant proportion of participants to reflect the higher ‘social value’ of attracting students from these groups, in the same way as for DCU in the community.

Case Study: Student Volunteering

There is a long and recognised tradition of student volunteering in Ireland, particularly in relation to fundraising for charities. However, student volunteering has changed over the years with more students becoming engaged directly in community organisations. Students participate in volunteering for a wide variety of reasons. They can be motivated by a desire to help others and to contribute to their local community. Volunteering can also provide an activity focus for meeting new people or for gaining work experience and new skills, improving employability and enhancing their curriculum vitae. Overall, volunteering can be mutually beneficial for students and for the communities and organisations with whom they work.

During the summer of 2014 a survey was distributed to all DCU students through the Students Union Office via Facebook and email. The survey explored students’ motivations for volunteering; sought data on average hours devoted to volunteering over the course of a year and types of volunteering engagements. Students’ motivations for volunteering ranged from altruistic reasons of giving back to the community to gaining work experience. Of the 226 students who completed the survey, many of the reasons they cited for volunteering included “giving something back to the community” (28%); making a difference (27%); “help others” (25%); “gaining new skills” (20%); “improve CV and future career prospects” (22%); “experience personal growth” (17%).

Many students (27%) learned of their volunteer opportunities by “word of mouth” while 22% discovered volunteer opportunities directly through Dublin City University’s Clubs and Societies Office. Overall 42% of students indicated a link between their volunteering and the university, whether through the Clubs and Societies Office or through the annual DCU ‘Expo’, through the Student Union or through talking to individual DCU staff and students.

Fundraising for worthy causes was still the most frequently mentioned form of engagement (19%); Youth Work featured strongly (16%) followed by giving teaching assistance (13%) educating and mentoring adult and young students made up 12% with 11% of

Table 11: Valuation of Coderdojo sessions

<table>
<thead>
<tr>
<th>Coderdojo</th>
<th>DCU 2012/2013</th>
<th>No. of 2 hour sessions</th>
<th>Imputed ‘economic price’ per accompanied child participant</th>
<th>Assumed number of children per session</th>
<th>Estimated Economic Value of Coderdojo sessions</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept-May</td>
<td>108</td>
<td>€26.43</td>
<td>15</td>
<td>€42,816.6</td>
<td>€54,710</td>
<td></td>
</tr>
<tr>
<td>June-August</td>
<td>30</td>
<td>€26.43</td>
<td>15</td>
<td>€11,893.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
students indicating their involvement with Advocacy and Campaigning. There was a wide range of other types of volunteer work including care for the elderly, and environmental-related volunteering (conservation etc).

In addition to surveying the student body, invitations to speak to the researchers about their volunteer experiences were also extended to students through staff advisors. A number of students, including adult ‘returners’ enrolled in the “Health and Society” undergraduate program agreed to be interviewed about their voluntary experiences as literacy tutors at primary schools in North Dublin. All those interviewed stated that they had gained considerable personal satisfaction and additional insight into other people’s lives through the experience of volunteering.

Drawing on the survey data, estimates can be made of the economic value on the volunteering activity delivered by DCU students in the course of a year. Caution needs to be exercised in analysis of this data for two main reasons:

(a) The survey response rate (the survey took place at the end of the year after many students had left for the summer) was low – representing c. 2% of all students. However we take this factor into account in the estimations, as explained subsequently.

(b) Not all volunteering activity may be associated with the university directly or indirectly but be something the individual student would tend to undertake as a citizen anyway, regardless of their status as a student. However 42% of the survey respondents clearly indicated some type of university link to their volunteering activity, through DCU Clubs & Societies, the DCU annual Expo, through the Students Union or through working with DCU staff.

The social weighting is neutral, assuming that the students choice to volunteer already reflects their social preferences.

Economic Value estimates

There were 226 survey respondents, of whom 75% indicated they had undertaken volunteering activity in the past year. 25% said they had not undertaken any volunteering. There was an average of 55 hours per year volunteer engagement reported by active volunteers – just over 1 hour per week for each active volunteer. With both the low response rate and bearing in mind that there may also have been an element of ‘self-selection’ in the survey responses (those active in volunteering being more likely to have replied) it cannot be assumed that this pattern of volunteering (with 75% of all students volunteering 1 hour per week) is common across the entire student community. However, based on the interviews conducted by the researchers and experience from elsewhere, it is plausible to suggest that the reverse proportion could comfortably be assumed – i.e. that at least 25% of students are engaged in volunteering.28

Assuming, therefore, that the level of volunteering per student is similar (55 hours per year) and 25% of the 2013 student population are engaged in volunteering, the economic value generated by DCU student volunteer activity in 2013 is estimated as amounting to nearly €1.3m.

28 A 2014 UK National Union of Students report The Student Volunteering Landscape found that in the UK 31% of students engaged in volunteering activity. There is no reason to think that Irish students would be less engaged, hence the 25% assumed figure here is conservative. http://s3.amazonaws.com/student-volunteering-week-production/attachments/resources/pdfs/47/original/The_Student_Volunteering_Landscape.pdf?1392977996
The economic valuation above is based on the conservative assumption that 25% of students participate in a modest level of volunteering. However, insight from the interviewees and from discussion with DCU staff engaged in clubs and societies suggests a much higher rate of volunteer activity and engagement among students, possibly as much as 40%. There are plans at DCU to increase the coordination and support for student volunteering in the future; maintaining central records of student volunteer hours as part of the central coordination (for instance through introducing a system of ‘awards’ for student volunteer hours delivered, thus encouraging students to record their hours) would enable the full value to society of the volunteer activity of students to be made more visible and recognised.

In the meantime it can be seen that even on very conservative estimates the value delivered by student volunteering is significant.

### Summary of Case Study results

Table 12 brings together and presents the valuation results for all of the case studies featured within this report.

Table 12 shows that the economic value of the civic engagement activity that was entirely additional to the ‘core’ teaching and research of the university (items 1-5 below) came to €1,611,652, with student volunteering making up the large part of this. The equivalent socially modified economic value (social value) came to €1,797,203. It should be highlighted that these were only a subset of the engagement activity taking place at DCU. Complete coverage of the engagement activity at DCU would enable a more comprehensive picture of the value of the ‘additional’ civic engagement activity taking place.

In relation to the Access programme the economic value of one year’s educational provision delivered to the intake of 170 Access students amounted to €1,938,000. This would be the same economic value of education provision as that pertaining to non-Access students. When the economic valuation was modified to reflect the high social priority placed on education of Access students the value increased to €3,192,000.

These findings highlight the importance of taking the broader economic and social value of programmes into account when considering their worth to society and whether expenditure on the programmes is justified. It should be remembered that the purpose of this type of exercise is not to generate ‘big numbers’ but to provide evidence for the benefits of programmes that can be used within a cost-benefit analysis. The results can inform policy and decision-making on whether the economic and social value of the benefits delivered exceed the financial costs of producing them.

Undertaking a full cost-benefit analysis was beyond the scope of this pilot study - however this pilot study with valuation of a subset of DCU civic engagement outputs clearly shows that holistic economic valuation can reveal the underlying value of ‘non-market’ university outputs, which might otherwise be overlooked.
### Table 12: Summary of case study results Conclusions and Reflections

<table>
<thead>
<tr>
<th></th>
<th>Economic Value €</th>
<th>Socially Modified Economic Value €</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DCU in the Community</td>
<td>217,886</td>
<td>403,437</td>
</tr>
<tr>
<td>2. Legal Advice Clinics</td>
<td>41,000</td>
<td>41,000</td>
</tr>
<tr>
<td>3. SciFest</td>
<td>1,161</td>
<td>1,161</td>
</tr>
<tr>
<td>4. Coderdojo</td>
<td>54,710</td>
<td>54,710</td>
</tr>
<tr>
<td>5. Student Volunteering</td>
<td>1,296,895</td>
<td>1,296,895</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>1,611,652</strong></td>
<td><strong>1,797,203</strong></td>
</tr>
<tr>
<td>6. 1 year provision of degree education to 170 Access students</td>
<td>1,938,000</td>
<td>3,192,000</td>
</tr>
<tr>
<td><strong>Totals for all outputs above</strong></td>
<td><strong>3,549,652</strong></td>
<td><strong>4,989,203</strong></td>
</tr>
</tbody>
</table>

*Taking the lower value in the calculated range*
CONCLUSIONS AND REFLECTIONS

It is now well recognised that universities are important economic entities, making a large financial impact on a region - attracting money and investment, being major employers, generating economic activity and contributing to GDP. The evidence presented in the first part of this report shows this to be very true of Dublin City University which has a significant presence in North Dublin. It is a large source of employment, generating 2524 jobs, €292 million of output and contributing €180 million to GDP. Many local businesses are dependent on the university and its students for their livelihood.

However the financial impact of the university is only one facet of its broader economic and social importance. The degree to which a university engages with the surrounding community - business, charities, arts and community organisations, colleges, schools and local individuals is of vital importance in determining how far the university can make a lasting economic impact and maximise its value to society. A key impetus for this study had been the general recognition that there is a pressing need to develop new ways to understand and acknowledge the broader economic and social value being delivered by universities.

The Higher Education Authority, for its part, has acknowledged that while it has a range of ways to assess value delivered through teaching and research activity, the wider civic engagement and social responsibility activity of universities - while recognised as being important and key to promoting the ‘cultural and social life of society’ - has until now eluded assessment, with credible and fair metrics still to be devised.

This is not a satisfactory state of affairs - neither for universities nor for the HEA (and indeed society as a whole.) Without credible evidence measures, the extensive civic engagement activities of universities can be overlooked and suffer from lack of support. Equally, without a good evidence base, the HEA would not have sufficiently robust justification for providing funding support nor any fair and transparent way of allocating support.

The nub of the issue is that many engagement activities are ‘non-market’ activities - not intended to generate income and do not have a ‘price’ or financial flow attached to them. There is then the risk, especially in times of austerity, that things which are not priced will be undervalued.

The economic valuation approach piloted in this study is based on recognised methodology and also has the virtue of being relatively straightforward.

It involves:
(a) Identifying the outputs of the relevant activities (eg what does DCU in the Community produce? - It delivers mentoring, maths and other classes for the community etc)

(b) Quantifying the outputs (How much of this is done? eg how many hours of classes are delivered and to how many people?)

(c) Imputing an ‘economic price’, through shadow-pricing where necessary, to the outputs.
Applying this approach across all activities would enable very different types of projects and programmes to be compared within the same consistent framework. It gives a ‘rate of exchange’ so that the value of apparently disparate programmes can be compared using the same numeraire. The DCU in the Community case study is a good example of how different types of output can be valued and included within the same framework.

It should be emphasised that this approach is not one that is limited to civic engagement activities. Applying a holistic approach in this way implies that all the university’s outputs, research outputs, teaching outputs and those of other activities can be considered within this framework.

In this DCU pilot study, the team concluded that it is possible in practice to apply an economic valuation approach. However, doing this as a one-off pilot in a single university and in isolation from other metrics and measure in use meant that there were a number of challenges.

The main challenges to this study involved data coverage, definitions and data collection.

- The university was clearly undertaking a considerable range, depth and breadth of engagement activities but was not automatically collecting or recording the data necessary for valuation in a consistent way. For instance, DCU in the Community had kept good records on numbers of classes delivered, numbers of participants etc, which made quantifying the outputs a relatively straightforward task. However other parts of the university had not kept the information needed - largely because no one had asked for it before and there had been no need.

- University staff did not always understand the type of information that was relevant - for example, including information on interactions within their own discipline and professional associations or their paid contracted work with businesses - things that would be usually regarded as part of the routine business of the university rather than as additional external engagement. This emphasised the need for very clear definitions and parameters to the data requested.

Conversely, staff were not always including other activities that would be relevant - such as unpaid public service activity (eg acting as adviser to government bodies, giving talks to local schools, etc.)

Some activities, for instance in the area of performance arts and sports provision, needed more in-depth analysis of their role and value as part of engagement. This mainly related to ‘pricing’ issues, where there was a ‘dual’ system with some commercial pricing in operation (hence no shadow-pricing necessary) running alongside a range of discounted or non-market activities (which would require shadow-pricing.)
Towards comprehensive metrics for civic engagement

In relation to civic engagement specifically, a sector-wide (preferably HEA-driven) approach to valuation and metrics development could overcome most of the challenges faced at this pilot stage. If undertaken by the HEA it would give the needed impetus and reason for institutions to commit to setting up the initial systems for data generation and collection. Thereafter it should be a relatively small scale exercise to update and report on the same dataset on an annual or biennial basis. We would propose as the next steps required the following:

- Development of an initial ‘master list’ of civic engagement outputs with clearly defined parameters and limited with reference to appropriate principles of aggregation. This should be compiled with a view to sector-wide consultation on the list. The initial list should be based on the pilot project findings (and also draw on the Campus Engage Audit of Civic Engagement) with an emphasis on the areas that the pilot project has found are likely to be high in terms of economic or social value.

- Development of a selected number of appropriate ‘natural units’ of quantification for each of the master outputs. These too could be put to consultation to agree the final set.

- A sector-wide pilot of the new ‘civic engagement output dataset’, using feedback from institutions for streamlining and refinement.

In terms of shadow-pricing, once a master list of outputs exists, a common set of shadow-prices could be devised by, or through, the HEA. The main point is that these should be devised independently of the institutions but which can then be used by all. A common set of shadow-prices would only require updating every 5 or so years.

The HEA could also consider the relevant ‘social weights’ that it would apply to reflect its priorities for civic engagement.

With the cooperation of Dublin City University in acting as a test bed, this pilot project has shown that it is possible to devise measures that would capture the broader value of the non-market activities of universities. The underlying value of the engagement activity studied was shown to be extensive. The challenge is now to use the lessons from this project to show how the approach could be scaled up to sectoral level and to develop a common set of engagement measures which are sufficiently consistent and rigorous for policy purposes but which are also targeted to be as straightforward and intuitive as possible so as to minimise the data burden on institutions.

The ultimate goal and purpose of this work is to provide a comprehensive and robust approach to assessment of the value of university civic engagement outputs which can be used within a cost-benefit framework to inform policy decisions on investment in support of higher education civic engagement.
APPENDIX ONE: DATA COLLECTION PROCESS

Data Collection:
Data collection informing the case studies in this report consisted of both a survey of all faculty, staff and heads of schools and interviews with faculty who manage civic engagement programs within their perspective schools. The survey and interviews took place between May and September of 2013. Of the thirteen schools contacted only two did not respond. The survey was comprised of three parts, including the indicators listed below. These indicators were chosen to demonstrate the purpose of the programme and its relation to both the university’s commitment to social responsibility and its commitment to community development, civic engagement and/or public service. Information was also collected to measure the university’s resources of staff time; program length and number of program participants. Not all of the examples collected from university units were utilised in this study - some of them will be further developed as case studies and made available in due course. An additional survey of students was undertaken in Summer 2014.

Data Collection was undertaken under 3 main headings:

Community Development
Community development activities included services that contribute to the holistic wellbeing of the community that are delivered by the following units: the Helix (cultural programmes), the Fitness Centre (health/psychological wellbeing) and any activities conducted by schools which contributed to this mission.

Data included: listing of programmes contributing to community development; purpose of the program/class; number of programs offered each year; total number of class hours each year; number of students attending; number of staff participating; number of volunteers participating, if any.

Civic Engagement
Civic Engagement activities included community based learning programs that are administered through DCU in the Community or the Schools with the intent of providing the community with life skills or academic preparation that will enhance the quality of life for community members. These programs also include DCU students who volunteer in these programs and any facilities that are donated by the university where these programs may be hosted.

Data included: listing of programs contributing to civic engagement; purpose of the program/class; number of programs offered each year; total number of class hours each year; number of students attending; number of staff participating; number of volunteers participating, if any.

Public Service
Public service activities included time given on behalf of any staff member who ministered to community needs on behalf of the university. It may include memberships on advisory boards and professional associations and staff who give of their time to provide lectures to the community outside of their classroom time on campus or write articles for public consumption.

Data included: listing of public service activities engaged in by faculty; the purpose of the outreach; number of articles or public appearances each year; number of hours spent in each outreach activity for the past year; number of university members involved in these activities.
Case Studies:
Particular programmes that have a long standing reputation of serving the community were identified through interviews that Dr. O’Quinn held with heads of schools. Once the staff who administer these programs were identified, Dr. O’Quinn interviewed them about the partnerships they had developed and are currently managing. Interviews with these staff members focused on the history and evolution of the partnerships they are currently managing; the partnerships’ mission in relationship to the mission of DCU and the programs within their school; the communities which these partnerships serve. The interviews also addressed the university resources these partnerships required and the economic and social impact they have had upon the communities they serve. Only a small selection of case studies could be included in this report. More will be made available at the Measuring Civic Engagement website (www.dcu.ie/community)
APPENDIX TWO:
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