

The Economic Impact of Higher Education in Wales

JANUARY 2018



Viewforth Consulting Ltd



The economic impact of Higher Education in Wales Report to Universities Wales

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Acknowledgements

This study was commissioned by Universities Wales and thanks are due to Universities Wales for insight into a number of aspects of Welsh Higher Education.

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

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The Economic Impact of Welsh Universities

A study into the economic aspects and impact of the higher education sector in Wales for the year 2015-2016

Universities in Wales are playing a crucial role in powering the Welsh economy and generating growth, supporting communities and individuals across the nation.

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 further economic activity. Whilst universities clearly support economic development in Wales through education and research, this study demonstrates the wide-reaching, immediate, and positive impact of university expenditure, and that of university staff

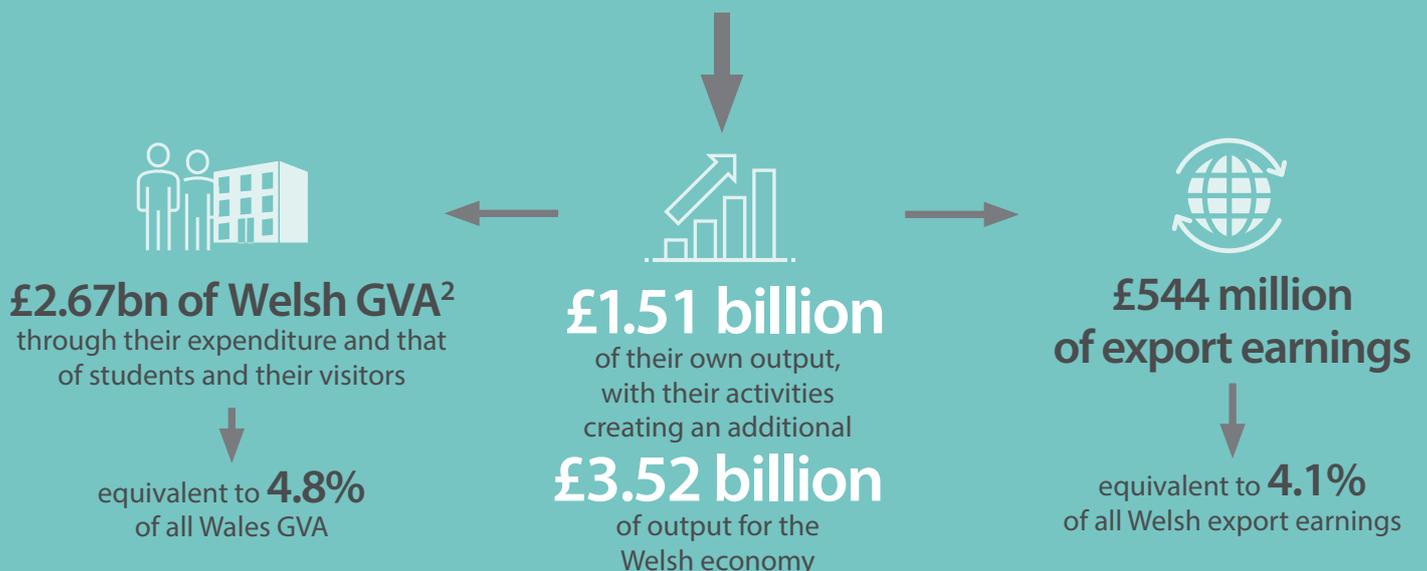
and students, on the entire Welsh economy. This work also demonstrates the distribution of economic impact across all the regions of Wales, and the contribution universities make to their local communities, as well as the wider Welsh economy, through supporting thousands of 'knock-on' jobs and expenditure beyond the university campuses.

Powering the Welsh economy

Welsh universities generated over

£5 BILLION

of output:¹



When compared to the rest of the UK, Welsh higher education is of greater relative importance to Wales, forming an even larger part of its economic base, than the UK higher education sector is to the UK overall.

1. Institutional output and output generated in other industries together with the expenditure of their staff, students, international students and visitors totaled £5.04 billion.
2. Gross Value Added

Supporting Welsh communities

All parts of Wales share in the benefits of our universities, with impact spread across Local Authority boundaries and to areas which do not host a university.

Adding value:

Of the **£2.67bn of Welsh GVA** generated by Welsh universities and their students

£561 million

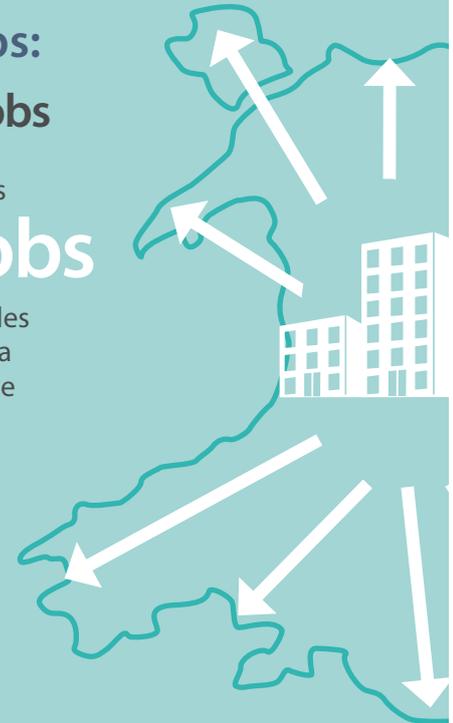
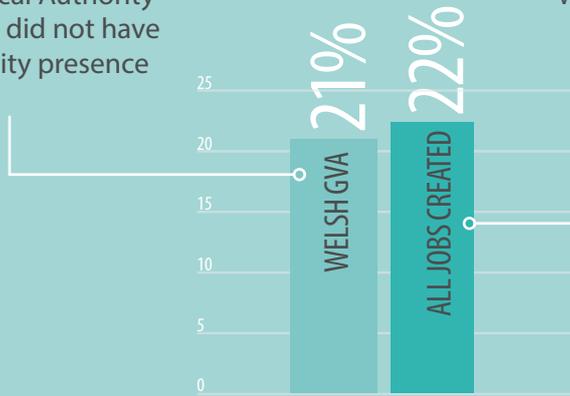
was in Local Authority areas that did not have a university presence

Creating jobs:

Of the **49,216 jobs** created by Welsh universities

11,024 jobs

were in parts of Wales that did not have a university presence

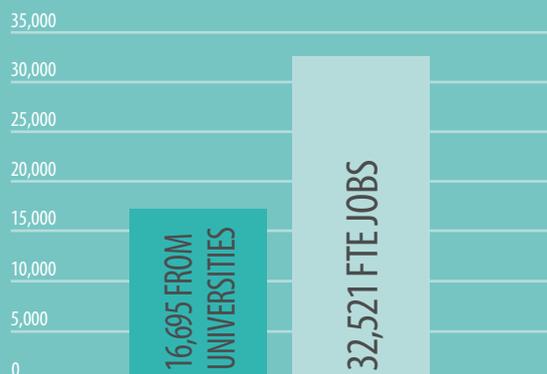


Creating jobs

Overall, Welsh universities generated **49,216 jobs** in Wales

equivalent to **3.5%** of all 2015 Welsh workplace employment

Of these jobs, universities directly provided **16,695 Full Time Equivalent jobs** across a range of occupations and skill levels.



An additional **32,521 Full Time Equivalent jobs** were generated in Wales - outside the universities - due to the expenditure of the institutions and their staff and students.

01

Introduction



- 1.1** The role that universities play in the Welsh economy has been a subject of considerable policy debate in Wales in recent years. The university sector in itself forms an important element of the Welsh economic base, generating output and jobs and contributing to Welsh GDP. 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. When compared to the rest of the UK, Welsh higher education is of greater relative importance to Wales, forming an even larger part of its economic base, than the UK higher education sector is to the UK overall.²
- 1.2** There has been a fundamental reshaping of the university landscape in recent years including a number of university mergers. The Higher Education (Wales) Act 2015 gave greater regulatory powers to the Higher Education Funding Council for Wales (HEFCW) and within the last year a number of major reviews have been published. These include the far-reaching Review of Higher Education Funding and Student Finance arrangements in Wales (The 'Diamond Review'³) as well as the extensive report by Professor Ellen Hazelkorn, *Towards 2030*,⁴ on the overall framework for all of tertiary education, which seeks to better align the post-compulsory system with the social, cultural and economic needs of Wales.
- 1.3** It is against this background that this 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. Following on from earlier 2013 and 2015 studies (undertaken within the same methodological framework) it updates and extends the earlier analyses, providing 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.

Methodological approach

1.4 The study examined key economic features of the Welsh higher education sector⁵ in the academic and financial year 2015-16 (the most recent year for which data are available), 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 core model used was a modelling system based on input-output analysis and purpose designed for analysis of higher education impact. The same approach using input-output analysis has been used to previously 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 and Republic of Ireland institutions. An additional 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 first developed for the 2015 study. A new and updated Welsh gravity model was constructed specifically for this study. The gravity model combines a range of mass and distance variables to examine how impact from centres of higher education activity flows out across Wales. A fuller description of the methodology and data sources used is included as Appendix One.

¹ Policy Statement on Higher Education Welsh Government 2013.

² Taking the GVA generated by the Universities alone (i.e. excluding off campus expenditure of students), in 2015/16 the Universities in Wales generated the equivalent of nearly 3.2% of all 2015 Welsh GVA compared to the 2.4% of UK GVA generated by the entire UK HE Sector (Universities UK: The impact of Universities on the UK economy 2014).

³ <http://gov.wales/topics/educationandskills/highereducation/reviews/review-of-he-funding-and-student-finance-arrangements/?lang=en>.

⁴ Hazelkorn, E (2016) Towards 2030: A Framework for building a world-class post-compulsory education system for Wales.

Study coverage

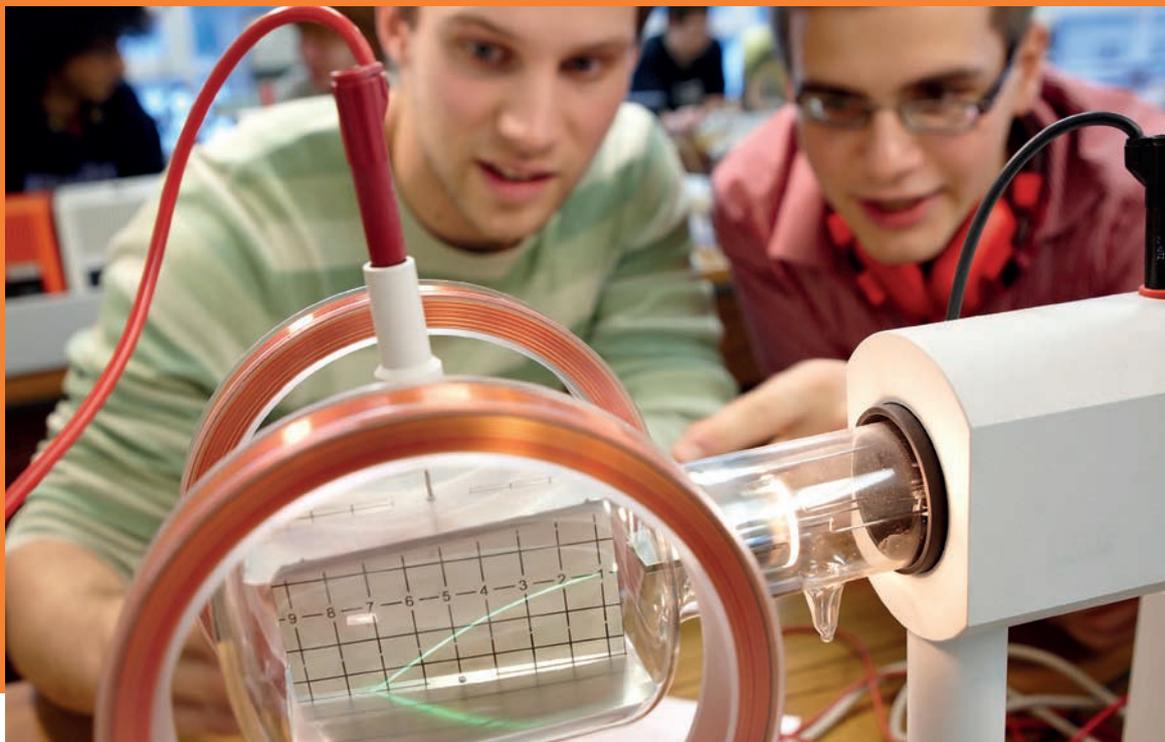
1.5 The study includes the 8 universities that are included in the 2015/16 Higher Education Statistics Agency (HESA) data together with the central functions of the University of Wales. The analysis of student data additionally includes Open University students in Wales. A list of the included institutions can be found in appendix three. In the study year the 8 institutions included ranged in size from Cardiff University, with over 30,600 students, to Wrexham Glyndŵr University with just over 6,600 students. There is academic provision across all major areas including Arts and Humanities, Creative Industries, Science and Technology, Business, Education, Social Sciences, Medicine and Healthcare. All of the Welsh institutions have an international profile and attract students from across the globe to study in Wales.

1.6 The study examines the impact of the expenditure of the Welsh universities together with that of their international and domestic students. For the purposes of economic impact analysis the overall definition of international students includes both non-EU students and students from the rest of the EU (outside the UK), since money brought into Wales from other EU countries counts as export earnings just as much as does money from non-EU countries. However, the impact of the non-EU students and rest of EU students are analysed separately as there are different policy issues associated with each group. It also includes analysis of the additional impact of short-term international visitors (from both non-EU and rest of EU countries) to Wales who are visiting friends and family studying in Wales. It additionally includes extended analysis of the distribution of economic impact across Wales, which had first been presented in the 2015 report.

⁵ 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.

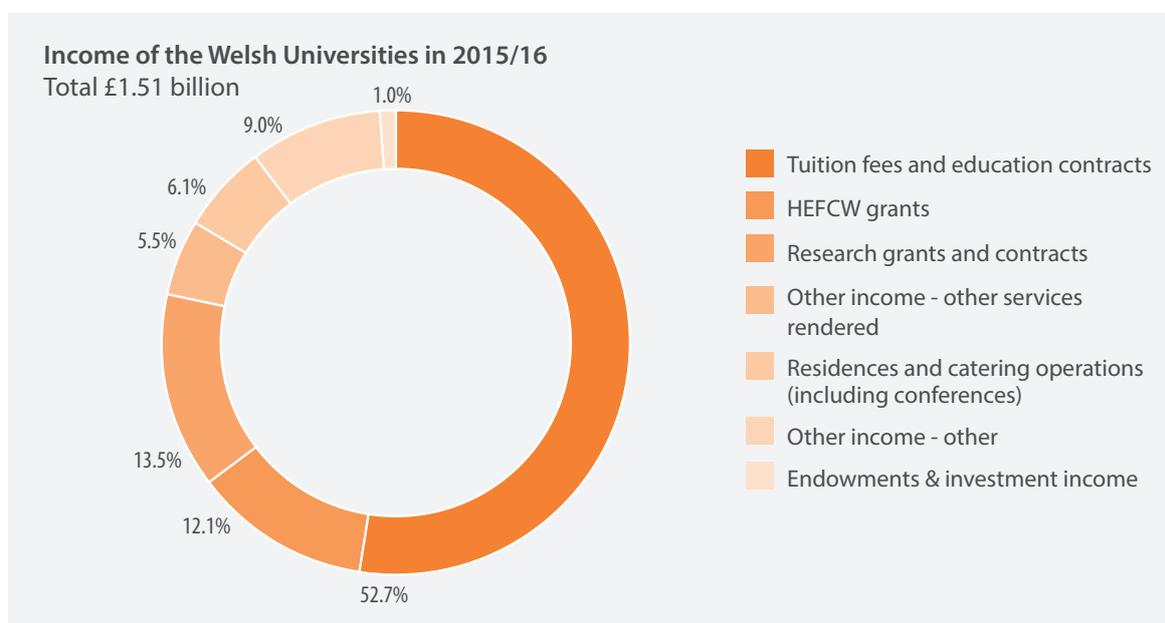
02

Key economic characteristics of the sector



Income

Figure 1: Sectoral income



Source: HESA Finances of Higher Education Providers 2015/16

2.1 The Welsh higher education sector had total revenue of £1.51 billion in the study year. Figure 1 shows how the total income was earned for a diverse range of educational and related services. 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) and earn money from a range of sources.

- 2.2 The largest part of sectoral income (78.3%) can be seen as being earned for delivering teaching and research (Higher Education Funding Council for Wales (HEFCW) grants, Tuition Fees and Research Income.) This was from a range of sources including from the funding council grants for teaching and research, individual student fee payments and research contracts with private and international clients. As well as money for teaching and research the sector also earned just over 20% of its income from other services including, for example, consultancy services, the provision of residence and catering services, conference support or facilities hire.
- 2.3 There has been some change in the balance of income sources since the last report, reflecting changes in the funding of Welsh higher education. There is proportionately less money coming in the form of HEFCW grants and proportionately more directly through tuition fees. Research income from grants and contracts (at £204.6 million or 13.5% of total income) has remained fairly constant as a proportion of overall income. The universities also receive funding for research support directly from HEFCW (£75.4 million in 2015/16 - part of the 12.1% HEFCW grants) distributed among universities on the basis of the quality ratings from the most recent Research Excellence Framework assessment.⁶
- 2.4 The Welsh Government has recently confirmed its commitment to continuing to provide direct research support through HEFCW, recognising that it *"is vital to support and grow the research and innovation base in Wales."*⁷ Donations, endowments & investments remain at around 1% - this is 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 fund-raising campaigns.

Export earnings

- 2.5 The sector's international revenue of £242 million⁸ together with the estimated off-campus expenditure of international students (£280 million) and the expenditure of international visitors to Wales associated with international students (£22 million)⁹ represents a total of £544 million of export earnings. This is an important contribution to the UK balance of trade and is equivalent value to 4.1% of 2016 Welsh Export of Goods.¹⁰

Employment

- 2.6 The sector directly provided 16,685 full time equivalent (FTE) jobs across a wide range of occupations – overall this is a similar number of staff in Welsh HE as two years earlier, although there have been noticeable changes underlying the total figure, with staff numbers in some of the universities contracting significantly. Future challenges to the sector on funding may see staff numbers dropping in the future in Wales and also in the rest of the UK. The occupational profile of university employment is shown in Figure 2. Unsurprisingly, professional occupations (to which all academics – professors, lecturers and researchers – belong) are the largest single type of occupation. However jobs are provided across a very wide range of occupations, including a range of skilled and semi-skilled jobs.

⁶ This is known as 'QR' Funding and is part of the 'dual support' framework for research whereby Universities receive direct quality-related research support from HEFCW and can also apply on a competitive basis to the Research Councils for specific project or programme support.

⁷ Welsh Government (2017) response to the recommendations from the Review of Student Support and Higher Education Funding in Wales (the 'Diamond Review').

⁸ This figure for university international revenue was derived from analysis of HESA 2015-16 finance data and includes non EU fees, an estimate of 'rest of EU' student fees paid from non-UK sources, 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.

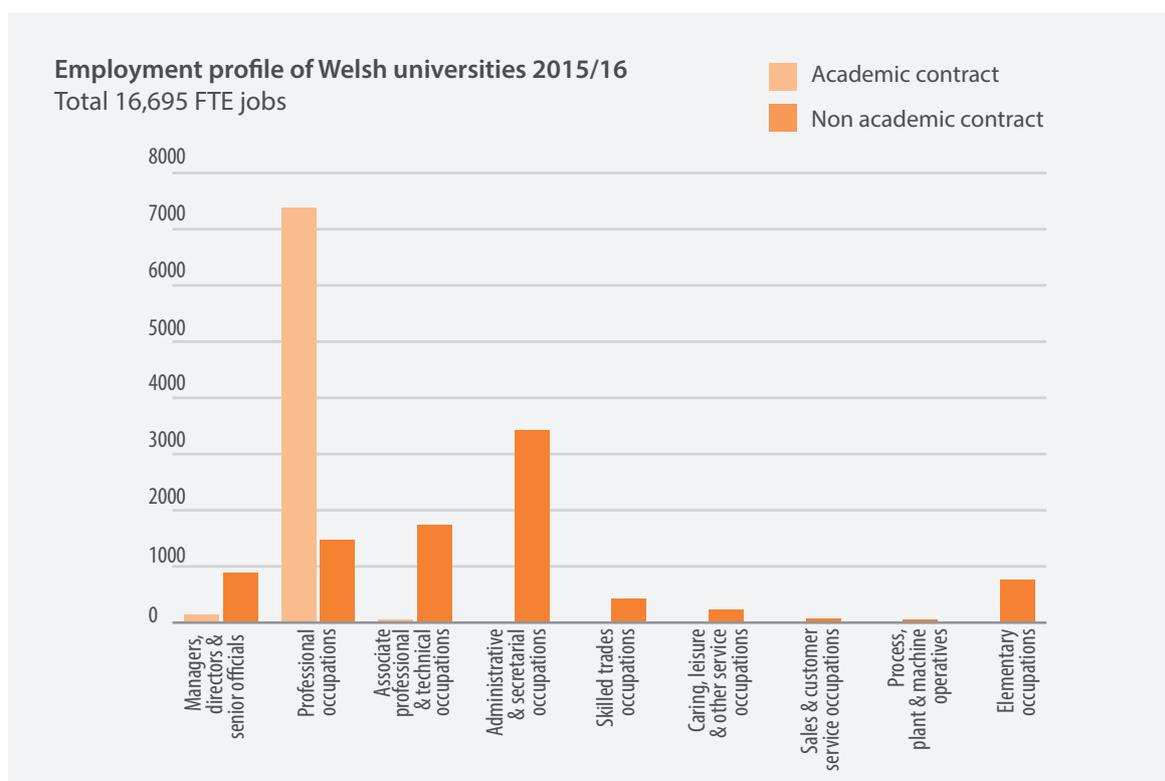
⁹ These only include an estimated number of visitors associated with international students i.e. visiting family and friends. It does not include the expenditure of any business visitors (business tourism) attracted by the universities, as there was insufficient data to make estimates of these.

¹⁰ StatsWales 2017. The 2016 value of Welsh Exports of Goods amounted to £13.253 billion.

2.7 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 and the employment opportunities it offers are

an important element of its role in the Welsh economy. As part of their role as responsible employers, the universities are committed to paying at least the Living Wage to all employees as well as, in July 2017, becoming signatories to the Welsh Government's Code of Practice Ethical Employment in Supply Chains.

Figure 2: Occupational profile of employment in Welsh HEIs



Source: HESA Staff in Higher Education 2015-16

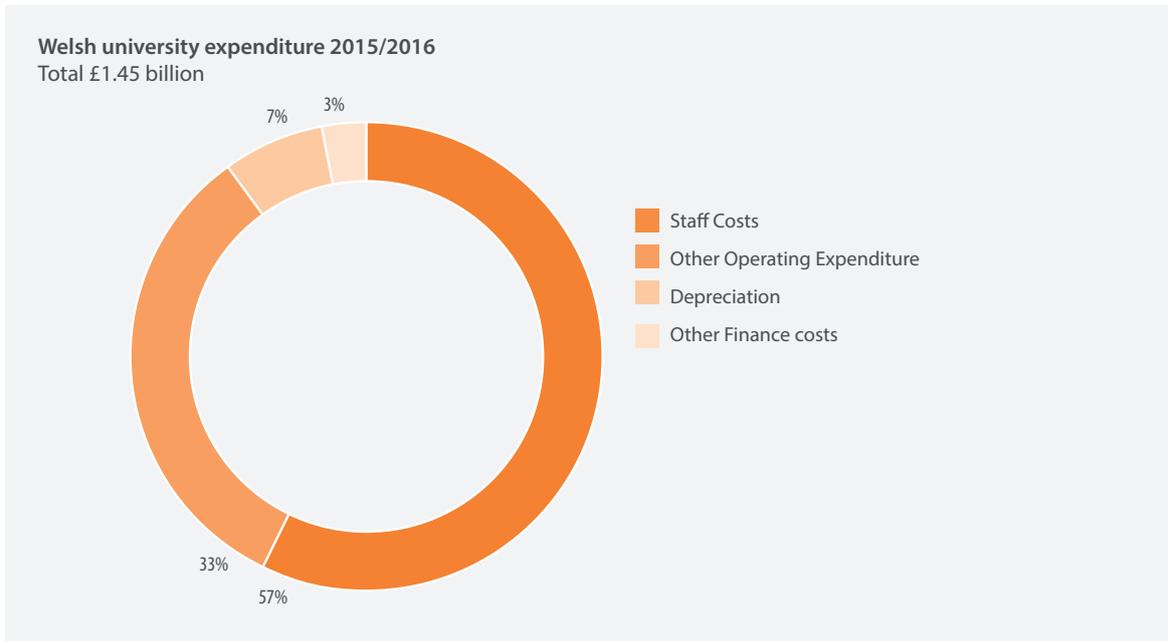
Expenditure

2.8 Welsh university expenditure, together with the expenditure of university staff and students, generates economic activity through secondary or 'knock-on' effects.

2.9 In 2015-16 the HESA data show a total expenditure (including staff salaries) of £1.45 billion.¹¹ General categories of spend-staff costs, other operating expenditure etc. are shown in Figure 3.

¹¹ As non-profit institutions, University institutional expenditure is normally very close to institutional income. Any surplus is reinvested in the institutions.

Figure 3: Sectoral expenditure

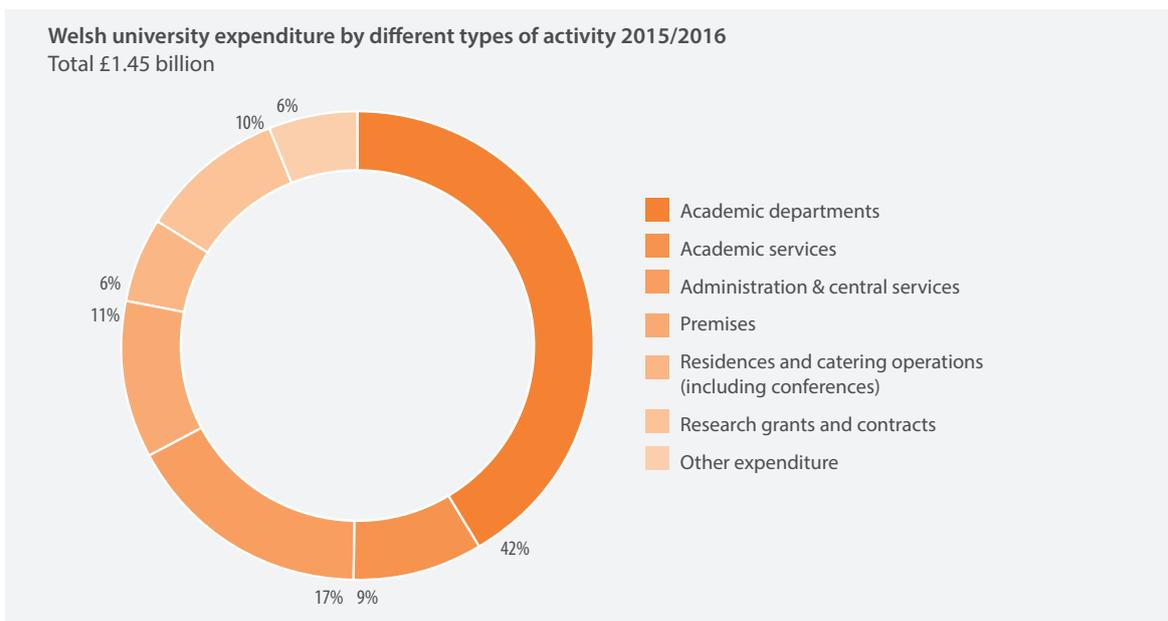


Source: HESA Finances of Higher Education Providers 2015/16

2.10 Figure 4 presents the allocations of expenditure by broad activity types. The majority of expenditure (61%) is incurred, as might normally be expected in universities, in supporting academic departments, research and

academic services. Expenditure on central administration (which includes, for example, things like student records, central admissions etc.) makes up 17%. Premises, catering and other expenditure make up the remaining 22%.

Figure 4: Sectoral expenditure by broad type of activity



Source: HESA Finances of Higher Education Providers 2015/16

03

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 Previous studies have shown that universities in the UK have a relatively high propensity to spend on UK, rather than imported, goods and services, generating greater regional economic impact than businesses that rely more heavily on imports.¹² Additionally, 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. Many of the universities also participate in the Local Supplier Development Project¹³ and work to build stronger local supply chains. The distributional impact analysis presented in Section 5 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.

3.3 Staff¹⁴ and student expenditure usually follows a slightly different pattern from institutional expenditure, being more consumer oriented. 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). However, there is still an obvious and 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 reflects those linkages.

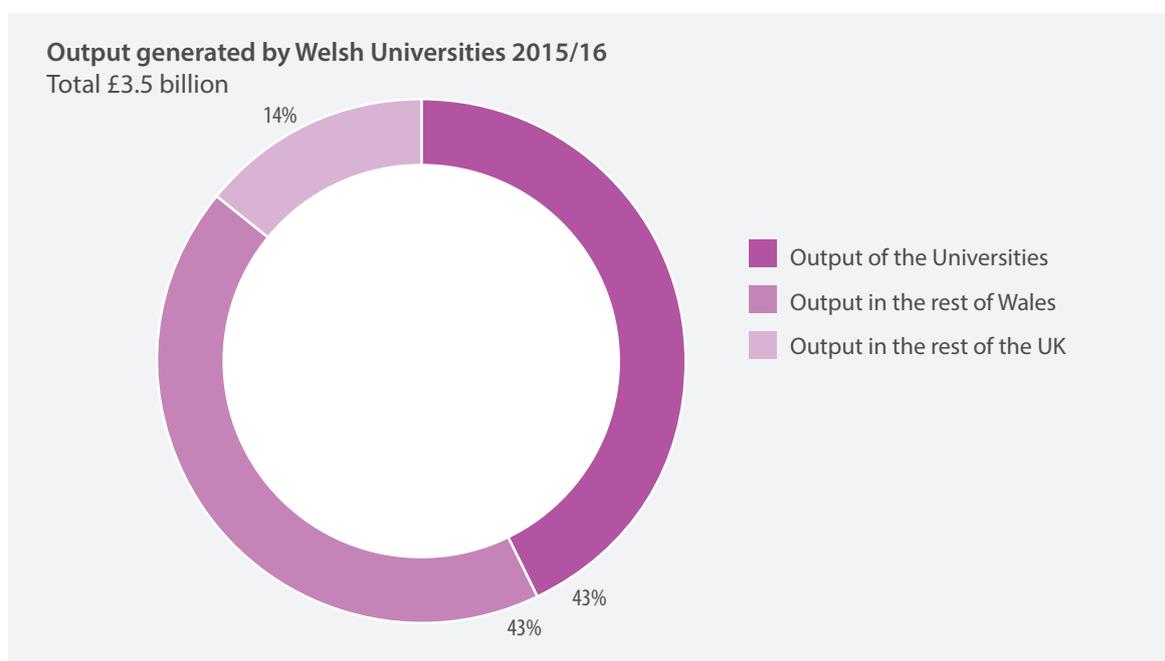
3.4 In this study, the impact of Welsh university expenditure on the UK as a whole was modelled and analysis made of the proportion of that impact accruing to Wales using location quotients. An

additional Wales-specific gravity model was then 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.

Output generated by the Welsh universities

3.5 The sector’s output in 2015/16 was £1.51 billion.¹⁵ Through ‘knock-on’ effects in that year the sector generated an additional £2.07 billion in other industries throughout the UK, with the majority (£1.51 billion – almost the same as the direct output)¹⁶ accruing in Welsh industries.

Figure 5: Total output generated by Welsh HEIs 2015/16



Source: Viewforth modelling system analysis (2017)

¹² See McNicoll, 1995 & 1997 Kelly et al 2006, 2009, 2014.

¹³ See for example the Procurement policy of the UWTSd on Local Supplier Development <http://www.uwtsd.ac.uk/corporate-services/procurement/>

¹⁴ The impact of staff expenditure is included within the modelling of university impact.

¹⁵ Institutional revenue or ‘turnover’ equates to institutional output.

¹⁶ These are the figures rounded to 2 decimal places. The secondary impact on Wales is not exactly the same as the sector’s direct output but is very close to it, with direct output being £1.5144 billion and impact on Wales being £1.5101 billion.

3.6 The impact is generated by institutional expenditure. By studying the total volume of impact generated by 2015/16 sectoral expenditure, it is possible to calculate ‘multipliers’ that show the relationship between the university’s direct output and that generated in other sectors. Multipliers are an outcome of the modelling process. Only tailored modelled analysis of the kind undertaken in this study can produce higher education specific multipliers.¹⁷ The Type II output multipliers for the Welsh HEI sector in 2015/16 were calculated. These were:

- UK: 2.33
- Wales: 2.0

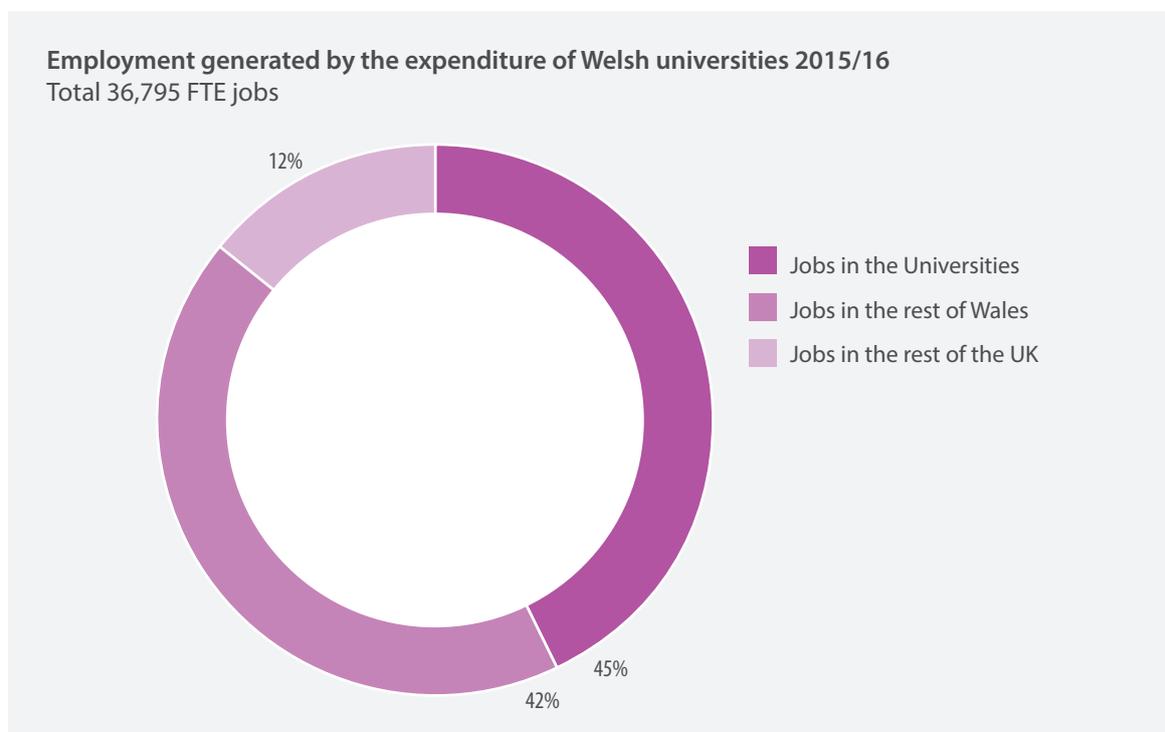
3.7 In other words, every £1 million of Welsh university output in 2015/16 generated a further secondary output impact of £1.0 million in Wales plus a further £0.33 million outside Wales, in the rest of the UK.

Employment generated by the expenditure of Welsh universities

3.8 In addition to directly providing 16,695 full time equivalent (FTE) jobs, university expenditure generated additional jobs in other parts of the economy.

3.9 Over 20,100 more FTE jobs were generated outside the universities. The majority of the additional jobs (15,635) are generated in Wales.

Figure 6: Employment generated by the expenditure of Welsh universities



Source: Viewforth modelling system analysis (2017)

¹⁷ This point is worth emphasising as there have been a number of studies of higher education impact in recent years that rely on ‘borrowing’ multipliers from other sectors, from other parts of the economy or from previous reports on higher education. Such studies are not undertaking original modelled analysis and at best are giving a ‘broad-brush’ picture of impact. The multipliers presented here, however, are the outcome of actual modelled analysis of the Welsh higher education sector in 2015/16.

3.10 As with the analysis of output impact, it is possible to calculate ‘multiplier’ values. The Type II employment multipliers for the Welsh higher education sector in 2015/16 were calculated as follows:

- UK 2.20
- Wales 1.94

3.11 In other words, for every 100 direct full time equivalent (FTE) jobs created in the University itself, another 120 UK jobs were generated outside the universities in other industries, 94 of which were in Wales.

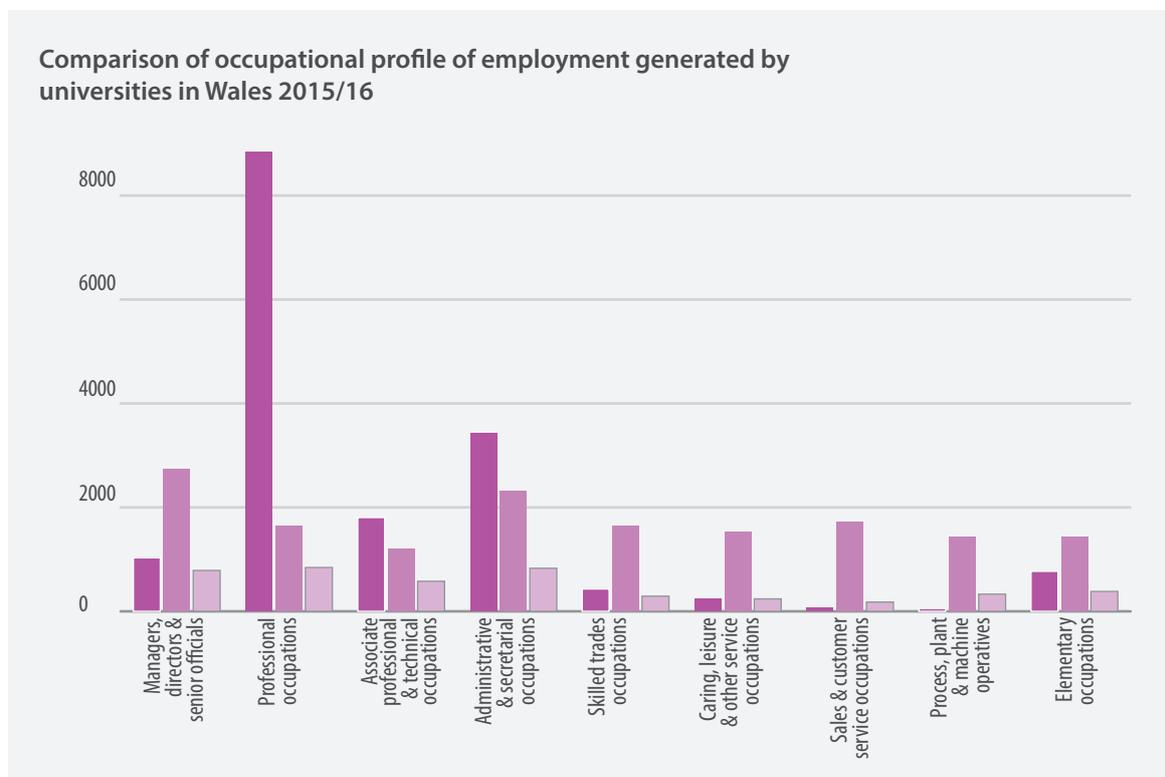
3.12 The total UK employment impact of £1 million received by the Welsh HEIs was 24.29 FTE jobs. Every £1 million of sectoral output¹⁸ created:

- 11.02 FTE jobs directly in the universities

- plus 10.32 FTE additional (secondary impact or ‘knock-on’) jobs in Wales
- plus 2.95 FTE secondary impact jobs in the rest of the UK

3.13 Section 2 (Figure 2) had 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 7 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.

Figure 7: Comparison of the occupational profile of the employment generated



Source: Viewforth modelling system analysis (2017)

¹⁸ University output is definitionally equivalent to revenue or ‘turnover’.

3.14 Universities provide high value jobs. As figure 7 illustrates, higher education employment is relatively specialised in high skilled ‘white collar’ jobs compared to jobs generated in the rest of the economy (jobs generated outside the university through the university’s expenditure tend to be more similar to the overall economy structure). This might be expected from the specialist and 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. Figure 7 illustrates the wide range of employment generated through the university supply chains. As the universities are signatories to the Welsh Government’s Code of Practice for Ethical Employment in Supply Chains this means that over time the universities will also help positively influence conditions of secondary generated employment.

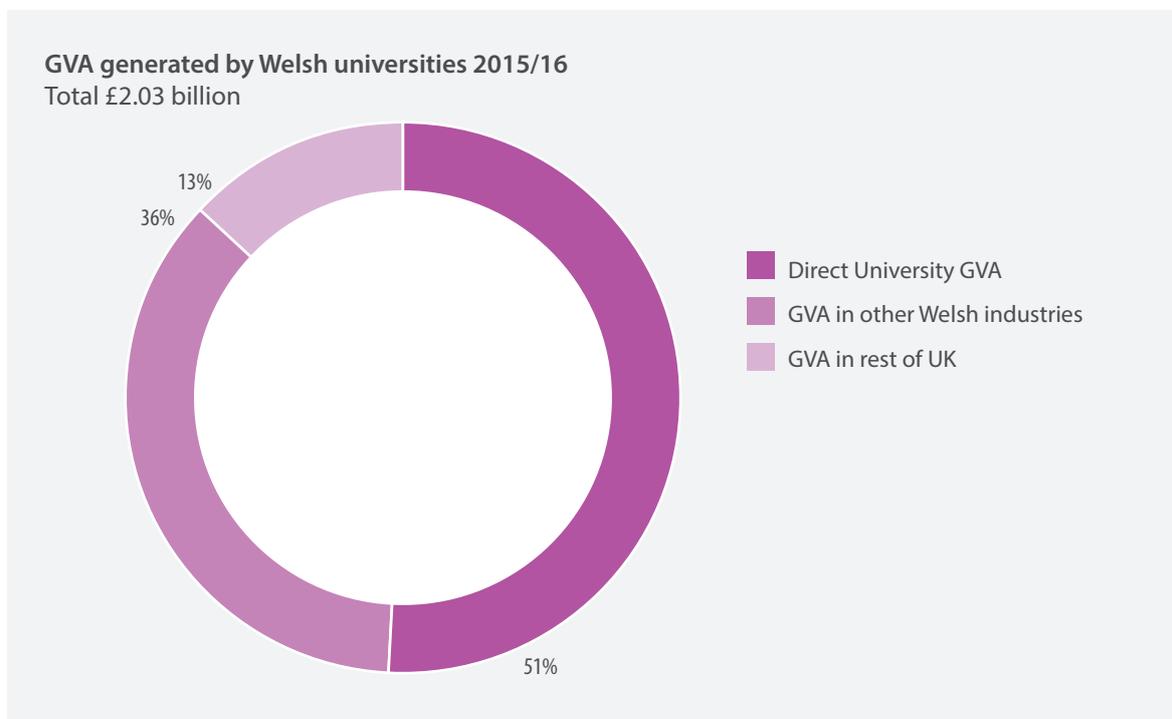
GVA generated by the Welsh universities

3.15 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 £1.04 billion and through secondary or ‘knock-on’ effects it generated a further £991 million of GVA in other industries across the UK (£729 million of GVA was related to Welsh industries). The £1.769 billion share of Welsh GVA (direct and secondary) was equivalent to around 3.1% of 2015 Welsh GVA.





Figure 8: Total GVA generated by the Welsh universities 2015/16



Source: Viewforth modelling system analysis

04

The impact of off-campus student expenditure



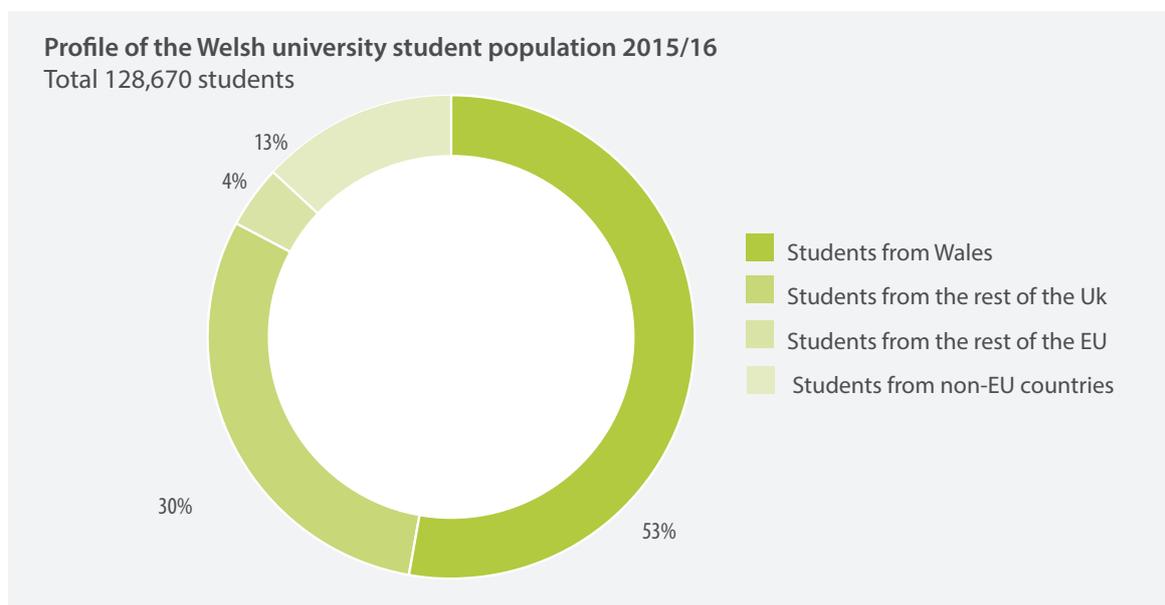
4.1 An additional and important aspect of the impact generated through a university's activities is the impact of student expenditure. Student expenditure can be very important to the local and regional economy and is always seen by local businesses as a core part of their own revenue stream. As well as paying fees to the university, students spend money on rent, food and other living expenses, much of which impacts on the local area. There is a visible 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.

4.2 There was a total (headcount) student population in Welsh universities of 128,670 in 2015/16.¹⁹ 53% came from Wales, 30% came from the rest of the UK, 4% from the rest of the EU and 13% from other countries.



¹⁹ Student data are taken from HESA 2015/16 and includes Wales based Open University students. The university finance flows associated with the students (tuition fees and so on) are not included in Wales data but are attributed to the main OU site in Milton Keynes.

Figure 9: Student profile by domicile of origin



Source: HESA (2017) *Students in Higher Education 2015/16*

4.3 Estimates were made of the personal expenditure²⁰ of the four different groups of students - Non EU students, students from the rest of the EU, students from other parts of the UK and domestic Welsh students - and the impact of their expenditure on the economy was modelled. The results for each group are presented below.

International students

4.4 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 recent consultation on the development of a post-compulsory education framework for Wales, *Public Good and a Prosperous Wales (2017)*, recognised the importance of making links and being both locally and internationally engaged. *"We need all of our educational and research*

institutions to make a contribution locally, while being aware and active internationally."

4.5 By attracting students from abroad, the higher education sector is contributing, both immediately and in the longer term, to the wider prosperity and wellbeing of Wales, raising the country's profile internationally, and attracting investment.

4.6 In economic terms students from both non-EU countries and students from the rest of the EU (outside the UK) bring international revenue into the country and all non-UK income (whether from the rest of the EU or from non-EU countries) is regarded as export earnings. Non-UK students bring considerable amounts of money into the UK economy every year. 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,

²⁰ Student off-campus expenditure was estimated by drawing on the most recently available Student Income and Expenditure survey for Wales (published 2017) and adjusted to 2015 expenditure using the Consumer Price Index. Student types were mapped (part-time/fulltime; undergraduate/postgraduate) 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 updated by the Consumer Price Index to 2015. To avoid double counting overall student spend figures were adjusted downwards to reflect the estimated amount spent on campus (for residence, catering etc), which varied according to different groups of students (for instance a relatively higher proportion of international students tend to stay in university accommodation compared to Welsh students.) and this gave the final 'off-campus' spend. 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.

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. Recent research has shown that studying and working abroad can have a positive impact on academic and career outcomes for the individual which also helps generate longer term economic benefits for society.²¹

- 4.7** In 2015/16 Welsh universities attracted over 22,190 students from outside the UK. The fees paid by non-UK 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 £150 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, all international students spend money off-campus. This can be on private sector rental, food, entertainment, consumer goods, travel etc. In 2015/16, the off-campus expenditure of international students was estimated as £280 million.²² 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. However the impact of non-EU and EU students was analysed separately as there are different policy issues surrounding each group of students.

For instance Non-EU students currently typically pay much higher fees than students from EU countries and are subject to stricter immigration rules.

International students from non-EU countries

- The off-campus expenditure of non EU students generated £318 million of output (of which £238 million was in Wales) and over 2,687 full time equivalent jobs throughout the UK (of which 1991 were in Wales).
- Non EU student off-campus expenditure generated nearly £147 million of GVA in the UK (£107 million in Wales).

Students from the rest of the EU

- The off campus expenditure of students from the rest of the EU generated over £110 million of output in the UK (of which £83 million was in Wales). 934 full time equivalent jobs were generated in the UK (692 in Wales).
- EU students generated over £51 million of UK GVA (£37 million in Wales).

Students from the rest of the UK

- 4.8** In 2015/16, there were 38,495 students from outside Wales registered at Welsh Universities.²³ 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.
- 4.9** The off-campus expenditure of the 38,495 students from the rest of the UK studying at Welsh higher education institutions was estimated to be £482 million.
- The off-campus expenditure of students from the rest of the UK generated £559 million of output in Wales and over 4,688 jobs in Wales.

²¹ See, for example Broadening Horizons: The Value of the overseas experience (British Council 2015) https://www.britishcouncil.org/sites/default/files/6.3_broadening-horizons-2015.pdf

²² The Economic Impact of International Students in Wales (November 2017): <http://www.uniswales.ac.uk/wp/media/Unis-Wales-international-student-research.pdf>

²³ Source: HESA Students in Higher Education Institutions 2015/16

- The off-campus expenditure of students from the rest of the UK generated £252 million of Welsh GVA.

Welsh students

4.10 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 2015/16, 67,990 Welsh-domiciled students studied at universities in Wales.²⁴ 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.

- 4.11** Welsh domiciled students spent an estimated £948 million off-campus on personal and living expenses.
- The off-campus expenditure of Welsh domiciled students studying at Welsh universities in 2015/16 was estimated to be £948 million.
 - This expenditure generated £1.12 billion of output and around 9,294 jobs in Wales.
 - The off-campus personal expenditure of Welsh students generated £501 million of Welsh GVA.

4.12 The impact of off-campus student expenditure is presented in Table 1.

Table 1:

Impact of off-campus expenditure of university students in Wales 2015/16							
	Estimated off campus expenditure (£m) ²⁵	Output Impact on Wales (£m)	Output Impact on rest of UK (£m)	Jobs generated in Wales (FTE)	Jobs generated in rest of UK (FTE)	GVA generated in Welsh industries (£m)	GVA generated in rest of UK (£m)
Non-EU students	208.77	237.63	79.97	1991	696	107.31	39.88
Rest of EU Students	71.08	82.54	27.78	692	242	37.28	13.85
Rest of UK students	481.76	559.44	N/A*	4688	N/A*	252.65	N/A
Welsh students	947.95	1108.98	N/A*	9294	N/A*	500.82	N/A
TOTAL	1709.56	1988.59	107.75	16665	938	898.06	53.73

Source: Viewforth Modelling System Analysis

*NOTE to Table: 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.

²⁴ This includes Open University students studying in Wales

²⁵ 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.

Impact of international visitors

- 4.12** 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.
- 4.13** The important role that universities can play in attracting business tourism is increasingly recognised and encouraged in many cities across the UK with convention bureaux frequently establishing dedicated 'Ambassador Programmes' to work with university staff in attracting major academic conferences. 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 become more visibly 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.
- 4.14** Nonetheless, 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.
- 4.15** To estimate the numbers of leisure visitors we drew on numbers of international visitors to Wales in 2016 reported through the IPS and *Travel Trends* (2017), who indicated that the primary purpose of visit was to see family and friends. The Annual Population Survey (2015) also provided 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.
- 4.16** For instance only 8% 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 21% of North American 'friends and family' visits were considered to be to students, with 35% 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 56,136 international visits in 2015/16 attracted as a result of a friend or family member studying in Wales, with an average spend per visit of £398. The impact of this expenditure was modelled and the results are presented in Table 2.

Table 2: Additional impact of expenditure of short-term international visitors associated with international students in Wales

	Generated in Wales	Generated in rest of UK	Total generated in UK
Output	£26.41m	£8.89m	£35.30m
Jobs	221 FTE	77 FTE	298 FTE
GVA	£11.93m	£4.43m	£16.36m

Source: Viewforth Modelling System Analysis

Overall impact on Wales of the universities and their students

4.17 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 Tables 3 and 4 and 5.

Overall output impact

Table 3: The total impact of Welsh university activity in 2015/16: summary of output generated.

	Direct	Knock-on' Impact on UK* £m	Of which accruing to Wales £m	Total UK Impact (Direct & 'Knock-on')£m	Total Impact on Wales (Direct & 'Knock-on') £m
University	1514.4	2017.6	1510.1	3532.0	3024.5
Plus Non EU students	0.0	317.6	237.6	317.6	237.6
Subtotal	1514.4	2335.2	1747.7	3849.6	3262.1
Plus EU Students	0.0	110.3	82.5	110.3	82.5
Subtotal	1514.4	2445.5	1830.2	3959.9	3344.7
Plus Rest of UK Students	0.0	559.4	559.4	559.4	559.4
Subtotal	1514.4	3004.9	2389.7	4519.4	3904.1
Plus Welsh Students	0.0	1109.0	1109.0	1109.0	1109.0
Subtotal	1514.4	4113.9	3498.7	5628.3	5013.1
Plus International Visitors	0.0	35.3	26.4	35.3	26.4
Total Combined Impact	1514.4	4149.2	3525.1	5663.6	5039.5

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

4.19 The total combined impact on Welsh employment of the universities, their students and international visitors came to 49,216 FTE jobs. This was equivalent to 3.5% of all 2015 Welsh employment.²⁶

Table 4: The total impact of Welsh university activity in 2015/16: Summary of employment

	Direct Employment (FTEs)	Knock-on' impact on UK* (FTEs)	Of which accruing to Wales £m (FTEs)	Total UK Impact (Direct & 'Knock-on')£m (FTEs)	Total Impact on Wales (Direct & 'Knock-on') £m (FTEs)
University	16695	20100	15635	36795	32330
Plus Non EU students	0	2688	1991	2688	1991
Subtotal	16695	22788	17626	39483	34321
Plus EU Students	0	934	692	934	692
Subtotal	16695	23722	18318	40417	35013
Plus Rest of UK Students	0	4688	4688	4688	4688
Subtotal	16695	28410	23006	45105	39701
Plus Welsh Students	0	9294	9294	9294	9294
Subtotal	16695	37704	32300	54399	48995
Plus International Visitors	0	298	221	298	221
Total Combined Impact	16695	38002	32521	54697	49216

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.

²⁶ Total Welsh Workplace employment in 2015 stood at 1,405,600 (StatsWales 2016) 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 is likely to be greater than 3.9%.

Overall impact on GVA

4.20 The universities alone directly generated £1.03 billion of GVA in 2015/16 and the total combined impact on Wales GVA of the universities and their students and visitors came to around £2.67 billion. This was equivalent to 4.8% of all 2013 Wales GVA. (Total Wales GVA in 2015 was £55.7billion (ONS 2016).

Table 5: Overall impact on GVA (universities and students) 2015/16

	Direct (£ m)	Knock-on' Impact on UK* (FTEs)	Of which accruing to Wales £m (FTEs)	Total UK Impact (Direct & 'Knock-on')£m (FTEs)	Total Impact on Wales (Direct & 'Knock-on') £m (FTEs)
University	1033.60	991.26	728.72	2024.86	1762.32
Plus Non EU students	0.00	147.19	107.31	147.19	107.31
Subtotal	1033.60	1138.45	836.03	2172.05	1869.63
Plus EU Students	0.00	51.13	37.28	51.13	37.28
Subtotal	1033.60	1189.58	873.31	2223.18	1906.91
Plus Rest of UK Students	0.00	252.65	252.65	252.65	252.65
Subtotal	1033.60	1442.23	1125.96	2475.83	2159.56
Plus Welsh Students	0.00	500.82	500.82	500.82	500.82
Subtotal	1033.60	1943.05	1626.78	2976.65	2660.38
Plus International Visitors	0.00	16.36	11.93	16.36	11.93
Total Combined Impact	1033.60	1959.41	1638.71	2993.01	2672.31

Source: Viewforth Modelling System Analysis

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

05

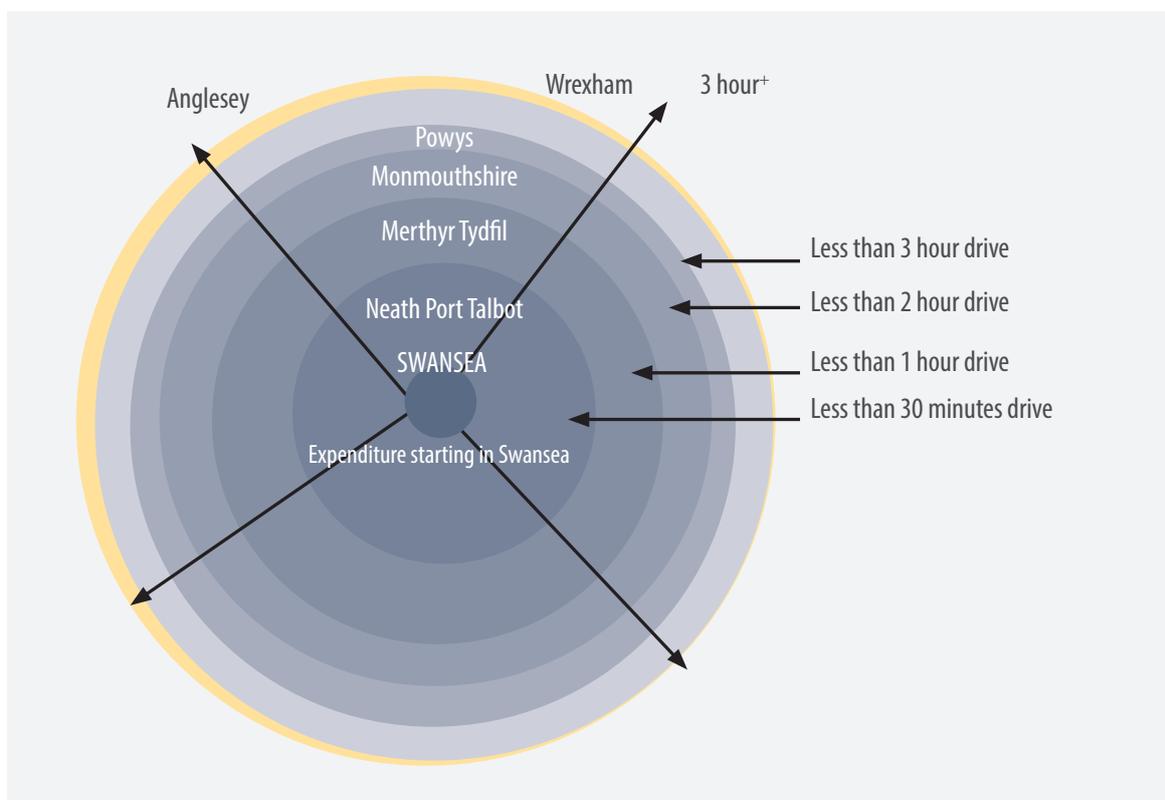
Distribution of impact across Wales



- 5.1** This study was extended to include 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.
- 5.2** Analysing 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.

Figure 10: Ripple effect of impact across Wales (using impact originating in Swansea as an example)



Source: Viewforth Consulting

5.3 This effect is replicated for all of areas where higher education activity originated. In this analysis, 9 centres of university activity were identified and used as the originating point of impact, which then spread across Wales in a ripple effect.²⁷

5.4 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.

5.5 The analysis undertaken reflects the total impact of Welsh universities on Wales and includes 'spill-overs' 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 activity in Swansea) but also includes ripples from the impact of other universities. The impact observed in Gwynedd includes not only the impact of the University of Bangor but also economic ripple effects from other universities in Wales including e.g. impact originating from Aberystwyth, the University of South Wales, Cardiff University and so on.

²⁷ 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.

Distribution across Wales of output impact

5.6 The results for detailed analysis of impact across the 22 Local Authority areas of Wales are presented below. Figure 11 shows how the university sector impact flows out across and affects all areas of Wales.

Figure 11: Distribution of output impact - local effects across Wales

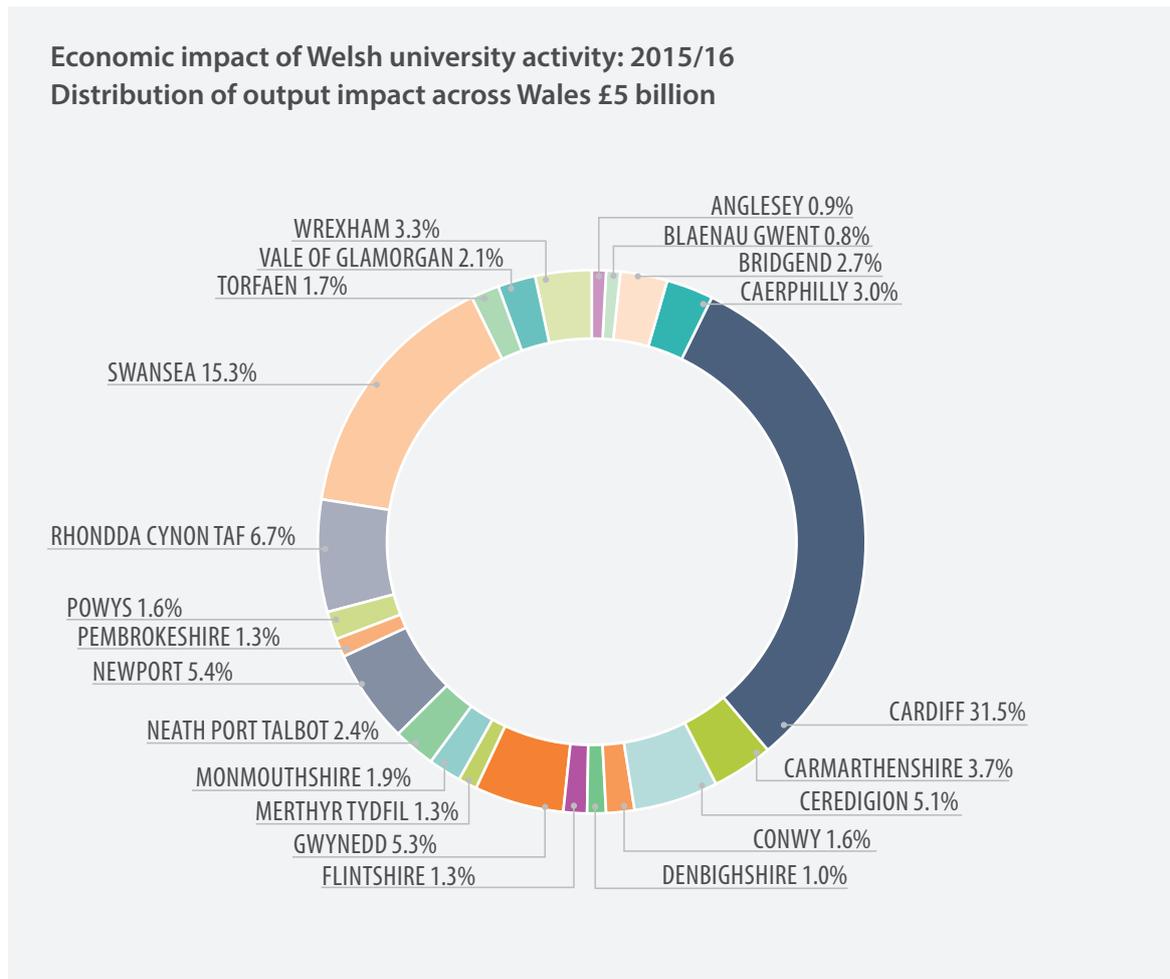
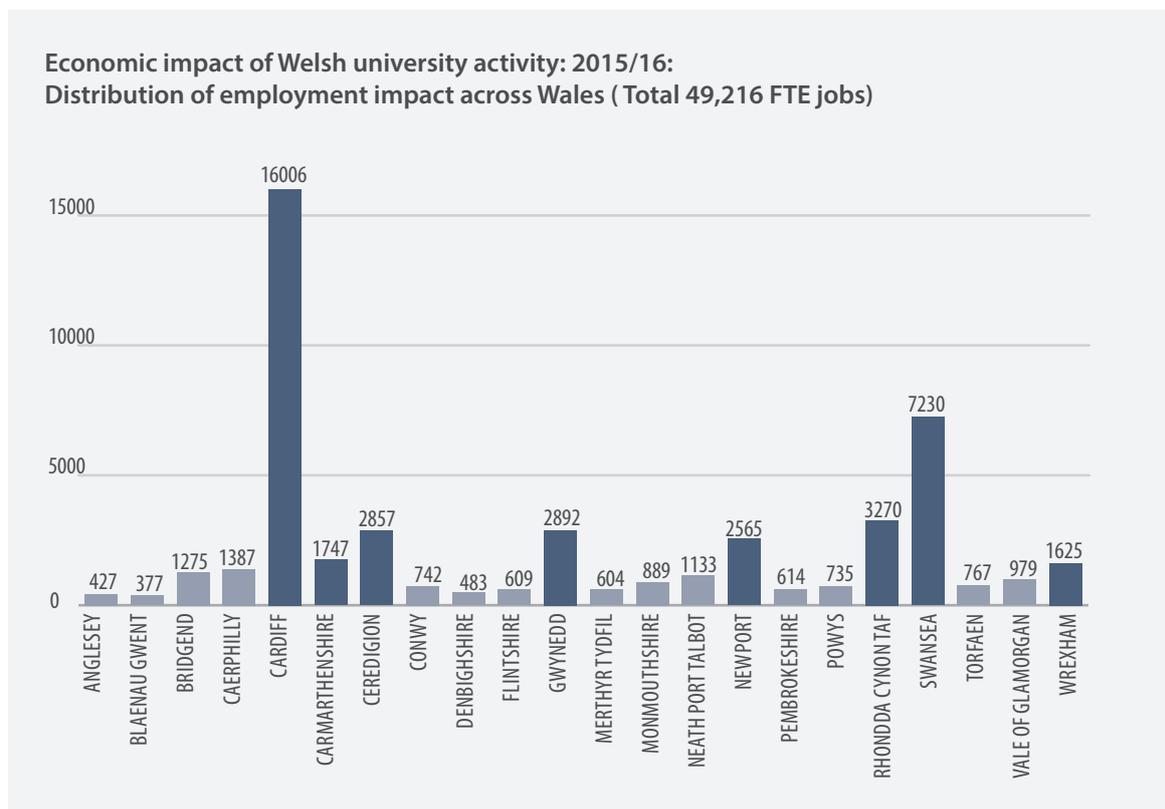


Figure 11 above shows how the output generated through the expenditure of the universities and their students flows to every part of Wales.

Distribution across Wales of employment impact

Just as output flows across Wales, so too is employment created as a result. Figure 12 presents our analysis of where employment is created in Wales.

Figure 12: Distribution of employment impact – local effects across Wales



Source: Viewforth Gravity Modelling System Analysis (Totals may not sum due to rounding)

In Figure 12, 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 dark blue 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 22% of all jobs (11,024) being generated in 'non-university' areas. This made an important impact in those areas.

Table 6 (below) gives an insight into the relative significance of the employment generated by the Welsh universities by showing the jobs generated in the context of total workplace employment in each area. For instance the 427 jobs generated by the universities in Anglesey is equivalent to 1.65%

of all Anglesey employment. Across all of Wales the jobs generated by the universities in Wales makes up between 1% and 7.5% of employment in any given area, with highest proportionate impact being seen in Ceredigion, followed by Cardiff, Swansea and Gwynedd.

Table 6: Relative local importance of jobs generated by Welsh university activity

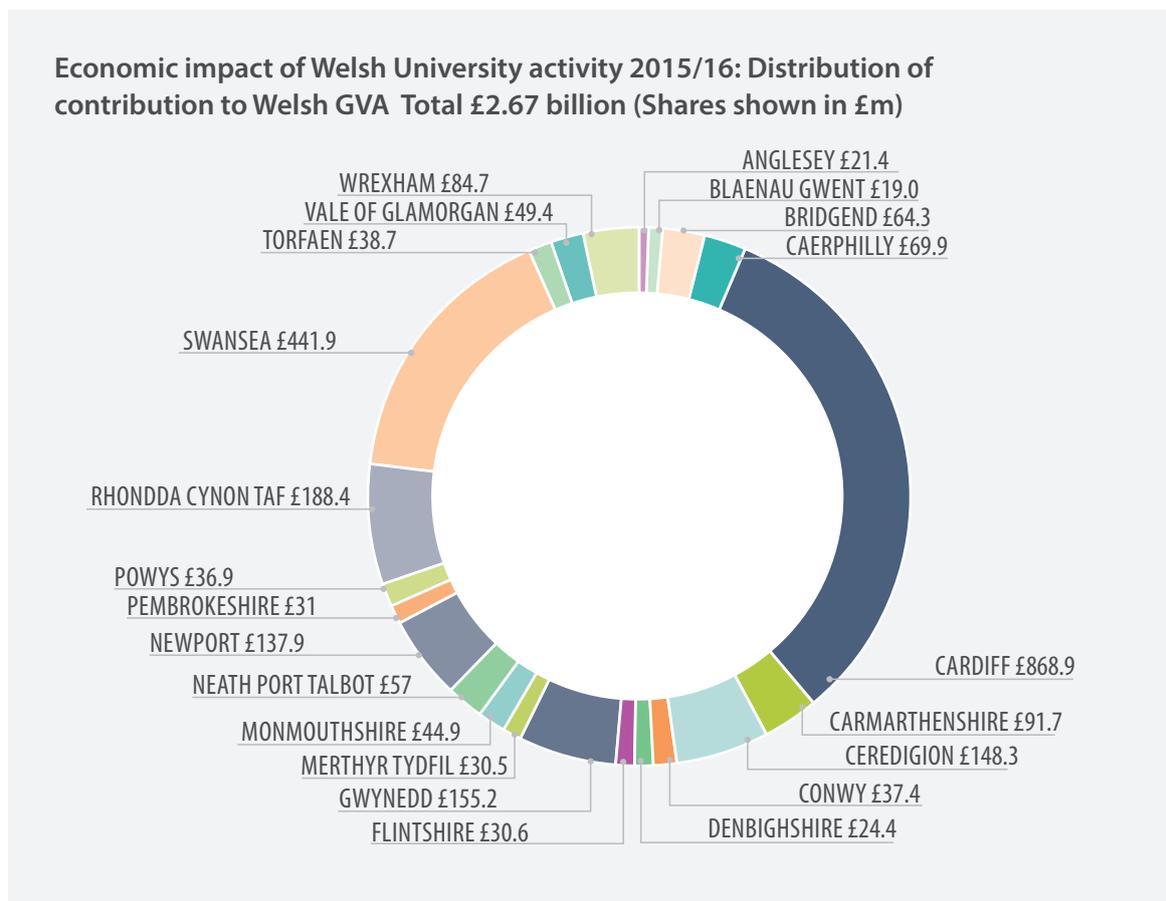
Local Authority	FTE jobs dependent on Welsh University activity (2015/16)	Equivalent percentage of local employment ²⁸
Anglesey	427	1.65
Blaenau Gwent	377	1.78
Bridgend	1275	2.00
Caerphilly	1387	2.37
Cardiff	16006	7.11
Carmarthenshire	1747	2.15
Ceredigion	2857	7.54
Conwy	742	1.62
Denbighshire	483	1.11
Flintshire	609	1.02
Gwynedd	2892	4.52
Merthyr Tydfil	604	2.40
Monmouthshire	889	1.95
Neath Port Talbot	1133	2.23
Newport	2565	3.42
Pembrokeshire	614	1.08
Powys	735	1.15
Rhondda Cynon Taf	3270	3.88
Swansea	7230	6.05
Torfaen	767	1.99
Vale of Glamorgan	979	2.21
Wrexham	1625	2.18
ALL WALES	49216	3.50

²⁸ 2015 Workplace employment by Local Authorities (StatsWales 2016).

Figure 13 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.

Distribution across Wales of GVA impact

Figure 13: Distribution of GVA Impact – local effects across Wales



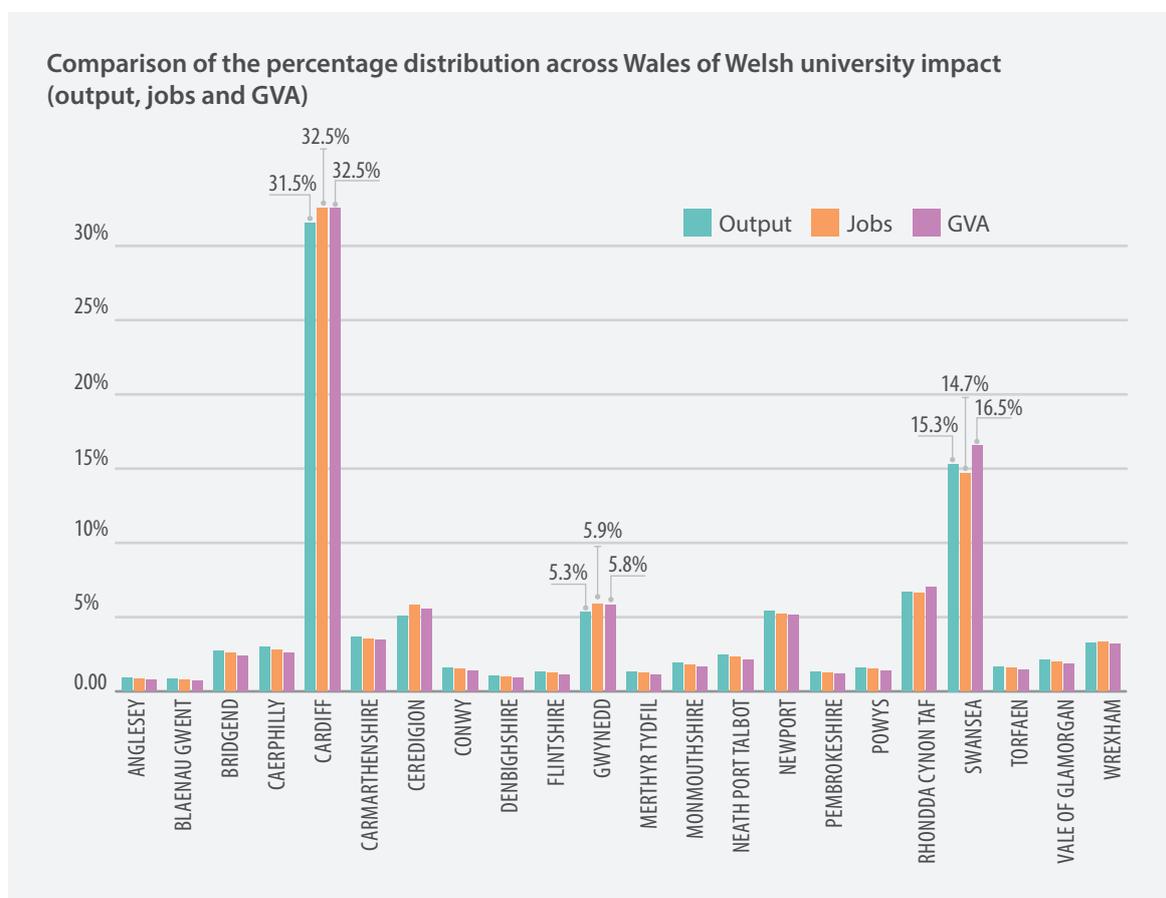
Source: Viewforth Gravity Modelling System Analysis



Figure 14 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. Slightly bigger 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.

Figure 14: Comparison of the percentage distribution of Impact across Wales (Output, Jobs, GVA) 2015/16



Source: Viewforth Gravity Modelling System Analysis

For instance, to explain the variations shown in Figure 14 - 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. in Cardiff there is both Cardiff and Cardiff Metropolitan as well as some activity related to the University of South Wales. In Swansea

there is Swansea University as well as some of the activity related to the University of Trinity St David in Swansea) 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 but also shows how the universities still impact on the economy even in areas with no direct university presence.

06

Conclusions and reflections



6.1 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 recognising *“the significant contribution that Higher Education... makes to sustaining large numbers of high-skilled jobs and ensuring a continuing supply of highly skilled graduates.”*²⁹

6.2 Key points to note include:

- The universities make a substantial contribution to Welsh GVA. Welsh universities, together with their students and related international visitors, generated Welsh GVA of over £2.67 billion, equivalent to 4.8% of total 2015 Welsh GVA.³⁰
- Universities are important for Welsh jobs. Total employment generated in Wales by the higher education institutions, their staff and students amounted to 49,216 jobs in Wales. This was equivalent to around 3.9% of all 2015 Welsh employment.³¹
- In terms of their institutional impact, universities in Wales directly employ 16,695 people in occupations spanning the whole spectrum of skills and qualifications. Through ‘Knock-on’ effects, an additional 15,635 FTE jobs are created in Wales.
- Institutional expenditure generates substantial additional employment, output and GVA in other industries in Wales, with additional spill-over effects in other parts of the UK.

²⁹ Hefcw Remit Letter 2016/17

³⁰ Total Welsh GVA in 2015 was £55.7 billion (ONS 2016)

³¹ Total Welsh Workplace employment in 2015 stood at 1,405,600 (StatsWales 2016). 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 is likely to be greater than 3.9%.

- The sector operates in a global market, attracting students from outside the UK and thereby generating export earnings. Welsh universities have suffered a drop in non EU student numbers in the last 2 years which may be related to stricter UK Home Office visa conditions applying to non-EU students (there are 3230 fewer non-EU students than in 2013/14). However the numbers attracted to Wales (16,730 non EU students) remain substantial and create an important economic impact. EU student numbers (5,460) are fairly similar to 2013/14 and the off-campus expenditure of international students (EU and Non-EU) created 3,621 jobs across the UK, with 2,683 of these in Wales.
- The universities also attract a significant proportion of students (38,495) from the rest of the UK, which brings additional benefits to both local and wider Welsh economies, with 4,668 jobs in Wales dependent on the off-campus expenditure of students from the rest of the UK.
- The university's 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 (67,995) who may otherwise have left to study elsewhere. The off-campus and personal expenditure of Welsh students is substantial, and this has been retained within Wales and supporting 9,294 jobs.³²
- 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 also 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.

- 6.3** 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 spill-over benefits for other parts of the UK.

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 2015/16. The study also examined the impact of the off-campus expenditure of international students who were studying at universities in Wales in that year.³³ 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 input-output model of

³² It is worth highlighting that 70% of all Welsh students studying in UK Higher Education Institutions do so in Wales. More students come to Wales from the rest of the UK than leave Wales to study elsewhere. (In 2015/16 there were 25,950 Welsh students studying elsewhere in the UK, whereas there were 38,495 students attracted into Wales. This emphasises the continuing strength and attractiveness to students of Welsh HEIs.)

³³ 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.

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 Wales. 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. 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 inevitably accrues 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 'spill-over' effects from regions to be incorporated. That is to say the final results for impact on a particular area e.g. Gwynnedd will not only include impact of the University in the area (in this case 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. The mathematical specification of the model can be found in Annexe B of *The Impact of Universities on the UK Economy* (Universities UK 2014) <http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/impact-higher-education-institutions-uk-economy.aspx>

The main source of university data was the Higher Education Statistics Agency (HESA)

relating to data on HE Finance, staffing and students. Estimates of student expenditure were made drawing on the most recent (2017) Welsh Government Student Income and Expenditure survey as well as Department for Business and Innovation (BIS) estimates of international 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 economic analysis.

Appendix Two

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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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Table 6: Relative local importance of jobs
generated by Welsh University activity

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