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Views expressed in this report are those of the authors and not necessarily those of Universities Wales.

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Universities in Wales are playing a crucial role in powering the Welsh economy

As an integral part of the Welsh economy, the university sector is an industry in itself, providing employment for tens of thousands of people in Wales and generating other economic activity.

Whilst universities clearly support economic development in Wales through education and research, this study demonstrates that university expenditure, and that of university staff and students, have an immediate positive impact that is significant to the economy in Wales.

The key findings show the economic aspects of the higher education sector in Wales for the year ending 2014, and of the sector’s impact on Wales. This work updates an earlier 2013 study using a new and more precise methodology, and therefore also demonstrates the growth in Welsh universities’ economic impact.

Additionally, for the first time this work also includes extended analysis of the distribution of economic impact across all the regions of Wales, demonstrating just how vital a contribution universities make to their local communities, as well as the wider Welsh economy, through supporting thousands of ‘knock-on’ jobs and expenditure outside of campuses.

Welsh universities, together with the expenditure of their international students and visitors, students from the rest of the UK and Welsh students, generated £2.4 billion of Welsh GVA equivalent to 4.6% of all Welsh GVA 2013

The universities’ own output was £1.38bn, and they generated an additional £1.41bn in other industries in Wales.

Welsh universities generated a total of £600 million of export earnings equivalent to 4.6% of all 2014 Welsh export earnings.

Executive Summary

The Economic Impact of Welsh Universities

Powering the Welsh Economy
Welsh universities generated **46,554** jobs in Wales

equivalent to **3.4%** of all Welsh workplace employment 2013

Of these jobs, 18,702 FTE jobs were generated in other parts of the UK economy – outside of universities – due to the expenditure of the institutions and their staff and students, with most (14,558) of these jobs in Wales.

All parts of Wales shared in the impact of the universities, with impact spreading across local authority boundaries and to areas which do not host a university.

Welsh universities’ contribution to areas of Wales **that do not have a university presence**:

**Value Added**
Of the £2.4 billion of Welsh GVA generated across Wales by Welsh universities and their students, £597 million - nearly 25% - was generated in local authority areas that did not have a university presence.

**Jobs Created**
Of the 46,554 jobs generated by the universities in Wales, **11,783 jobs** – over 25% - were in parts of Wales that did not have a university presence.

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1. The 2013 study can be found at www.uniswales.ac.uk/publications.
2. Institutional output and output generated in other industries together with the expenditure of their staff, students, international students and visitors totals £4.6bn.
3. Gross Value Added
1. Introduction

1.1 The role that universities play in the Welsh economy has been increasingly recognised in Wales in recent years. Welsh Government policy towards higher education pays considerable attention to the importance of higher education in supporting economic growth through fostering innovation and increasing higher skills. The university sector in itself forms an important element of the Welsh economic base, generating output and jobs and contributing to Welsh GDP.

1.2 The Welsh Government’s desire to maximise the benefits of public investment in universities led to it supporting a number of key changes in the sector in recent years including the reconfiguration of the sector. University research accounts for around half of all research and development expenditure in Wales1 and there is strong policy support to encourage collaboration and partnership between universities and business. The funding and finance of higher education in Wales is under review with the Independent Review of higher education funding and finance (the ‘Diamond Review’) due to report in September 2016, with an interim report in autumn 2015.

1.3 It is against this background that this study – which updates and extends an earlier 2013 study - has been undertaken. The study focuses on the role of Welsh universities as an integral part of the Welsh economy, with the university sector as an industry in itself, providing employment and generating other economic activity.

1.4 This study presents a summary of key economic aspects of the higher education sector in Wales in the academic and financial year ending 2014 and of the sector’s impact on Wales and on the rest of the UK. The study includes the eight universities that are given complete coverage in the 2013/14 Higher Education Statistics Agency (HESA) data together with the central functions of the University of Wales. The analysis of student data additionally includes Open University students in Wales. A list of the included institutions can be found in Appendix Three. 2013/14 is the most recent year for availability of higher education data.

1.5 This study examines the impact of the expenditure of the Welsh universities together with that of their students. It also includes analysis of the additional impact of short-term international visitors to Wales who are visiting friends and family studying in Wales. For the first time it also includes extended analysis of the distribution of economic impact across Wales.

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1 Policy Statement on Higher Education Welsh Government 2013
1.6 In the study year the eight institutions included ranged in size from Cardiff University, with over 30,000 students, to Glyndŵr University with just over 8,000 students. There is academic provision across all major areas including Arts and Humanities, Creative Industries, Science and Technology, Business, Education, Social Sciences, Medicine and Health care. Many of the Welsh institutions have an international profile and attract students from across the globe to study in Wales. Since the last study of Welsh Higher Education (undertaken in 2013) a number of the Welsh Higher Education Institutions have merged, reducing the overall number of universities but not reducing the availability of higher education study opportunities. This was part of an overall Welsh Government reconfiguration of the Welsh higher education sector in order to strengthen regional presence, rationalise some aspects of provision and maximise the benefits arising from public investment in higher education. An additional point to make regarding data on higher education in Wales is that the HESA data on higher education student numbers now includes students registered to study at the Open University in Wales. This means that there has been an increase in the published number of higher education students and also that we were able to include Open University students in the modelled impact of higher education student off-campus expenditure.

1.7 The study examined key economic features of the Welsh higher education sector in the academic and financial year 2013-14, together with those aspects of its contribution to the economy that can be readily measured. Major economic characteristics of the sector were examined, including its revenue, expenditure and employment. The study also included modelled analysis of the economic activity generated in other sectors of the economy through the secondary or ‘knock-on’ effects of the expenditure of the institution, its staff and students. The model used was a purpose modelling system, designed for analysis of higher education impact. The same system has been used previously to model higher education impact in Wales as well as for modelling of higher education at the UK level, in the English regions and for many individual UK institutions. An additional and new dimension of analysis, involving local gravity-modelling, was included in the system to enable analysis of the distribution of impact across Wales. A Welsh higher education ‘gravity model’ was developed specifically for this study. This combined a range of mass and distance variables to examine how impact from centres of higher

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2 However any fees or other monies paid to the Open University are not included, nor are any of the OU staff based in Wales included. These continue to be attributed by HESA to the OU main site, which is in Milton Keynes.

3 The terms ‘University sector’ and ‘Higher Education sector’ will be used interchangeably but in all cases refer to higher education provision in the universities. There are additional HE level courses offered in a range of colleges in Wales but these are not included in this analysis.
education activity flows out across Wales. A description of the methodology and data sources used is included in Appendix One. Overall this summary report presents an up-to-date examination of the quantifiable contribution of the Welsh higher education sector to the Welsh economy, as well as its impact on the rest of the UK.

2. Key Findings

2.1 Revenue

![Figure 1: Sectoral Revenue](source: HESA Finance Plus 2013-14)

The Welsh higher education sector had total revenue of £1.38 billion in the study year. This was earned for a wide range of educational and related services. This is shown in Figure 1.

- The largest part of sectoral revenue (79%) can be seen as being earned for delivering teaching and research (18% Funding Council grants, 47% Tuition Fees and 14% Research Income). This is earned from a range of sources including from the public sector in the form of ‘core’ funding council grants for teaching and research, individual student fee payments and research contracts with private and international clients.

- As well as earning money for teaching and research the sector also earns just over 20% of its income from other services including, for example, consultancy services,
provision of residence and catering services, conference support or facilities hire. Income from endowments and investments (frequently these come from charitable or philanthropic donations) has remained fairly constant in the last few years as a proportion of total income at just under 1% - this is fairly typical of higher education across the UK.

- The tradition of philanthropic giving to higher education (such as donations from alumni) is not particularly strong in the UK although many universities are seeking to encourage this through their alumni offices and other fundraising campaigns.

2.2 Export earnings

- Universities are export earners for Wales. Overall Welsh university international revenue has increased from 17% to 20% of income (estimated as amounting to nearly £273 million, up from £218 million 2 years ago). This includes overseas student fees as well as residence and conference income and research and consultancy contracts with international agencies. Non EU fee income alone makes up £143.4 million or over 10% of Welsh University income.

- The sector’s estimated international revenue of £273 million together with the estimated off-campus expenditure of international students (£303 million) and the expenditure of international visitors to Wales associated with the universities (£24 million) represents a total of £600 million of export earnings. This was equivalent to nearly 4.6% of all of Wales 2014 export earnings.

2.3 Employment

- The sector directly provided 16,638 full time equivalent (FTE) jobs across a wide range of occupations. The occupational profile of university employment is shown in Figure 3. Unsurprisingly, professional occupations (to which all academics - Professors, Lecturers and Researchers – belong) are the largest single type of

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4 E.g. The Bangor University Alumni Giving Programme: [http://www.bangor.ac.uk/giving/news.php.en](http://www.bangor.ac.uk/giving/news.php.en)
5 This figure for university international revenue was derived from analysis of HESA 2013/14 finance data and includes non EU fees, income from international research and consultancy together with other services to international customers including, for example, conference accommodation and residence fees paid by international students.
6 Estimates of student expenditure were made drawing on the most recent (2014) Welsh Government Student Income and Expenditure survey as well as Department for Business and Innovation (BIS) estimates of international student expenditure.
7 This only includes an estimated number of visitors associated with international students i.e visiting family and friends.
8 Wales 2014 export earnings were £13.2 billion according to Wales in the World: The Welsh Government’s International Agenda (2015)
occupation. However, jobs are provided across a very wide range of occupations, including a range of skilled and semi-skilled jobs.

- This reflects the need to maintain significant university estates including lecture halls, laboratories, offices as well as halls of residence, cafeteria and related facilities for students such as sports facilities. The university sector is a major source of employment in Wales, with 16,638 FTE jobs representing over 1.2% of all Welsh employment.

![Employment profile of Welsh HEIs 2013/14](image)

**Figure 2: Occupational profile of employment in Welsh HEIs**  
*Source: HESA Staff data 2013-14*

### 2.4 Expenditure

- All of the universities are autonomous private bodies (all of the Welsh universities in this study are part of the 'not-for-profit' sector and are registered charities).

- Their non-profit status means that any surplus generated by the universities is reinvested in the sector.

- Welsh university expenditure, together with the expenditure of university staff and students generates economic activity through secondary or ‘knock-on’ effects.
• In 2013-14 the HESA data show a total expenditure (including staff salaries) of £1.33 billion\(^9\).

• The proportions of expenditure (on staff costs, other operating expenditure etc.) remain very much in line with previous years.

![Welsh HEIs Expenditure 2013/2014](image)

**Figure 3: Sectoral expenditure**
*Source: HESA Finance Plus 2013/14*

2.5 Students at Welsh universities

• There was a total (headcount) student population of 137,145 in 2013/14\(^{10}\).

• The sector attracted 25,605 students from outside the UK. As well as paying fees to the university, international students spend money on rent, food and other living expenses, much of which accrues to the local area. International student off-campus personal expenditure amounted to an estimated £303 million.

• International students included both students from the rest of the EU and students from outside the EU (5,645 from other parts of the EU and 19,960 from outside the EU).

• In addition, the sector attracted 38,620 students from the rest of the UK (outside Wales), who spent an estimated £401 million off-campus on living and personal

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\(^9\) As non-profit institutions, University institutional expenditure is normally very close to institutional income. Any surplus is reinvested in the institutions.

\(^{10}\) Student data is taken from HESA 2013/14. For the first time the HESA data now includes the Wales based Open University students – in previous years these students were not identified nor included in Welsh HE student numbers. The university finance flows associated with the students (tuition fees and so on) are not included in Wales but are attributed to the main OU site in Milton Keynes, The economic impact of the students therefore included in this analysis is restricted to their off-campus expenditure as local students.
expenses. The expenditure of these students from other parts of the UK can be regarded as an injection into the Welsh economy.

- The sector also provided extensive educational opportunities for Welsh students, with eight universities across Wales, plus the Open University in Wales. There were nearly 73,000 Welsh-domiciled students registered at the universities in 2013/14 and the opportunities provided by the universities meant that these students did not have to go to other parts of the UK, or abroad, to study. In that sense the Welsh higher education sector played an important role in retaining Welsh students within Wales. This is important of course in terms of increasing the national skills base and the absorptive capacity of Wales.

- It also means that a large proportion of student spending was retained within Wales. Welsh domiciled students spent an estimated £906 million in personal and living expenses.\textsuperscript{11} Attracting students to, and retaining students within, the region is important for local and regional economic development.

3. Secondary or ‘Knock-on’ effects on the economy

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

- **Indirect effects**: through the universities 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.

- **Induced effects**: through the universities paying wages to their 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.

3.2 In the case of universities that are long established in a particular location, purchasing linkages will be highly developed within their host region (previous studies of universities in the UK have shown that universities have a relatively high propensity to spend on UK, rather

\textsuperscript{11} Estimates of student expenditure were made drawing on the most recent (2014) Welsh Government Student Income and Expenditure survey as well as Department for Business and Innovation (BIS) estimates of international student expenditure.
than imported, goods and services, generating greater regional economic impact than businesses that rely more heavily on imports\textsuperscript{12}). The long established roots of many of the Welsh higher education institutions (with most going back between 100 – 150 years) and their strong local presence will be likely to enhance their impact, increasing the tendency to spend on more local, Welsh, goods and services. The distributional impact analysis presented in Section 7 of this report shows the significant local impact of the sector in the areas immediately surrounding the centre of higher education activity as well as illustrating benefits flowing to other parts of Wales.

Staff and student expenditure tends to follow a different pattern from institutional expenditure, being more consumer oriented, but while staff and student expenditure will have a higher proportion of expenditure on imported consumer goods and goods from elsewhere in the UK (e.g. through online shopping), there is still an observable reliance on local goods and services – such as cafes, pubs, restaurants, fast food outlets, taxi services or personal services such as hairdressing etc. The ‘snapshot’ analysis of the impact of expenditure will reflect the composition of those linkages.

\textbf{3.3} In this particular study, the impact of Welsh university expenditure on the UK as a whole was modelled and then analysis made of the proportion of that impact accruing to Wales. An additional Wales-specific gravity model was constructed to analyse the further flow of impact across Wales. Modelling of impact on and across Wales took into account the business and industry structure of Wales and the distances between different centres of activity. Consideration was also taken of activity likely to be more locally based, for instance provision of consumer-related goods and services of local pubs and coffee shops, grocery stores and personal services such as hairdressers.

\textbf{3.4 Output generated}

- The sector’s output in 2013/14 was £1.38 billion\textsuperscript{13}. Through ‘knock-on’ effects in that year the sector generated an additional £1.9 billion in other industries throughout the UK, with the majority (£1.41 billion) accruing in Welsh industries. This is shown in Figure 4.

\textsuperscript{13} Institutional revenue or ‘turnover’ equates to institutional output.
3.5 The impact was spread across a range of other industries, with an emphasis on manufacturing, wholesale and retail, and business activities. The spread of impact is determined by the types of goods and services bought by the universities and their staff – as well as from whom they are bought. A university may buy laboratory equipment direct from a manufacturer, for instance, or through a wholesaler. They may purchase legal services from a local firm of solicitors. University staff expenditure tends to be more oriented towards consumer goods and services, many of these from local companies and shops. Figure 5 shows the pattern of output impact across industries.

Figure 4: Total output generated by Welsh HEIs 2013/14
Source: Viewforth modelling system analysis

Figure 5: Secondary output generated by Welsh HEIs 2013/14
Source: Viewforth modelling system (2013) analysis
3.6 The impact is generated by institutional expenditure. By studying the volume of impact generated by 2013/14 sectoral expenditure it is possible to calculate ‘multipliers’. Analysis of the output impact enabled Type II output multipliers for the Welsh HEI sector to be derived. These were:

- UK: 2.36
- Wales: 2.02

3.7 In other words, every £1 million of Welsh university output will generate a further secondary output impact of £1.02 million in Wales plus a further £0.34 million outside Wales, in the rest of the UK.

3.8 Employment generated

- In addition to directly providing 16,638 full time equivalent (FTE) jobs, university expenditure generated additional jobs in other parts of the economy.

- Over 18,702 more FTE jobs were generated outside the universities. The majority of the additional jobs (14,558) are generated in Wales.

![Pie chart](image)

**Figure 6: Employment generated by the Welsh Universities 2013/14**

**Total 35,340 FTE jobs**

- University jobs 47%
- Jobs in the rest of Wales 41%
- Jobs in the rest of the UK 12%

**Source: Viewforth modelling system analysis**

3.9 Figure 7 shows the other industries within which the additional jobs would be generated. This pattern of employment generated has a particular emphasis on the wholesale and retail trade, business activities and public administration. This is because of a combination of two major factors – that Welsh universities had a relatively high output impact in these areas and also that these industries tend to be relatively labour intensive.
3.10 As with the analysis of output impact, it is possible to calculate ‘multiplier’ values.

- The Type II employment multipliers derived for the Welsh higher education sector were observed to be as follows:
  - UK 2.12
  - Wales 1.87

- In other words, for every 100 direct FTE jobs created in the university itself, another 112 UK jobs would be generated outside the universities in other industries, 87 of which would be in Wales.

- The total UK employment impact of £1m received by the Welsh HEIs is 25.63 FTE jobs. Every £1m of sectoral output\textsuperscript{14} creates:
  - 12.07 FTE jobs directly in the universities
  - plus 10.56 FTE additional (secondary impact or ‘knock-on’) jobs in Wales
  - plus 3.01 FTE secondary impact jobs in the rest of the UK

\textsuperscript{14} University output is definitionally equivalent to revenue or ‘turnover’.

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\textbf{Figure 7: Secondary employment generated by Welsh Universities}

\textit{Source: Viewforth modelling system (2013) analysis}
3.11 The universities’ employment impact on Wales can be seen to be significant, with the sector itself providing 16,638 full time equivalent jobs and its expenditure estimated to generate a further 14,558 jobs in Wales.

3.12 Section 2 (Figure 2) has shown how the sectoral employment profile covers a wide range of occupations and skill levels. Using Standard Occupational Classifications it is possible to compare the profile of higher education employment with that generated outside the universities. Figure 8 compares the sectoral occupational profile with that of the employment created outside the higher education institutions in Wales and in the rest of the UK.

![Comparison of occupational profile of employment generated by the Welsh HEIs in 2013/14](chart.png)

**Comparison of occupational profile of employment generated by the Welsh HEIs in 2013/14**

**Total 35,340 FTE jobs**

- Elementary occupations
- Process, plant and machine operatives
- Sales and customer service occupations
- Skilled trades occupations
- Administrative and secretarial occupations
- Skilled trades occupations
- Associate professional and technical occupations
- Professional occupations
- Managers, directors and senior officials

Source: Viewforth modelling system (2013) analysis

As Figure 8 illustrates, higher education employment is relatively specialised in high skilled ‘white collar’ jobs compared to jobs in the rest of the economy. This might be expected from the knowledge intensive nature of university activity. The relatively fewer ‘managerial’ occupations in universities compared to the jobs generated in the rest of the economy will tend to be more of a reflection of how universities classify their own staff – with many academics (who are classed as professionals, rather than managers) undertaking managerial roles.
4. GVA generated by the Welsh universities

The importance of higher education to the Welsh economy can be seen by its generation of significant levels of gross output and employment. However another key measure of the sector’s contribution to the economy is the GVA generated. GVA or ‘Gross Value Added’ is a measure of the value created by the sector – 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 sector’s direct GVA amounted to £904 million and through secondary or ‘knock-on’ effects it generated a further £922 million of GVA in other industries across the UK (£677 million of GVA was related to Welsh industries).

![Secondary GVA generated by Welsh Universities 2013/14](chart)

Source: Viewforth modelling system analysis

Welsh universities generated Welsh GVA of £1.58 billion in total (direct plus secondary), which was equivalent to around 3% of all 2013 Welsh GVA\(^\text{15}\). A further £0.25 billion of GVA was generated in the rest of the UK, bringing total GVA generated (direct plus secondary) to £1.83 billion.

\[^{15}\] 2013 Welsh GVA was £52.07 billion (StatsWales 2014)
5. The impact of off-campus student expenditure

5.1 As well as providing educational opportunities for Welsh students, with around half of all students coming from Wales, Welsh universities attract a substantial number of students from the rest of the UK and from overseas. 28% come from the rest of the UK and 19% from other countries. The international dimension of Welsh higher education is regarded as of considerable value to Wales, in terms of making international connections and acting as a bridge between Wales and the global economy. The Welsh Government’s Policy Statement on Higher Education (2013) highlighted the importance to Wales of the international links created by the Welsh universities, increasing the country’s presence on the world stage with the additional economic and cultural benefits that could bring. By attracting students from abroad, the higher education sector is contributing, both immediately and in the longer term, to the goal of raising the country’s profile and attracting investment. The students themselves can be regarded as ‘long stay visitors’, spending money in the region. They also attract and regularly pull in short stay leisure visitors (parents, relations, and friends) who spend money on hotel accommodation and local amenities. Active alumni networks can also help make such benefits a longer lasting phenomenon, attracting alumni back to Wales and building international links. Encouraging domestic students to develop an international outlook is also considered to be important, with universities encouraging domestic Welsh students and staff to participate in international exchange and research collaborations.

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16 HESA data on Welsh university students now includes Open University students studying in Wales so there is a slightly higher proportion of Welsh students recorded as studying in Wales than in previous years.
5.2 International Student Expenditure

The current strength of Welsh higher education institutions in attracting students from further afield to study in Wales also means they are attracting additional money into Wales and boosting export earnings.

- In 2013/14 Welsh universities attracted over 25,605 students from outside the UK. The fees paid by international students to the universities are captured in the university accounts and their impact is included in analysis of the overall institutional impact at sectoral level. (Non EU students alone paid the universities over £143 million in fee income in 2013/14.) Payments to the universities for Halls of Residence accommodation, or money spent in university cafeteria, bars etc. are likewise captured in the institutional 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 2013/14 this off-campus expenditure of international students was estimated as £303 million.\(^{17}\) 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 UK economy and are export earnings.

- The impact of non-EU and EU students can be observed separately. The off-campus expenditure of non EU students generated £360 million of output (of which £269.4

\(^{17}\) See Appendix Two for details of how international student expenditure was estimated.
million was in Wales) and over 3,046 full time equivalent jobs throughout the UK (of which 2,257 were in Wales). Non EU student off-campus expenditure generated nearly £167 million of GVA in the UK (£122 million in Wales).

- The off campus expenditure of students from the rest of the EU generated nearly £95 million of output in the UK (of which £71 million was in Wales). 802 full time equivalent jobs were generated in the UK (594 in Wales). EU students generated nearly £44 million of UK GVA (£32 million in Wales).

5.3 Students from the rest of the UK

- In 2013/14, there were 38,620 students from the rest of the UK (outside Wales) registered at Welsh universities\(^\text{18}\). The expenditure of students from outside Wales - while it is not additional to the UK economy as a whole - can be regarded as an injection into the Welsh economy. Consideration of this element of impact is legitimate in terms of regional policy evaluation.
- The off-campus expenditure of the 38,620 students from the rest of the UK studying at Welsh higher education institutions was estimated to be £401 million.
- This off-campus expenditure of students from the rest of the UK generated £451 million of output in Wales and over 3,776 jobs in Wales.
- The off-campus expenditure of students from the rest of the UK generated £204 million of Welsh GVA.

5.4 Welsh Students

One of the distinctive aspects of the Welsh higher education sector is its strong Welsh identity and its commitment to raising the skills base of Wales through providing educational opportunities to domestic residents, thereby ensuring they have access to higher education without having to leave Wales. This can be of particular importance in more rural or remote areas such as the North East of Wales. In 2013/14, 72,910 Welsh-domiciled students studied at universities in Wales\(^\text{19}\).

The expenditure of students from Wales is not additional to the Welsh economy. However there is an arguable case that the universities ensure that this expenditure is retained within the region, rather than the students moving away from Wales.

Student expenditure can be very important to the local and regional economy and is always seen by local businesses as a core part of their own revenue stream. There is a visible

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18 Source: HESA Students 2013/14
19 This includes Open University students studying in Wales
impact on the areas surrounding a university. The most casual observer can see the plethora of bars, cafes and shops and other services that spring up to serve the student population. Local landlords also benefit from the need for rented accommodation. Therefore it is worth analysing the impact of domestic student expenditure because its immediate impact can be very real at a local level.

- The off-campus expenditure of Welsh domiciled students studying at Welsh universities was estimated to be £907 million.
- The off-campus expenditure of these students generated £1.02 billion of output and around 8,533 jobs in Wales. Much impact is likely to accrue to the area closest to the Universities and where there are local shopping facilities e.g. in local bars, cafes and clubs, in grocery stores, on local public transport and taxis, etc. The next section of this report considers the spread of impact across Wales, and reveals where there tends to be greater impact in the areas immediately surrounding universities.
- The off-campus personal expenditure of Welsh students generated £460 million of Welsh GVA.

<table>
<thead>
<tr>
<th></th>
<th>Estimated off campus expenditure (£m)</th>
<th>Output Impact on Wales (£m)</th>
<th>Output Impact on Rest of UK (£m)</th>
<th>Jobs generated in Wales (FTE)</th>
<th>Jobs generated in rest of UK (FTE)</th>
<th>GVA generated in Welsh Industries (£m)</th>
<th>GVA generated in rest of UK (£m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-EU students</td>
<td>239.8</td>
<td>269.4</td>
<td>90.6</td>
<td>2257</td>
<td>789</td>
<td>121.6</td>
<td>45.3</td>
</tr>
<tr>
<td>Rest of EU students</td>
<td>63.2</td>
<td>70.9</td>
<td>23.9</td>
<td>594</td>
<td>208</td>
<td>32</td>
<td>11.9</td>
</tr>
<tr>
<td>Rest of UK students</td>
<td>401.2</td>
<td>450.6</td>
<td>N/A*</td>
<td>3776</td>
<td>N/A*</td>
<td>203.5</td>
<td>N/A</td>
</tr>
<tr>
<td>Welsh students</td>
<td>906.6</td>
<td>1018.2</td>
<td>N/A*</td>
<td>8533</td>
<td>N/A*</td>
<td>459.8</td>
<td>N/A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1610.8</td>
<td>1809.1</td>
<td>33.5</td>
<td>15160</td>
<td>997</td>
<td>816.9</td>
<td>57.2</td>
</tr>
</tbody>
</table>

Figure 12: The impact of off-campus expenditure of university students in Wales 2013/14

Source Viewforth Modelling System Analysis

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20 This is the ‘off-campus’ personal expenditure of students. It does not include monies paid to the universities for catering, residence and related items, which are included in university accounts and reflected in university impact.
*NOTE: Impact generated by international students is additional to both the UK and Welsh economies. Impact of students from the rest of the UK is included here on the basis that the Welsh universities attracted RUK students and their expenditure into Wales and hence it is an injection into the Welsh economy. Analysis of domestic Welsh student expenditure is also included here on the basis that the universities retained these Welsh students and their expenditure in Wales. In both the case of RUK students and Welsh students, it is the impact on Wales that is important, impact on RUK is not relevant as it is not additional to the UK economy and could be regarded as displacement.

5.5 Impact of international visitors

Along with attracting international students, universities also attract a range of other international visitors - both business and leisure - every year. As organisations with an international outlook and with research connections across the globe, universities regularly attract business visitors on individual research visits, study visits or for participation in academic and learned society conferences. The important role that universities can play in attracting business tourism is increasingly recognised and encouraged in many cities cross the UK with Convention Bureaux frequently establishing dedicated ‘Ambassador Programmes’ to work with university staff in attracting major academic conferences – some of which can have several thousand delegates to the city\(^\text{21}\). This can – in Glasgow for instance – also depend on the availability of local facilities including hotel space and the existence of dedicated conference centres. The ongoing development of the new Wales International Convention Centre, in Newport, will provide the type of facility that can successfully host major conferences and it is likely that the role of the Welsh universities in helping to attract international business visitors will visibly become more important in future. However there was no reliable source of data available to enable robust estimates of business visitors to, or associated with, Welsh universities and hence the impact of these visits was not included in the analysis. However there is also a clear stream of international leisure visitors associated with the universities, for whom some estimates can be made. These are the family and friends of current and graduating international students, who come to Wales as tourists to visit students, attend graduation ceremonies and other university events. The universities do not formally collect data on such visitors. However estimates can be made through analysis of the International Passenger Survey data, combined with data from the Annual Population Survey and HESA data on international student numbers.

To estimate the numbers of leisure visitors we drew on numbers of international visitors to Wales in 2014 reported through the IPS and Travel Trends (2015), who indicated that their

\(^{21}\) E.g. The Glasgow Ambassador Programme http://conventions.peoplemakeglasgow.com/glasgow-conference-ambassador-programme/
primary purpose of visit was to see family and friends. The Annual Population Survey (2015) also provides estimates of the resident population of different nationalities in Wales. It was assumed that visitors to friends and family were visiting people of the same nationality as themselves. Combining data on the resident international population with the numbers of current students of the same nationalities enabled a further estimate of the proportion of visits to friends and family that were likely to have been associated with the international student population rather than to other international residents in Wales. For instance only 10% of the ‘friends and family’ visits to Wales from other European Countries were estimated to have been associated with European students studying in Wales, but around 37% of North American ‘friends and family’ visits were considered to be to students, with 40% of ‘friends and family’ visits from other countries considered to have been made to students. The estimated expenditure of visitors was also made drawing on the IPS and Travel Trends data. Overall this resulted in an estimate of 50,180 international visits in 2013/14 attracted as a result of a friend or family member studying in Wales, with an average spend per visit of £479.

The impact of this expenditure was modelled and the results were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Generated in Wales</th>
<th>Generated in rest of UK</th>
<th>Total generated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>£23.5m</td>
<td>£7.9m</td>
<td>£31.4m</td>
</tr>
<tr>
<td>Jobs</td>
<td>197 FTE</td>
<td>69 FTE</td>
<td>266 FTE</td>
</tr>
<tr>
<td>GVA</td>
<td>£10.6m</td>
<td>£4m</td>
<td>£14.6m</td>
</tr>
</tbody>
</table>

Figure 13: Additional impact of expenditure of short-term international visitors associated with international students in Wales

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22 As these visitors are assumed to be visiting university students, the total expenditure figure was reduced prior to modelling (by 13%) in the same proportion as student expenditure, to reflect possible payments they may have made for overnight accommodation or catering in the universities (this would already be included in the university impact).
6. Overall Impact on Wales of the Universities and their Students

6.1 This study focussed on Welsh universities as businesses and the Welsh university sector as an industry in itself, generating jobs and output through its expenditure. A summary of the results for the modelled analysis of impact on Wales as a whole and on the rest of the UK are summarised in Figures 14 and 15. Figure 16 shows the overall impact on Welsh GVA. The study shows Welsh higher education to be of significant economic importance to Wales bringing immediate benefits to the country in terms of output generated and jobs created. Section 7 of this report goes further to explore the pattern of impact and how this is distributed around Wales.

<table>
<thead>
<tr>
<th></th>
<th>Direct (£ m)</th>
<th>Knock-on' impact on UK* (£m)</th>
<th>Of which accruing to Wales (£m)</th>
<th>Total UK Impact (Direct &amp; 'Knock-on') (£m)</th>
<th>Total Impact on Wales (Direct &amp; 'Knock-on') (£m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University</td>
<td>1379.0</td>
<td>1881.3</td>
<td>1406.8</td>
<td>3260.2</td>
<td>2785.8</td>
</tr>
<tr>
<td>Plus Non EU students</td>
<td>0.0</td>
<td>360.0</td>
<td>269.4</td>
<td>360.0</td>
<td>269.4</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1379.0</td>
<td>2241.3</td>
<td>1676.2</td>
<td>3620.3</td>
<td>3055.2</td>
</tr>
<tr>
<td>Plus EU Students</td>
<td>0.0</td>
<td>94.8</td>
<td>70.9</td>
<td>94.8</td>
<td>70.9</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1379.0</td>
<td>2336.1</td>
<td>1747.1</td>
<td>3715.1</td>
<td>3126.1</td>
</tr>
<tr>
<td>Plus Rest of UK Students</td>
<td>0.0</td>
<td>450.6</td>
<td>450.6</td>
<td>450.6</td>
<td>450.6</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1379.0</td>
<td>2786.7</td>
<td>2197.7</td>
<td>4165.7</td>
<td>3576.7</td>
</tr>
<tr>
<td>Plus Welsh Students</td>
<td>0.0</td>
<td>1018.2</td>
<td>1018.2</td>
<td>1018.2</td>
<td>1018.2</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1379.0</td>
<td>3804.9</td>
<td>3216.0</td>
<td>5183.9</td>
<td>4594.9</td>
</tr>
<tr>
<td>Plus International Visitors</td>
<td>0.0</td>
<td>31.4</td>
<td>23.5</td>
<td>31.4</td>
<td>23.5</td>
</tr>
<tr>
<td>Total Combined Impact</td>
<td>1379.0</td>
<td>3836.3</td>
<td>3239.5</td>
<td>5215.3</td>
<td>4618.4</td>
</tr>
</tbody>
</table>

Figure 14: The total impact of Welsh university activity in 2013/14: Summary of Output generated

Source Viewforth Modelling System Analysis

*Because of the effects of displacement, the impact on UK output for both RUK students and Welsh students is assumed to be equal to the impact on Welsh output.
Overall Employment Impact

The total combined impact on Welsh employment of the universities and their students came to 46,357 FTE jobs. This was equivalent to 3.4% of all 2013 Welsh employment\(^{23}\).

<table>
<thead>
<tr>
<th></th>
<th>Direct employment (FTEs)</th>
<th>Knock-on’ impact on UK* (FTEs)</th>
<th>Of which accruing to Wales (FTEs)</th>
<th>Total UK impact (Direct &amp; ’Knock-on’) (FTEs)</th>
<th>Total impact on Wales (Direct &amp; ’Knock-on’) (FTEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University</td>
<td>16638</td>
<td>18702</td>
<td>14558</td>
<td>35340</td>
<td>31196</td>
</tr>
<tr>
<td>Plus Non EU Students</td>
<td>0</td>
<td>3046</td>
<td>2257</td>
<td>3046</td>
<td>2257</td>
</tr>
<tr>
<td>Subtotal</td>
<td>16638</td>
<td>21749</td>
<td>16816</td>
<td>38387</td>
<td>33454</td>
</tr>
<tr>
<td>Plus EU Students</td>
<td>0</td>
<td>802</td>
<td>594</td>
<td>802</td>
<td>594</td>
</tr>
<tr>
<td>Subtotal</td>
<td>16638</td>
<td>22551</td>
<td>17410</td>
<td>39189</td>
<td>34048</td>
</tr>
<tr>
<td>Plus Rest of UK Students</td>
<td>0</td>
<td>3776</td>
<td>3776</td>
<td>3776</td>
<td>3776</td>
</tr>
<tr>
<td>Subtotal</td>
<td>16638</td>
<td>26327</td>
<td>21186</td>
<td>42965</td>
<td>37824</td>
</tr>
<tr>
<td>Plus Welsh Students</td>
<td>0</td>
<td>8533</td>
<td>8533</td>
<td>8533</td>
<td>8533</td>
</tr>
<tr>
<td>Subtotal</td>
<td>16638</td>
<td>34860</td>
<td>29719</td>
<td>51498</td>
<td>46357</td>
</tr>
<tr>
<td>Plus International Visitors</td>
<td>0</td>
<td>266</td>
<td>197</td>
<td>266</td>
<td>197</td>
</tr>
<tr>
<td>Total Combined Impact</td>
<td>16638</td>
<td>35126</td>
<td>29916</td>
<td>51764</td>
<td>46554</td>
</tr>
</tbody>
</table>

Figure 15: The total impact of Welsh university activity in 2013/14: Summary of Employment Generated

*Source: Viewforth Modelling System Analysis*

*Because of the effects of displacement, the impact on UK jobs for both RUK students and Welsh students is assumed to be equal to the impact on Welsh jobs.*

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\(^{23}\) Total Welsh Workplace employment in 2013 stood at 1,350,800 (StatsWales 2014) As the modelled analysis relates to FTE jobs and the workplace employment measure is based on job instances, the proportion of actual workplace jobs supported by the Universities and their students will be greater than 3.3%.
Overall impact on GVA

Figure 16 summarises the results for impact on Welsh GVA.

The universities alone directly generated £904 million of GVA in 2013/14 and the total combined impact on Wales GVA of the Universities and their students and visitors came to around £2.4 billion. This was equivalent to 4.6% of all 2013 Wales GVA. (Total Wales GVA in 2013 was £52.07 billion (StatsWales2014.))

<table>
<thead>
<tr>
<th></th>
<th>Direct (£ m)</th>
<th>Secondary (£m)</th>
<th>Total (£m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University</td>
<td>904.1</td>
<td>677.0</td>
<td>1581.1</td>
</tr>
<tr>
<td>Plus Non EU Students</td>
<td>0.0</td>
<td>121.6</td>
<td>121.6</td>
</tr>
<tr>
<td>Subtotal</td>
<td>904.1</td>
<td>798.7</td>
<td>1702.8</td>
</tr>
<tr>
<td>Plus EU Students</td>
<td>0.0</td>
<td>32.0</td>
<td>32.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>904.075</td>
<td>830.728</td>
<td>1734.803</td>
</tr>
<tr>
<td>Plus Rest of UK Students</td>
<td>0.0</td>
<td>203.5</td>
<td>203.5</td>
</tr>
<tr>
<td>Subtotal</td>
<td>904.1</td>
<td>1034.2</td>
<td>1938.3</td>
</tr>
<tr>
<td>Plus Local Students</td>
<td>0.0</td>
<td>459.8</td>
<td>459.8</td>
</tr>
<tr>
<td>Subtotal</td>
<td>904.1</td>
<td>1494.1</td>
<td>2398.1</td>
</tr>
<tr>
<td>Plus International Visitors</td>
<td>0.0</td>
<td>10.6</td>
<td>10.6</td>
</tr>
<tr>
<td><strong>Total Combined Impact</strong></td>
<td><strong>904.1</strong></td>
<td><strong>1504.7</strong></td>
<td><strong>2408.7</strong></td>
</tr>
</tbody>
</table>

Figure 16 : Overall impact on Welsh GVA(Universities and Students) 2013/14

Source: Derived from university accounts from HESA Finance Plus 2013/14 together with analysis of the secondary impacts modelled in the Viewforth modelling system.
7. Distribution of impact across Wales

7.1 This study was extended to include, for the very first time, analysis of the distribution of university economic impact across Wales. This involved the construction of a Wales-specific ‘gravity model’ which combined official data on the industry and labour market structure of Wales together with information on the travel distance from the major centres of university activity.

7.2 Observing how higher education economic impact flows across Wales shows how all parts of Wales benefit from the impact of the spending of the universities, university students and their visitors. While the areas immediately surrounding centres of university activity benefit most directly, economic impact flows further afield even to areas that do not have a university. This reflects the way in which the expenditure impact ripples through the economy, so that even locations relatively distant from the immediate centre of higher education activity experience some impact. The concept is illustrated below, using the example of university activity in Swansea as the initial source of impact.

The ‘ripple effect’

Figure 17: Ripple effect of impact across Wales (using impact originating in Swansea as an example)
This effect is replicated for all of areas where higher education activity originated. In this analysis, nine centres of university activity were identified and used as the originating point of impact, which then spread across Wales in a ripple effect\textsuperscript{24}.

Larger centres of employment and population tend to attract concentrations of expenditure impact. This is moderated by distance - the further the distance travelled from the original source of impact, the weaker the ripples of impact become. The resultant analysis reflects the demographics, industry and employment characteristics of Wales as well as geographical location factors.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure18.png}
\caption{Impact ‘spillovers’ across Wales, with impact originating in areas of higher education activity}
\end{figure}

7.3. The analysis undertaken reflects the total impact of Welsh universities on Wales and includes ‘spillovers’ across regions. For instance the overall economic impact of the university sector observed to be in Swansea is not only and wholly attributable to the higher education activity directly in Swansea (Swansea University and University of Trinity St David

\textsuperscript{24} The initial ‘impact point’ included the main geographical areas where there was observable Welsh university activity. In 2014 these were: Aberystwyth, Bangor, Cardiff, Carmarthen, Lampeter, Newport, Pontypridd, Swansea, Wrexham.
activity in Swansea) but also includes ripples from the impact of other universities. The impact observed in Gwynedd includes not only the impact of Bangor University but also economic ripple effects from other universities in Wales including e.g. impact originating from Aberystwyth University, the University of South Wales, Cardiff University and so on.

**Results of local impact analysis**

The results for detailed analysis of impact across the 22 Local Authority areas of Wales are presented below. Figure 19 shows how the university sector impact flows out across and affects all areas of Wales. Total impact came to £4.6 billion and was distributed across Wales.

![Economic impact of Welsh Higher Education 2014/15 Distribution of output impact across Wales (£million)](image)

**Figure 19: Distribution of Output Impact - Local effects across Wales (£m)**

*Source: Viewforth Gravity Modelling System Analysis*
The largest output impact can be seen in Cardiff and Swansea, where there are particularly high concentrations of university activity. However all parts of Wales were positively affected – even the area with the lowest volume of impact (Anglesey) still benefitted with £41.5 million of output generated in its local industries by the knock-on impact of the expenditure of Universities, their students and visitors. Figure 20 presents the distribution of employment impact.

**Figure 20: Distribution of Employment Impact – Local effects across Wales**

Source: Viewforth Gravity Modelling System Analysis

In Figure 20, the total employment generated includes both jobs inside the universities and jobs generated through the effects of the spending of universities, university students and their visitors. The areas highlighted in red are those where there is an actual university presence or university activity in that area. It can be seen that the impact on employment is greater in those areas than in others - which is predominantly as a result of the jobs directly provided by the universities in those areas. However, the impact is still significant even in areas that do not have a university presence, with over 25% of all jobs (11,783) being generated in ‘on-university’ areas. This made an important impact in those areas. For
instance the 396 jobs generated by the Universities in Anglesey is equivalent to 1.6% of all Anglesey employment. Figure 21 shows the employment generated by the universities in each area and the proportion of that area’s employment that university-generated impact represents. Across all of Wales the jobs generated by the universities in Wales makes up between 1% and 8.4% of employment in a given area, with highest proportionate impact being seen in Ceredigion, followed by Cardiff, Swansea and Gwynedd. Figure 21 is an indicator of the relative importance to a particular area of university-generated employment. It places the employment generated by the Universities in the context of more general employment in that area.

<table>
<thead>
<tr>
<th>Numbered by relative importance to employment in that area</th>
<th>Area of Wales</th>
<th>FTE Jobs generated by University activity</th>
<th>% of employment in the area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ceredigion</td>
<td>3027</td>
<td>8.4</td>
</tr>
<tr>
<td>2</td>
<td>Cardiff</td>
<td>15047</td>
<td>6.6</td>
</tr>
<tr>
<td>3</td>
<td>Swansea</td>
<td>6482</td>
<td>5.6</td>
</tr>
<tr>
<td>4</td>
<td>Gwynedd</td>
<td>2851</td>
<td>4.7</td>
</tr>
<tr>
<td>5</td>
<td>Rhondda Cynon Taf</td>
<td>3227</td>
<td>4.3</td>
</tr>
<tr>
<td>6</td>
<td>Newport</td>
<td>2433</td>
<td>3.4</td>
</tr>
<tr>
<td>7</td>
<td>Wrexham</td>
<td>1704</td>
<td>2.6</td>
</tr>
<tr>
<td>8</td>
<td>Merthyr Tydfil</td>
<td>534</td>
<td>2.3</td>
</tr>
<tr>
<td>9</td>
<td>Caerphilly</td>
<td>1349</td>
<td>2.3</td>
</tr>
<tr>
<td>10</td>
<td>Vale of Glamorgan</td>
<td>813</td>
<td>2.1</td>
</tr>
<tr>
<td>11</td>
<td>Carmarthenshire</td>
<td>1512</td>
<td>2.0</td>
</tr>
<tr>
<td>12</td>
<td>Neath Port Talbot</td>
<td>941</td>
<td>2.0</td>
</tr>
<tr>
<td>13</td>
<td>Torfaen</td>
<td>703</td>
<td>1.9</td>
</tr>
<tr>
<td>14</td>
<td>Bridgend</td>
<td>1248</td>
<td>1.9</td>
</tr>
<tr>
<td>15</td>
<td>Monmouthshire</td>
<td>839</td>
<td>1.9</td>
</tr>
<tr>
<td>16</td>
<td>Blaenau Gwent</td>
<td>339</td>
<td>1.7</td>
</tr>
<tr>
<td>17</td>
<td>Anglesey</td>
<td>396</td>
<td>1.6</td>
</tr>
<tr>
<td>18</td>
<td>Conwy</td>
<td>679</td>
<td>1.6</td>
</tr>
<tr>
<td>19</td>
<td>Flintshire</td>
<td>693</td>
<td>1.2</td>
</tr>
<tr>
<td>20</td>
<td>Denbighshire</td>
<td>488</td>
<td>1.1</td>
</tr>
<tr>
<td>21</td>
<td>Powys</td>
<td>707</td>
<td>1.1</td>
</tr>
<tr>
<td>22</td>
<td>Pembrokeshire</td>
<td>542</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>ALL WALES</strong></td>
<td><strong>46552</strong></td>
<td><strong>3.4</strong></td>
<td></td>
</tr>
</tbody>
</table>

Figure 21: Jobs generated by the expenditure of Universities, their students and visitors across Wales, by relative employment impact in each area

---

25 Derived from 2013 Data on Workforce employment by Local Authority (StatsWales)
Figure 22 presents the distribution of GVA generated through the impact of the university sector. This is a very similar – but not identical – pattern to the distribution of output and jobs. The total impact came to £2.4 billion and was distributed across Wales. The largest impact was in Cardiff, but there was still a notable impact across all other parts of Wales, with £597 million - nearly 25% - generated in local authority areas that did not have a university presence.

**Figure 22: Distribution of GVA Impact – Local effects across Wales (£m)**

*Source: Viewforth Gravity Modelling System Analysis*
Figure 23 compares the percentage distribution of impact across Wales in terms of output, jobs and GVA. Three examples are highlighted - in Cardiff, Swansea and Gwynedd - where the area's impact share of output, jobs and GVA is not identical.

Figure 23: Comparison of the percentage distribution across Wales of Welsh university impact

Source: Viewforth Gravity Modelling System Analysis
Variations in impact share can be seen in areas where there is a university presence and is a result of the direct impact of university activities in those areas. As labour intensive organisations with high skill levels, universities tend to have relatively high direct GVA compared to other enterprises and also tend to be important employers in the area. In Gwynedd the direct effect of the University of Bangor as a local employer will be the major reason for the slightly greater effect on jobs in the area compared to the impact on output. In the case of Cardiff and Swansea, there is a particular high concentration of direct university activity in those areas (e.g. Cardiff, Cardiff Metropolitan and Swansea universities as well as some of the activity related to the University of Trinity St David in Swansea and some related to the University of South Wales in Cardiff) and this is reflected in the higher comparative GVA. The pattern in areas without a university presence reflects the business, labour market and industrial structure in those areas.

8. Conclusions and reflections

8.1 This study demonstrates the baseline economic impact of the Welsh universities as large businesses and large employers. Welsh higher education has undergone significant changes in recent years in terms of its configuration and organisation, with the Welsh Government aiming to create ‘a stronger and more competitive sector’ and to support economic growth and innovation potential.

8.2 This study highlights that while the sector is of considerable importance to Wales in supporting economic development through education and research it is also a major economic actor and industry in itself, generating output, jobs and GVA, supporting communities across all of Wales. The results clearly demonstrate that, irrespective of any wider impact generated by the nature of higher education activities, higher education institutional expenditure and that of higher education staff and students have an immediate positive economic impact and this impact is significant for Wales, with ‘spillover’ benefits for other parts of the UK.

8.3 Key points to note include:

- Universities in Wales directly employ 16,638 people in occupations spanning the whole spectrum of skills and qualifications. Through ‘Knock-on’ effects an additional 18,702 FTE jobs are created in other industries across the UK, with 4,558 of these in Wales.

26 HEFCW Remit Letter 2013-14
• Institutional expenditure generates substantial additional employment, output and GVA in other industries in Wales and in other parts of the UK.

• The sector operates in a global market, attracting students from outside the UK and thereby generating export earnings. The off-campus expenditure of international students (EU and Non-EU) creates an additional 3,848 jobs across the UK, with 2,851 in Wales.

• The universities also attract a significant proportion of students from the rest of the UK, which brings additional benefits to the local and regional economies, generating 3,776 jobs in Wales through their off-campus expenditure.

• The universities’ provision of educational opportunities for Welsh students and the sector’s commitment to promoting the Welsh economy and community has meant that it also retains significant numbers of students in Wales who may otherwise have left to study elsewhere. The off-campus and personal expenditure of Welsh students is substantial, and this may be regarded as having been retained within Wales and supporting 8,533 jobs.

• The total employment generated in Wales by the higher education institutions, their staff and students amounted to over 51,498 jobs, 46,357 of which are in Wales. This was equivalent to around 3.4% of all 2013 Welsh employment27.

• Welsh universities, together with their students, generated Welsh GVA of nearly £2.4 billion, equivalent to 4.6% of total 2013 Welsh GVA28.

• The universities are of significant economic importance in their immediate host localities, with clear impacts on local employment, with many local businesses dependent on the spending of the universities, their staff, and students.

• However the Welsh universities have a positive economic effect across the whole of Wales, with even areas that do not have a university benefitting from the impact of university expenditure.

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27 Total Welsh Workplace employment in 2013 stood at 1,350,800 (StatsWales 2014). As the modelled analysis relates to FTE jobs and the workplace employment measure is based on job instances, the proportion of actual workplace jobs supported by the Universities and their students will be greater than 3.3%.

28 Total Welsh GVA in 2013 was £52.07 billion (StatsWales 2014).
Appendix One: Methodology and Data Sources

The primary focus of the study was the Welsh university sector as an industry and the impact generated by university sector activity during the academic and financial year 2013/14. The study also examined the impact of the off-campus expenditure of international students who were studying at universities in Wales in that year\(^{29}\). Analysis also included the impact of international visitors (friends and family) to international students in Wales. It further analysed the additional injection into the Welsh economy of the expenditure of students from other parts of the UK. The expenditure of local Welsh students was also analysed, on the basis that it is retained in the region by the universities.

There was a three-stage approach to the estimation of the economic impact of the universities. The impact of the Welsh universities on the UK economy was modelled, using a purpose-designed economic model of the UK. Analysis was then undertaken, using a Location Quotient approach, to estimate the share of the institutional impact on the UK likely to have accrued to the region. Finally, in order to refine the analysis of Welsh impact and to take into account the distribution of university impact across Wales, a Wales-specific ‘gravity-model’ was developed. The ‘gravity modelling’ approach developed for this study involved firstly identifying positive ‘mass’ or ‘attraction’ variables (in this case population and employment) in all 22 of Welsh Local Authority areas (LAU1) included in StatsWales. These were combined with negative ‘distance’ variables reflecting the estimated travel time (by road) between the main ‘centres of higher education activity’ and the main administrative centre of each of the regions. Travel time was based on estimates given by the web-based ‘Distancefrom’ route mapping site (http://www.distancesfrom.com/) which gives both distance and average road travel time between any two UK points.

A modelled combination of these variables was applied to derive estimates of the pattern of impact distribution. A large proportion of the impact of each individual university impact will inevitably accrue to the immediate surrounding area. However the gravity-modelling approach enables analysis of how far impact may also be felt through ‘knock-on effects’ in industries across Wales. This particular approach to gravity-modelling, allowed ‘spillover’ effects from regions to be incorporated. That is to say the final results for impact on a particular area e.g. Gwynedd will not only include impact of the university activity in that area (such as the University of Bangor) but also include ripple effect impact from the other universities across Wales.

The UK input-output model used was a ‘Type II’ input-output model based on actual UK data derived from the UK Input-Output Tables (Office of National Statistics) together with Labour Force Survey and Annual Business Inquiry data and the 2008 UK Bluebook. The modelling

\(^{29}\) In this context ‘International students’ refers to all students whose permanent domicile is recorded as outside the UK, including other parts of the EU as well as non EU students.
system was updated in 2013 to reflect productivity increases and related economic changes. Additional data sources included the Producers’ Prices Index, ONS Regional Accounts and Welsh specific data from the Welsh Government Statistics through StatsWales. The core modelling system is based on SIC 2003 classifications and this has been used for the one digit aggregate presentation of results. The modelling system used was purpose-designed for UK higher education institutions and is the most recent version of the Universities UK modelling system. The technical specification for the model is included in *The impact of universities on the UK economy* Kelly, McLellan and McNicoll Universities UK 2014.

**Other data sources and issues arising**

The main source of University data was data published by the Higher Education Statistics Agency (HESA) relating to HE Finance, staffing and students. Estimates were made of International income based on HESA data together with tacit knowledge and observations from previous detailed studies of the income sources of individual universities (making the assumption that the broad pattern of other income sources, e.g. for Residence and Catering, is likely to be similar for most institutions).

**Estimations of Student Expenditure**

Students studying at the Open University for Wales were included in the overall analysis of student expenditure. However financial and staff data pertaining to the Open University in Wales were not available (as this is formally allocated to the OU main site in Milton Keynes) and hence the Open University was not included in the institutional analysis.

Student off-campus expenditure was estimated by drawing on the most recently available Student Income and Expenditure survey for Wales (2007), uprating this to 2013 using the Consumer Price Index. Student types were mapped (part-time/fulltime; undergraduate/postgraduate) were mapped to the relevant expenditure types. Expenditure included for undergraduate students was for 9 months of the year and postgraduates included 12 months expenditure. International Student off-campus expenditure was estimated by drawing on the detailed analysis of International student expenditure carried out by the Department for Business, Skills and Innovation (BIS) for the HM Government *International Education Strategy Paper International Education: Global Growth and Prosperity* (July 2013) and uprated by the CPI. Overall student spend figures were adjusted downwards to reflect the estimated amount (13%) spent on campus (for residence, catering etc.) This was to avoid double counting. Amounts spent on campus are already included in the university impact.) The analysis by BIS of international student expenditure took account of ‘UK-sourced’ income e.g. from part-time work and excluded UK-sourced income so that
only expenditure from non-UK sources was counted – hence can be reliably classed as export earnings. The estimated expenditure relevant here is of off-campus expenditure i.e. excludes any fee payments to the university; account is also taken of university accommodation charges or other payments to the university e.g. cafeteria etc. Therefore there is no double-counting.
Appendix Two: References and Bibliography

Higher Education Statistics Agency (HESA) (2013) publications on Finance, Staff and Students
Higher Education Funding Council for Wales publications https://www.hefcw.ac.uk/home/home.aspx
Department for Business, Innovation and Skills
Universities UK
Office of National Statistics Regional Accounts
Office of National Statistics Regional Summary of Labour Markets Headline Indicators
Office of National Statistics Business Register and Employment Survey (BRES)
Welsh Government, Minister for Education and Skills HEFCW Remit Letter to the Chair of HEFCW March 2014
Welsh Government, Minister for Education and Skills HEFCW Remit Letter to the Chair of HEFCW March 2013
Welsh Government Policy Statement on Higher Education (June 2013)
Appendix Three: Universities included in the analysis

Aberystwyth University
Bangor University
Cardiff University
Cardiff Metropolitan University
Glyndŵr University
Swansea University
University of Wales Trinity St David
University of South Wales
Plus Central Functions of the University of Wales (Finance and Staffing)

The overall student numbers and off-campus expenditure analysis also included Higher Education students registered as studying with the Open University in Wales
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