



## Student contributions to the UK economy

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### Foreword from the NUS

At NUS we are passionate about the power of students to drive change - in their communities, in society, and in the economy.

Whether locally, regionally, or nationally, students are instrumental in creating a stronger economy and a fairer, more prosperous society. We are therefore proud to be producing research, with **nef consulting** (new economics foundation), that for the first time acts to quantify the immediate value students bring to the UK economy.

This report proves the tremendous social return on investment in students. It's simple economic sense - through education we drain less from the state, and add so much more.

Students bring huge direct benefits to the UK economy. The report shows that student spending supports over £80bn of UK economic output - roughly one third of the total contribution of the aviation sector to the UK. Student expenditure supports over 830,000 UK jobs, including more than 109,000 in Scotland and 35,000 in Wales. Indeed, in the UK, the number of employed persons directly and indirectly supported by student spending is more than the total population of the city of Liverpool.

The benefits are also highly significant at regional and local level. Through their subsistence spending, students contribute to regional value creation and support local and regional employment. It's the simple value of students living within a community.

More worryingly, our report highlights the dire economic implications that would result from a reduction in student enrolment in many areas across the country, and shows that this would be most severe in the most deprived areas.

We know a great deal about the wider benefits that investment in education brings – to both society and individuals. However, this report demonstrates the day-to-day benefits that students bring to local, regional and national economies.

With student spending supporting over £80bn of UK economic output, the case for investment in higher education remains extremely strong.

A handwritten signature in black ink, appearing to read 'Toni Pearce', followed by a period.

Toni Pearce,  
NUS President

# Executive Summary

This report, by **nef consulting** (new economics foundation) for the National Union of Students (NUS), provides compelling new evidence that students are significantly contributing to the UK economy at national, regional and local levels while Higher Education Institutions (HEIs) also generate substantial wealth for the economy. Our research shows that investment in higher education yields substantial public gains and returns to the UK population as a whole.

We have calculated that:

- Student spending supported over £80bn of UK economic output, which is roughly one third of the total contribution of the aviation sector to UK GDP<sup>1</sup>, and generated over £25bn of Gross Value Added (GVA).
- Student expenditure supports over 830,000 UK jobs, including more than 109,000 in Scotland and 35,000 in Wales. In the UK, the number of employed people directly and indirectly supported by student spending is more than the total population of Liverpool.
- Student expenditure supports 1.3% of Scottish GDP. This is comparable to one tenth of the yearly contribution of tourism to the Scottish economy<sup>2</sup>. In Scotland, almost 4 out of 100 people are in employment as a consequence of student spending in the regional economy.
- 2.6% of Welsh GVA is supported by student spending. This is 1.5 times more than the contribution of agriculture to the Welsh economy. In Wales, the 35,000 employees directly and indirectly supported by student expenditure are equivalent to 10% of the population of its largest city, Cardiff.

These findings raise some important questions:

- Given the importance of student spending for the UK and, most critically, for regional economies, what would a reduction of student enrolment imply for economic performance, particularly in the most deprived regions of the UK?
- If higher education students contribute to the broader economy both in the short and the long term, then can we really afford not to invest public funds in higher education?

Our research makes an initial attempt to address these questions by reviewing the most critical quantitative evidence on the impacts of university students and HEIs on the UK economy, and on regional and local economies, and by providing new quantitative data to estimate the impacts on student spending on the national and regional economies. The generation of new data responds to a gap in existing research. Although there is a wide body of literature analysing the macro-economic effects of having a highly educated workforce, few – if any – studies have dealt with the impacts of student spending on the UK national economy and the regions that comprise it. This report aims to fill that gap. Our conclusions are supported by previous economic studies that have found that:

1 Oxford Economics (2011), "Economic benefits from air transport in the UK". Available at: <http://www.niassembly.gov.uk/Documents/Finance/Air-Passenger-Duty/Written-Submissions/Oxford-Economics-economic-Benefits-from-Air-Transport-in-UK.pdf>

2 Deloitte & Oxford Economics (2010), "The economic contribution of the visitor economy". Available at: [http://www.visitbritain.org/Images/Economic%20case%20for%20the%20Visitor%20Economy%20-%20Phase%202%20-%2026%20July%202010%20-%20FINAL\\_tcm29-14561.pdf](http://www.visitbritain.org/Images/Economic%20case%20for%20the%20Visitor%20Economy%20-%20Phase%202%20-%2026%20July%202010%20-%20FINAL_tcm29-14561.pdf)

Table 1: The contribution of student spending in the UK

	Direct output supported (£ billion)	Total output supported (£ billion)	Total GVA supported (£ billion)	Total GVA supported as % of GVA/GDP	Direct employment supported	Total employment supported	As % of national/regional employment
<b>United Kingdom</b>	50.37	82.83	25.21	1.03	430,164	833,803	2.8
<b>Scotland</b>	3.53	6.22	1.89	1.26	30,277	109,191	3.8
<b>Wales</b>	2.54	3.99	1.21	2.57	21,902	35,188	2.7

Source: nef consulting

- For each pound of public money invested in higher education, graduates return £3.22 of cashable benefits to the economy in the course of their lifetimes. This is a net benefit accruing to the Exchequer, UK taxpayers and the entire economy.
- Higher Education Institutions (HEIs) contribute significantly to local and regional economies. The University of Birmingham alone, for example, supports a total of 11,800 jobs and generates 2.2% of Birmingham's economic wealth, a value of £460 million accruing to the local economy.
- Students make up an important part of HEIs contribution to local and regional economies through their own subsistence expenditures and the spending of friends and relatives visiting the area.

The existing evidence thus suggests that there are both short-term and long-term public benefits of investing in higher education and that these benefits are over and above any private gains earned by students after they graduate. Although there are comparisons between the short-term costs of financing higher education versus long-term benefits, we found no study quantifying the more immediate contribution of students to the UK economy, aside from case studies on the contribution of specific HEIs.

This report goes a step further than existing research. It provides a first attempt to estimate the total contribution of student spending on (a) the UK economy and (b) on two regional economies, namely Wales and Scotland. This contribution is over and above any long term impacts of higher education graduates on economic performance of the UK.

## I. Introduction

This ground breaking research project aims to consider in detail the contribution students are making and the impact they are having. Our report shows that students are contributing significantly to the UK economy at national, regional and local levels - as well as improving their career and revenue prospects. Similarly, Higher Education Institutions (HEIs) generate substantial wealth for the UK economy.

As such, rather than asking whether we can afford to invest public money in higher education – and its students – it is perhaps more sensible to ask whether we can afford not to. What would a significant drop in student enrolment imply for the economy as a whole, and for the economic performance of UK regions?

This aim of this report is not to provide a complete and definitive answer to these questions, for which a more substantial analysis and review of evidence would be required. Rather, its objectives are two-fold:

- To review the most critical quantitative evidence on the impacts of university students and HEIs on the UK economy as well as on regional and local economies.
- To provide new quantitative data by estimating the impacts on student *spending* on the national and regional economies.

The generation of new data responds to a gap in existing research. Indeed, although there is a wide body of literature analysing the macro-economic effects of a highly educated workforce, few – if any – studies have dealt with the impacts of student expenditure on the UK national economy and the regions that comprise it.

This report aims to fill this gap by undertaking a preliminary analysis of the macro-economic impacts of student spending both on national and regional scales. Both employment and economic impacts do not necessarily represent so-called “additional” impacts, meaning a contribution which is over and above what would have been spent anyway in the UK and regional economies. As such, further analysis would be required in order to measure the additional impact of student spending. More detailed empirical data would also be required in order to measure the impacts of student spending with greater precision, notably in those UK regions omitted from this analysis.

## II. Student contributions to the UK economy: a brief review of existing evidence

The review of existing quantitative evidence suggests that:

- Investing in higher education students yields high social (public) returns over and above the private returns accruing to higher education graduates. These are medium to long-run benefits accruing to the society as a whole – and to taxpayers who contribute to financing higher education and university students.
- Beyond the medium to long-run impacts, individual HEIs significantly contribute to the local and regional economies in which they operate. These impacts consist mainly of immediate (short-term) economic and employment impacts.
- Students' subsistence spending is among the key drivers of the local and regional impacts of individual HEIs. Through their subsistence spending, students contribute to regional value creation and support both local and regional employment.

### Public returns to higher education in the UK

Returns to higher education are not only private. While graduates of HEIs benefit from having a university degree by increasing their long-term income and wealth prospects, investment in higher education also yields significant public benefits which accrue to the whole society. The “returns to education” literature aims to compare and contrast the fiscal impacts of investment in higher education. In other words it compares what it costs to UK taxpayers to fund an individual student with the tax (and other) contributions that this individual student is likely to generate after graduating from a HEI.

The OECD has compiled data which compares the public costs of investing in higher education with the public benefits derived from this investment<sup>3</sup>.

Costs include:

- The direct subsidies for higher education provided by the State.
- The foregone tax revenue on earnings (income tax) while the student is enrolled in a HEI.
- The grants provided by the State or other institutions.

Benefits include:

- Income tax gains. On average, graduates of HEIs earn more than citizens who did not pursue higher education studies. Had students chosen not to undertake a university degree they would have generated (a) less income and thus (b) less tax revenue for the State. The income tax gain is the difference between the tax receipt that would have been generated if the individual had not completed a university degree and the tax receipt generated by the average graduate throughout this life-span.
- Social contribution gains, consisting of contributions to National Insurance (NI). These are calculated in the same way as the income tax benefits, i.e. measuring the average difference (in NI contribution) between HEI graduates and individuals who did not graduate from HEIs.

<sup>3</sup> Organization for Economic Cooperation and Development (2013), “What are the incentives to invest in education?”, in OECD (2013) Education at a glance. Available at: <http://www.oecd.org/education/skills-beyond-school/48630822.pdf>

- Avoided unemployment benefits. On average individuals without a university degree are more likely to be unemployed throughout their life. The OECD has compared the average time in unemployment for graduates and non-graduates. Based upon the difference between both, it then calculated the avoided unemployment benefits, i.e. jobseeker's allowance the State would have financed had the individual not graduated from a HEI.

Table 2 contrasts these costs and benefits based upon OECD data.

Table 2: The public costs and benefits of investing in higher education per average student

	£ GBP
<b>Costs</b>	
<b>Direct cost (State funding)</b>	£24,919
<b>Short-term foregone taxes on earnings</b>	£16,257.4
<b>Grants effect</b>	£1,701
<b>TOTAL</b>	£42,877
<b>Benefits</b>	
<b>Income tax effect</b>	£110,230
<b>Social contribution effect</b>	£23,095
<b>Unemployment effect (avoided)</b>	£4,873
<b>TOTAL</b>	£138,199
Net Present Value	£95,322
Benefit:Cost Ratio	3.22

Source: OECD

The results suggest that for each pound invested in higher education by the State, £3.22 of public revenue is generated, on average, throughout the lifetime of the individual. This means that the revenue accruing to the State by investing in higher education is higher than the costs. It is thus a beneficial investment for taxpayers and the UK economy: HEI graduates contribute more to the public purse than they cost to the State

These figures, however, only represent the fiscal impacts of investment in higher education, i.e. comparing State spending and costs to tax receipts generated by the average student throughout the course of his/her life: (a) they are not representative of the total economic activity supported by students and HEIs in the UK and (b) they assume that short term costs are only covered by long-term fiscal benefits of higher education.

### The contribution of Higher Education Institutions to the UK economy

HEIs contribute to the UK economy through numerous means, which include:

- The direct impacts of their expenditures on local, regional and national economies.
- The indirect impacts of their supply chain expenditures on local, regional and national economies.
- The direct employment of personnel.

- The employment indirectly generated via their supply chain expenditures.
- The attraction of extra-regional and extra-national students who spend in the local and regional economy thus contributing to these regions both in terms of Value Added creation and employment.
- The Value Added generated by visitors

Some HEIs have commissioned reports measuring their total economic contribution, including their direct, indirect and enabled local and regional economic impacts. We have compiled the key results of publically available studies in Table 3.

Table 3: The economic impacts of selected HEIs

	Local Value Added contribution (£ million)	As % of local Value Added	Regional GVA contribution (£ million)	As % of regional GVA	Sources
<b>University of Birmingham</b>	460	2.2	530	0.5	Oxford Economics <sup>4</sup>
<b>University of West London</b>	60.4	1	87.6	0.03	Oxford Economics <sup>5</sup>
<b>University of Kent</b>	n/a	n/a	571	0.3	Viewforth Consulting <sup>6</sup>
<b>University of St Andrews</b>	215.9	n/a	483.3	0.2	BiGGAR Economics <sup>7</sup>

Although these figures do not represent the impacts of student “subsistence” spending per se they are nonetheless indicative of the local and regional impacts that a single HEI can have. The University of Birmingham, for instance, generates 2.2% of the total Value Added (VA) created in the city of Birmingham and represents 0.5% of the West Midlands GVA. Put in perspective, the Value Added generated by the region’s eight largest football clubs is half the Value Added supported by the University of Birmingham.

In these examples, with the exception of St Andrews University, the majority of wealth creation of HEIs remains in the local area or city. This can have particularly positive impacts for less wealthy localities of the UK. Indeed, numerous universities tend to be situated in areas having relatively few sources of income generation and relatively high unemployment. It is in these areas where (a) university investment and expenditures as well as (b) student-related consumption are critical. This is because more marginalised areas would be unlikely to attract consumption and investment in a counterfactual scenario without students in the respective areas and regions.

These impacts of HEIs are evidently to be benchmarked against costs. Do these public benefits outweigh the national and regional costs of financing and

4 Oxford Economics (2013), “The economic impacts of the University of Birmingham”, available at: <http://www.birmingham.ac.uk/Documents/university/economic-impact-of-university-of-birmingham-full-report.pdf>

5 Oxford Economics (2012), Op. Cit.

6 Viewforth Consulting (2011), “The economic impacts of the University of Kent”, available at: <http://www.kent.ac.uk/about/impactreport-oct11.pdf>

7 BiGGAR Economics (2012), “Economic impact of the University of St Andrews”, available at: <http://www.kent.ac.uk/about/impactreport-oct11.pdf>

maintaining universities? Given that benefits are compared to costs only for the University of St Andrews, it is difficult to provide conclusive evidence. BiGGAR Economics estimates that for each £1 of grant funding from the Scottish Funding Council the University of St Andrews generates £9.57 of impact accruing to the local economy (44.7%) and the rest of Scotland (55.3%). This is a very high return on investment (ROI) ratio, but more evidence would be required to assess whether ROIs are as high for other institutions.

### The contribution of students to regional economies

The evidence provided in case-study reports is also useful to elicit the impact of student subsistence spending on regional economies. Indeed, part of the economic contribution of HEIs is due to student spending in local and regional areas. The four case studies presented in Table 4 measure the “additional” impact of student subsistence spending. The additional (or “net”) impact consists of the amount spent by students who come (a) from other British regions or (b) from abroad. The amount spent by students originating from the region where the university is located is not factored into the analysis, since it is assumed that these students might have spent the same amount in the region anyway, i.e. regardless of the university’s presence. The findings presented in Table 4 suggest that student subsistence spending represents between 6% and 25% of HEIs regional Gross Value Added (GVA) contribution and creates between 13% and 26% of regional jobs supported by HEIs, either directly or indirectly.

Table 4: The contribution of students’ subsistence spending on regional economies

	Total regional VA created (£ million)	Total Regional jobs supported (headcount)	Regional VA contribution of student spending (£ million)	Regional jobs supported via student spending	Sources
<b>University of Birmingham</b>	530	11,800	134	3,100	Oxford Economics <sup>8</sup>
<b>University of West London</b>	87.6	1,860	13.8	330	Oxford Economics <sup>9</sup>
<b>University of Kent</b>	571	7,299	127	1,142	Viewforth Consulting <sup>10</sup>
<b>University of St Andrews</b>	483.3	5,714	29.2	757	BiGGAR Economics <sup>11</sup>

8 Oxford Economics (2013), Op. Cit

9 Oxford Economics (2012), Op. Cit

10 Viewforth Consulting (2011), Op. Cit

11 BiGGAR Economics (2012), Op. Cit

### III. The contribution of student spending on the UK economy

#### Context of quantitative analysis

University students contribute to the UK economy in numerous direct and indirect ways. They first and foremost sustain the UK's HEIs - whose expenditures, knowledge and investment contribute significantly both to the UK economy and to regional/local economies (see Section II). They secondly generate long-term impacts via productivity gains accruing to the entire economy. In the medium to long-run students also generate tax gains for the State and taxpayers. Finally, students spend and invest personal (or family/household) resources throughout their degrees. This spending contributes to Value Added creation in the UK economy, and thus supports employment.

Although many of the medium to long-term impacts of higher education students and graduates are well documented, we found no study quantifying the shorter term impacts of student spending on the UK economy. We nonetheless consider that measuring aggregate impacts of student spending is important for the following reasons:

- Firstly, it is often asserted that despite generating medium to long-term benefits, students represent a short-term loss to the economy, notably for taxpayers. This view, however, excludes from the equation the numerous short-term contributions of HEI students to the UK, and regional/local, economies. It could be that, in fact, the short-term benefits generated outweigh the economic costs of investing in higher education students. Such a result would imply that there is a very strong rationale for investing public funds in higher education, and/or increasing public support for students.
- Secondly, the increase of tuition fees (and decrease of public support) of UK universities could potentially lead to a decrease in the number of students. By measuring the contribution of student spending on the national and regional economies, it would then be possible to obtain a clear picture of what a decrease of university students would imply for the UK economy.
- Thirdly, the impact of student spending might be disproportionately important in less well-off regions of the UK. These are the regions which are less apt to generate alternative sources of income if universities downsize their activities. HEIs are thus driving a "recycling" mechanism, transferring wealth from richer to poorer regions via the attraction of students, who then spend money in the region and support employment. Thus, measuring the impacts of students on regional economies can also allow estimating of the potential losses associated with a reduction of students in these regions. For tackling these critical issues, quantifying the impacts of student spending is merely a first step; a crucial step, nonetheless, in order then to forecast different possible future scenarios.

## Approach and methodology

Quantifying the impacts of student spending on the UK economy has entailed three distinct steps

- Firstly, determining of the structure of student spending in order to derive the aggregate demand generated by students and thus the direct economic output supported by student spending. We considered not only “subsistence” spending but also payment of tuition fees as well as spending on housing.
- Secondly measuring of the total economic impacts through the use of output multipliers. Economic multipliers measure the total output created as a consequence of a unit of increase in demand for one good or service. For example, a unit of increase in demand for groceries creates a direct output for the grocery shop where the items are purchased. But it also, in turn, produces an additional unit of demand for other goods or services (e.g. agricultural production and transport to bring the groceries from the field to the shop). This is the indirect impact which input-output multipliers aim to measure (see Glossary). In short, through supply chain effects, a unit of increase in demand produces a non-symmetrical “chain” whereby the increase in economic output will ultimately be more than this unit of demand.
- Thirdly, after modelling the total economic output supported by student spending, we went on to measure the contribution of student spending to Gross Value Added (GVA), a component of the Gross Domestic Product (GDP). GVA is measured by subtracting so called “intermediary inputs” used in order to generate a final output, from the final output figure (see Glossary). This allowed us to depict the impacts of student spending on GVA and GDP.
- Lastly, we estimate the number of jobs (headcount) supported by student spending. The employment impact also incorporates both direct and indirect/induced effects, measured through the use of employment multipliers. Employment multipliers measure the total amount of jobs created throughout the economy as a consequence of hiring an extra person in one of the sectors of the economy.

We used the same approach for measuring the impacts of student spending on the UK economy, in aggregate and the impacts on two regional economies, namely Scotland and Wales. The choice of regions is guided by data availability: only Scotland and Wales have developed their own regional input-output tables through which indirect and enabled impacts can be assessed.

## Students’ spending patterns

Based upon available data, our analysis includes three types of student spending: (a) living expenses, (b) housing expenditures and (c) tuition fees. These three forms of spending constitute demand for goods and services in the UK economy.

Living expenses of students have been collected by the NUS through a primary survey, asking a sample of students across the UK to provide an estimation of their living expenses. These have been broken down into numerous categories and are presented in Table 5.

Table 5: Average living expenses of students across the UK

	Spending per week	Spending per year
Food shop	£25.00	£1,300.00
Travel	£16.00	£832.00
Bars/pubs/clubs	£12.00	£624.00
Eating out	£11.00	£572.00
Alcohol	£11.00	£572.00
Clothes	£11.00	£572.00
Mobile phones	£10.00	£520.00
Course books	£10.00	£520.00
Course related equipment	£9.00	£468.00
Excursions	£8.00	£416.00
Non-alcoholic drinks	£8.00	£416.00
Cigarettes	£7.00	£364.00
Internet/Wi-Fi	£7.00	£364.00
Toiletries	£7.00	£364.00
Printing/photocopying	£7.00	£364.00
Stationery	£6.00	£312.00
Films/DVDs	£6.00	£312.00
Music/downloads	£6.00	£312.00
<b>TOTAL</b>	<b>£177.00</b>	<b>£9,204.00</b>

Source: National Union of Students<sup>12</sup>

We assumed the same spending patterns for the UK, Scotland and Wales as the existing data cannot be broken down by region.

Housing expenditures of students have equally been captured in the 2012/2013 in an extensive survey conducted by the NUS (National Union of Students). Table 6 presents average housing expenditures per UK region for 2012/2013.

<sup>12</sup> NUS (2013), "Success in the Student Market: Survey results". Main research findings available at: [http://www.nus.org.uk/Global/891\\_NUSSL\\_Understanding%20Student%20Needs%20Report\\_020412\\_v3.pdf](http://www.nus.org.uk/Global/891_NUSSL_Understanding%20Student%20Needs%20Report_020412_v3.pdf)

Table 6: Weighted average spending on housing of students across the UK

	Spending per week	Spending per year
East Midlands	£112.63	£ 5856.76
East of England	£134.18	£ 6977.36
London	£157.48	£ 8188.96
Northeast	£111.76	£ 5811.52
Northwest	£106.49	£ 5537.48
Northern Ireland	£83.01	£ 4316.52
Scotland	£121.80	£ 6333.6
Southeast	£117.77	£ 6124.04
Southwest	£123.42	£ 6417.84
Wales	£95.50	£ 4966
West Midlands	£108.90	£ 5662.8
Yorkshire	£109.73	£ 5705.96

Source: National Union of Students<sup>13</sup>

It is critical to note that these weighted averages are only useful insofar as they provide proxy figures for the “average student”, and that they thus mask substantial differences in terms of housing type and other costs involved (e.g. bills).

More challenging has been to identify reliable data sources indicating weighted averages of tuition fees paid by students in the UK. Indeed, no aggregate data is available and it is currently challenging to estimate with any degree of accuracy what the “typical” fees paid by a university student would be. For this reason, we used the figures provided by an OECD report, which provides with an average estimation of tuition fees paid by students in major European countries<sup>14</sup>. The figure for the UK is of £4,980 per student per year. This figure is an average which takes into account (1) scholarships granted as well as (2) differential fees between UK and overseas students. We accept this assumption as a conservative estimate which might undervalue the actual amount paid by students in the UK – on average.

Table 7 collates all types of spending and presents the total amount spent each year by students in the UK. This represents the aggregate demand generated by students on a UK level, and the direct output supported. The figures assume a total number of 2.49 million higher education students as per 2012 figures<sup>15</sup>. Based upon existing data sources, we thus estimate that roughly 2.5 million students spend approximately £50.3 billion per annum in the UK. This figure also represents the direct output (or turnover) supported by students: an expenditure of £1.4 billion of clothes, for example, will directly lead to a turnover (or output) of £1.4 billion for clothing retail shops.

<sup>13</sup> NUS (2013), “Accommodation costs survey 2012-2013”, available at: <http://www.nus.org.uk/Global/Campaigns/Accommodation%20Costs%20Survey%20V6%20WEB.pdf>

<sup>14</sup> OECD, “Education at a glance 2013”. Available at: [http://www.oecd.org/edu/eag2013%20\(eng\)--FINAL%20%20June%202013.pdf](http://www.oecd.org/edu/eag2013%20(eng)--FINAL%20%20June%202013.pdf)

<sup>15</sup> Data available at: <http://www.hesa.ac.uk/>

Table 7: Total demand generated by students in the UK

	Spending per student p.a.	Total spending p.a.
Food shop	£1,300.00	£3,245,632,000
Travel	£832.00	£2,077,204,480
Bars/pubs/clubs	£624.00	£1,557,903,360
Eating out	£572.00	£1,428,078,080
Alcohol	£572.00	£1,428,078,080
Clothes	£572.00	£1,428,078,080
Mobile phones	£520.00	£1,298,252,800
Course books	£520.00	£1,298,252,800
Course related equipment	£468.00	£1,168,427,520
Excursions	£416.00	£1,038,602,240
Non-alcoholic drinks	£416.00	£1,038,602,240
Cigarettes	£364.00	£908,776,960
Internet/Wi-Fi	£364.00	£908,776,960
Toiletries	£364.00	£908,776,960
Printing/photocopying	£364.00	£908,776,960
Stationery	£312.00	£778,951,680
Films/DVDs	£312.00	£778,951,680
Music/downloads	£312.00	£778,951,680
Rent	£5,991.57	£14,958,793,324
University fees	£4,980.00	£12,433,267,200
<b>TOTAL</b>	<b>£20,175.57</b>	<b>£50,371,135,084</b>

Source: nef consulting based on NUS data

Table 7 also suggest that the annual per capita spending of students of £20,175 including tuition fees is lower than average household expenditures of the age group of 18-30 years old (estimated to approximately £30,000<sup>16</sup>). Nonetheless, households of the 18-30 year group are comprised, on average, of 2.4 members. This implies an average individual expenditure of about £12,500 per household member per year. Therefore, even when excluding tuition fees expenditures, students still spend approximately £2,500 more than the average person aged 18 to 30. Even though more refined comparisons between the two groups are required, the available data doesn't seem to suggest that students pay less than their employed counterparts. And thus that the demand for goods and services they generate is at least comparable.

<sup>16</sup> Office for National Statistics (2012), "Household spending, 2012 edition", <http://www.ons.gov.uk/ons/rel/family-spending/family-spending/family-spending-2012-edition/index.html>

In order to measure the total contribution of student spending we used multipliers provided by the Office for National Statistics . These are specific to the good or service purchased and we attempted to match as precisely as possible the goods in demand as per the student survey with ONS industrial classifications.

In order to measure the contribution of output to UK GDP, it is necessary to derive the Gross Value Added (GVA) created. GVA measures the output created net of inputs purchased to produce a good or service purchased and we attempted to match as precisely as possible the goods purchased as per the student survey with ONS industrial classifications. In order to measure the contribution of output to UK GDP, it is necessary to derive the Gross Value Added (GVA) created. GVA measures the output created net of inputs purchased to produce a good or service and serves as a basis for calculating GDP . Obtaining the GVA supported by student spending has required an estimation of intermediate inputs used in order to produce the total output (i.e. £82.8 billion) presented in the previous section. Due to a lack of disaggregated data matching the categories of student spent, we considered it sensible to assume that the weighted average of intermediary inputs per unit of output per broad industrial classification applies in this case. On an aggregate level, intermediate inputs represent 69.5% of total outputs generated throughout the UK economy. This means, in turn that GVA represents 20.5% of output. This figure has served as a basis for estimating the contribution of student spending to GVA presented in Table 8.

The Gross Value Added supported by student spending throughout the UK is of the order of £25 billion per annum. This represents 1.03% of UK GDP<sup>17</sup>. Put in perspective, this figure is equivalent to one third of the total contribution of the aviation sector to UK GDP<sup>18</sup>.

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17 Available at: <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/input-output/archive-data/uk-i-o-analyses--2005-edition/index.html>

18 Oxford Economics (2011), "Economic benefits from air transport in the UK". Available at: <http://www.niassembly.gov.uk/Documents/Finance/Air-Passenger-Duty/Written-Submissions/Oxford-Economics-Economic-Benefits-from-Air-Transport-in-UK.pdf>

Table 8: Total impact generated through student spending

	Direct output supported (£ million)	Output multiplier (Type II)	Total output supported (£ million)	Estimated Intermediate inputs (£ million)	Estimated GVA supported (£ million)
<b>Food shop</b>	£3,245	2.10	£6,807	£4,735	£2,072
<b>Travel</b>	£2,077	1.84	£3,827	£2,662	£1,165
<b>Bars/pubs/clubs</b>	£1,557	1.72	£2,682	£1,866	£816
<b>Eating out</b>	£1,428	1.64	£2,339	£1,627	£712
<b>Alcohol</b>	£1,428	1.87	£2,671	£1,858	£813
<b>Clothes</b>	£1,428	1.75	£2,492	£1,733	£758
<b>Mobile phones</b>	£1,298	1.57	£2,043	£1,421	£622
<b>Course books</b>	£1,298	1.32	£1,714	£1,192	£522
<b>Course related equipment</b>	£1,168	1.99	£2,327	£1,619	£708
<b>Excursions</b>	£1,038	1.60	£1,658	£1,153	£504
<b>Non-alcoholic drinks</b>	£1,038	2.19	£2,270	£1,579	£691
<b>Cigarettes</b>	£908	1.66	£1,508	£1,049	£459
<b>Internet/Wi-Fi</b>	£908	1.57	£1,430	£994	£435
<b>Toiletries</b>	£908	1.72	£1,564	£1,088	£476
<b>Printing/ photocopying</b>	£908	1.80	£1,636	£1,138	£498
<b>Stationery</b>	£778	1.69	£1,318	£917	£401
<b>Films/DVDs</b>	£778	1.77	£1,378	£959	£419
<b>Music/downloads</b>	£778	1.77	£1,378	£959	£419
<b>Rent</b>	£14,958	1.59	£23,829	£16,575	£7,253
<b>University fees</b>	£12,433	1.44	£17,953	£12,488	£5,465
<b>TOTAL</b>	<b>£50,371</b>	<b>n/a</b>	<b>£82,836</b>	<b>£57,620</b>	<b>£25,215</b>

Source: nef consulting based on ONS data

### **Methodology for calculating the impacts of student spending on UK employment**

The impacts of student spending on UK employment can also be split between direct, indirect and enabled impacts. By contributing to output generation through consumption, students support employment in those sectors where they consume goods and services. This is the direct impact. Employment multipliers are then used to measure the additional employment generated in the supply chain in order to support the expenditure. In essence, employment multipliers evidence the total amount of jobs (direct, indirect and enabled) created throughout the economy for each additional job directly supported or generated.

Given a lack of empirical data quantifying the number of jobs directly supported by student spending, we used aggregate UK figures. By dividing the total headcount jobs by GVA for each sector, we obtained a ratio of headcount jobs per unit of GVA, per sector. This served as a basis for estimating the direct employment supported by student spending per type of expenditure (Table 9). We subsequently used employment multipliers provided by the ONS in order to quantify the total headcount employment supported in the UK.

Table 9: Estimated employment supported in the UK

Expenditure	Estimated direct employment (headcount)	Employment multiplier	Total employment supported (headcount)
<b>Food shop</b>	27,717	2.25	62,234
<b>Travel</b>	17,739	1.83	32,454
<b>Bars/pubs/clubs</b>	13,304	1.64	21,753
<b>Eating out</b>	12,196	1.52	18,501
<b>Alcohol</b>	12,196	2.16	26,343
<b>Clothes</b>	12,196	1.70	20,778
<b>Mobile phones</b>	11,087	1.60	17,750
<b>Course books</b>	11,087	2.50	27,740
<b>Course related equipment</b>	9,978	2.17	21,603
<b>Excursions</b>	8,870	1.61	14,271
<b>Non-alcoholic drinks</b>	8,870	3.50	31,026
<b>Cigarettes</b>	7,761	2.33	18,052
<b>Internet/Wi-Fi</b>	7,761	1.60	12,425
<b>Toiletries</b>	7,761	1.64	12,689
<b>Printing/photocopying</b>	7,761	1.71	13,232
<b>Stationery</b>	6,652	1.75	11,665
<b>Films/DVDs</b>	6,652	1.70	11,322
<b>Music/downloads</b>	6,652	1.70	11,322
<b>Rent</b>	127,747	1.50	191,620
<b>University fees</b>	106,179	1.52	161,392
<b>TOTAL</b>	<b>430,164</b>	<b>n.a.</b>	<b>833,803</b>

Source: nef consulting based on ONS datasets

The employment estimation provided in Table 9 needs to be viewed with caution as ONS employment multipliers measure in fact “employment costs” multipliers, rather than employment per se. This nonetheless constitutes a useful “proxy” for deriving total employment impacts. If our estimation holds, student spending supports 833,803 jobs throughout the UK. Put in perspective, this is equivalent to the population of Liverpool and represents 2.8% of the UK’s total employed population.

## IV. The impacts of students' spending on regional economies

While, on aggregate, student spending contributes to around 1% of UK GDP, the distribution of this impact is also important. For some regions, the dependence of economic activity on student spending can be substantially higher than for the UK as a whole.

Few regions have developed input-output tables for gauging the regional multiplier impacts of different forms of demand for goods and services. Using UK multipliers for analysing regional impacts was excluded as a possibility due to the fact that regional multipliers tend to be different to national ones. This is due to the fact that there tends to be more output "leakage" to other regions (or countries) at a regional level. As such, we considered more appropriate to analyse the impacts of student spending in regions where multipliers have been measured and made public. This section presents the results we generated for Scotland and Wales.

Note that the approach taken is similar to the one taken for the UK economy as a whole. The only notable changes are as follows:

- The multipliers used. These are derived (1) from input-output tables created by the Scottish government's statistical division<sup>19</sup> and (2) Welsh input-output tables developed by Jones et al (2010)<sup>20</sup>.
- The universities' expenditures, detailed below.
- The housing expenditures, which vary substantially across regions of the UK.

### The impacts of student spending on Scotland

For measuring the impacts of student spending in Scotland we used:

- Similar "subsistence" spending assumptions, i.e. we assume national averages to hold at a regional level due to lack of more detailed data broken down by region.
- Different tuition fees expenditures. Scotland is unusual in that Scottish and EU undergraduate students are exempt from fees, except for non-Scottish UK nationals. Despite a low level of confidence in existing "average" figures we estimated that average tuition fees could be of the order of £825. This is a weighted average accounting for (a) students not paying fees, and (b) non-Scottish UK nationals paying fees of variable amounts (per university). This figure is likely to under-estimate actual average fees given that it doesn't include postgraduate fees.
- Different output multipliers (derived from the Scottish input-output accounts). These are more complete and detailed compared to ONS datasets. As such, a higher degree of confidence can be placed on results.
- Similar assumptions regarding the share of intermediate inputs to total output.
- A different amount spent on rent, since data broken down by region is available (see Table 6).

Our results suggest that the 216,320 students (as per 2012 figures) enrolled in

<sup>19</sup> Scottish input-output tables available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/Input-Output>

<sup>20</sup> Jones et al (2010), "The input-output tables for Wales 2007", Welsh economy research unit, Cardiff University. Available at: [http://business.cf.ac.uk/sites/default/files/IO\\_2007\\_Final\\_30\\_6.pdf](http://business.cf.ac.uk/sites/default/files/IO_2007_Final_30_6.pdf)

Scottish Universities generate a total output of £6.2 billion and contributed £1.8 billion to Scottish GDP (Table 10). This is equivalent to 1.26% of Scotland's GDP, which is estimated to be of £150 billion. Put in perspective, students' contribution to Scotland's GDP is equivalent to 10% of the tourism's sector contribution to the Scottish economy, and is almost as high as agriculture's contribution to Scottish GDP (1.4%).

Students' spending also supports more than 30,000 jobs directly and 79,000 jobs indirectly (Table 11). The total contribution of student spending to Scottish employment is estimated to 109,000 jobs in total. This is equivalent to one fifth (20%) of Edinburgh's total population. Put differently, for every 100 people employed in Scotland more than 3 depend on students' expenditures in the region.

Table 10: Impacts of student spending on the Scottish economy

Expenditure	Direct output supported	Output multipliers (Type II)	Total output supported	GVA supported
<b>Food shop</b>	£281,216,000.00	1.88	£527,405,711.17	£160,542,732.43
<b>Travel</b>	£179,978,240.00	1.84	£331,593,939.96	£100,937,468.16
<b>Bars/pubs/clubs</b>	£134,983,680.00	1.69	£227,904,801.54	£69,374,409.11
<b>Eating out</b>	£123,735,040.00	1.69	£208,912,734.75	£63,593,208.35
<b>Alcohol</b>	£123,735,040.00	1.54	£190,940,643.56	£58,122,489.00
<b>Clothes</b>	£123,735,040.00	1.74	£215,497,644.05	£65,597,660.16
<b>Mobile phones</b>	£112,486,400.00	1.70	£191,065,308.24	£58,160,437.04
<b>Course books</b>	£112,486,400.00	1.67	£187,811,751.03	£57,170,051.55
<b>Course related equipment</b>	£101,237,760.00	1.71	£173,001,831.59	£52,661,899.88
<b>Excursions</b>	£89,989,120.00	1.83	£164,360,082.08	£50,031,344.22
<b>Non-alcoholic drinks</b>	£89,989,120.00	1.75	£157,360,276.55	£47,900,597.66
<b>Cigarettes</b>	£78,740,480.00	1.00	£78,740,480.00	£23,968,666.90
<b>Internet/Wi-Fi</b>	£78,740,480.00	1.64	£129,312,305.38	£39,362,772.16
<b>Toiletries</b>	£78,740,480.00	1.71	£134,556,980.12	£40,959,255.46
<b>Printing/photocopying</b>	£78,740,480.00	1.91	£150,462,058.66	£45,800,774.45
<b>Stationery</b>	£67,491,840.00	1.71	£115,334,554.39	£35,107,933.25
<b>Films/DVDs</b>	£67,491,840.00	1.75	£117,917,757.73	£35,894,262.48
<b>Music/downloads</b>	£67,491,840.00	1.75	£117,917,757.73	£35,894,262.48
<b>Rent</b>	£1,370,084,352.00	1.82	£2,491,428,361.70	£758,392,843.24
<b>University fees</b>	£178,464,000.00	1.77	£316,519,942.94	£96,348,931.06
<b>TOTAL</b>	<b>£3,539,557,632.00</b>	<b>n.a.</b>	<b>£6,228,044,923.19</b>	<b>£1,895,821,999.04</b>

Source: nef consulting based on Scottish government and ONS datasets<sup>21</sup>

21 Scottish input-output tables available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/Input-Output>

Table 11: Estimated employment supported in Scotland

Expenditure	Estimated direct employment (headcount)	Employment multiplier	Total employment supported (headcount)
Food shop	2,402	2.7	6,447.08
Travel	1,537	2.4	3,747.59
Bars/pubs/clubs	1,153	1.3	1,506.03
Eating out	1,057	1.3	1,380.53
Alcohol	1,057	2.5	2,655.23
Clothes	1,057	55	58,117.64
Mobile phones	961	2.0	1,889.83
Course books	961	1.5	1,417.92
Course related equipment	865	1.4	1,184.69
Excursions	768	1.6	1,199.43
Non-alcoholic drinks	768	2.4	1,828.41
Cigarettes	672	1.0	672.44
Internet/Wi-Fi	672	1.5	1,037.18
Toiletries	672	1.4	921.43
Printing/photocopying	672	2.3	1,564.59
Stationery	576	1.4	789.79
Films/DVDs	576	1.7	951.77
Music/downloads	576	1.7	951.77
Rent	11,700	1.6	18,632.65
University fees	1,524	1.5	2,295.78
<b>TOTAL</b>	<b>30,227</b>	<b>n/a</b>	<b>109,191.76</b>

Source: nef consulting based on Scottish government and ONS datasets

### The impacts of student spending on Wales

For measuring the impacts of student spending in Wales we used:

- Similar “subsistence” spending assumptions, i.e. we assume national averages to hold at a regional level due to lack of more detailed data broken down by region.
- Different tuition fees expenditures. Welsh students (60% of the total) pay an average of £3500 per year while non-Welsh students (40%) an average of £8200. The weighted average is thus estimated to be £5,380 per annum.
- Different output multipliers (derived from the input-output accounts created by Jones et al for the Environment Agency Wales). These are less detailed than ONS datasets. As such, less confidence can be placed in the multipliers used to analyse indirect and enabled economic impacts.
- Similar assumptions regarding the share of intermediate inputs to total output.
- A different amount spent on rent, since data broken down by region is available (see Table 6).

Our results suggest that the total output supported by students' expenditures in Wales is of £3.9 billion while the contribution of students to Welsh regional Gross Value Added is estimated to be of £1.2 billion per annum. Students thus contribute, directly and indirectly, to 2.54% of Welsh regional Gross Value added, estimated to be of £47.30 billion. The contribution of students' expenditures to Welsh GVA is 1.5 times higher than the contribution of Welsh agriculture to GVA. Our results also suggest that the dependence of the Welsh economy on student spend is more than double the UK average.

Table 12: Impacts of student spending on the Welsh economy

Expenditure	Direct output supported (£ million)	Output multipliers (Type II)	Total output supported (£ million)	GVA supported (£ million)
Food shop	£170,540,500.00	1.59	£271,159,395.00	£82,541,142.95
Travel	£109,145,920.00	1.53	£166,993,257.60	£50,832,885.02
Bars/pubs/clubs	£81,859,440.00	1.54	£126,063,537.60	£38,373,844.57
Eating out	£75,037,820.00	1.54	£115,558,242.80	£35,176,024.19
Alcohol	£75,037,820.00	1.59	£119,310,133.80	£36,318,102.90
Clothes	£75,037,820.00	1.38	£103,552,191.60	£31,521,372.33
Mobile phones	£68,216,200.00	1.42	£96,867,004.00	£29,486,395.72
Course books	£68,216,200.00	1.39	£94,820,518.00	£28,863,443.70
Course related equipment	£61,394,580.00	1.5	£92,091,870.00	£28,032,841.00
Excursions	£54,572,960.00	1.53	£83,496,628.80	£25,416,442.51
Non-alcoholic drinks	£54,572,960.00	1.59	£86,771,006.40	£26,413,165.74
Cigarettes	£47,751,340.00	1.59	£75,924,630.60	£23,111,520.03
Internet/Wi-Fi	£47,751,340.00	1.42	£67,806,902.80	£20,640,477.00
Toiletries	£47,751,340.00	1.5	£71,627,010.00	£21,803,320.78
Printing/photocopying	£47,751,340.00	1.5	£71,627,010.00	£21,803,320.78
Stationery	£40,929,720.00	1.5	£61,394,580.00	£18,688,560.67
Films/DVDs	£40,929,720.00	1.5	£61,394,580.00	£18,688,560.67
Music/downloads	£40,929,720.00	1.5	£61,394,580.00	£18,688,560.67
Rent	£651,464,710.00	1.51	£983,711,712.10	£299,442,654.56
University fees	£705,775,300.00	1.68	£1,185,702,504.00	£360,928,817.81
<b>TOTAL</b>	<b>£2,564,666,750.00</b>		<b>£3,997,267,295.10</b>	<b>£1,216,771,453.57</b>

In terms of employment contribution, students' expenditures in Wales are estimated to support a total of 35,188 jobs (Table 13). This is equivalent to 10% of Cardiff's population, the region's largest city. Put differently, for each 100 people employed in Wales more than two depend on students' expenditures in the region.

Table 12: Estimated employment supported in Wales

Expenditure	Estimated direct employment (headcount)	Employment multiplier	Total employment supported (headcount)
Food shop	1,456	2.3	3,349
Travel	932	1.58	1,472
Bars/pubs/clubs	699	1.2	838
Eating out	641	1.2	768
Alcohol	641	2.3	1,473
Clothes	641	1.43	916
Mobile phones	583	1.52	885
Course books	583	1.59	926
Course related equipment	524	1.3	681
Excursions	466	1.34	624
Non-alcoholic drinks	466	2.3	1,071
Cigarettes	408	2.3	937
Internet/Wi-Fi	408	1.52	619
Toiletries	408	1.3	530
Printing/photocopying	408	1.3	530
Stationery	350	1.3	454
Films/DVDs	350	1.3	454
Music/downloads	350	1.3	454
Rent	5,579	1.57	8,759
University fees	6,027	1.57	9,462
<b>TOTAL</b>	<b>21,902</b>	<b>n/a</b>	<b>35,188</b>

Source: nef consulting based on Scottish government and ONS datasets

## V. Discussion and conclusion

### Synthesis and discussion of findings

Our analysis suggests that the contribution of student spent on the macroeconomy is far from negligible. This contribution is over and above all forms of public returns on investment in higher education, outlined in Section II of this report.

However, this is a first estimation of the impacts of student spending, and our results are sensitive to some key assumptions. Our estimation of university fees, for instance, is highly uncertain, both for the UK and for Scotland and Wales. The choice of an average fee figure can impact strongly on results given that university fees are one of the most substantial expenditures of students: they notably represent approximately 25% of total student expenditure in the UK and slightly more than 25% in Wales.

Similarly, regional differences in spending patterns may be important when analysing regional impacts. In the context of this study we have assumed that students have the same “subsistence” and housing expenditures (in amount, and structure) regardless of regional differences. This might bias our results for Scotland and Wales.

Table 13: Overview of results

	Direct output supported (£ billion)	Total output supported (£ billion)	Total GVA supported (£ billion)	Total GVA supported as % of GVA/GDP	Direct employment supported	Total employment supported	As % of national/regional employment
<b>United Kingdom</b>	50.37	82.83	25.21	1.03	430,164	833.803	2.8
<b>Scotland</b>	3.53	6.22	1.89	1.26	30,277	109,191	3.8
<b>Wales</b>	2.54	3.99	1.21	2.57	21,902	35,188	2.7

Source: nef consulting

Despite these caveats, our results are more likely to under-estimate, rather than over-estimate, the total economic impacts of students. This is because some impacts were not factored into this analysis. For example, students attract visitors and relatives to the regions where they study, and this induces an additional “round” of spending in the economy. This additional knock-on benefit was not included in our analysis.

Lastly, our estimation is illustrative of so-called “gross” rather than “net”, or “additional” impacts.

The additional contribution is defined as the contribution which is over and above what would have happened anyway, in a counterfactual scenario. Previous studies dealing with the contribution of HEIs to local and regional economies have measured the additional impact in the following ways:

- (1) By subtracting any expenditure of students originating from the local area or region, assuming these persons would have spent the same amount in the region anyway. The additional impact, in this case, is the sum of expenditures of foreign students and/or students coming from other UK regions.

- (2) At a UK level, by subtracting any expenditure of students originating from the UK, thus considering that only foreign student expenditure is a “net” benefit to the economy.

An analysis encompassing these elements would be able to evidence the additional impacts of student spending in the UK.

#### **Links with previous quantitative analyses and future research**

It is widely acknowledged that higher education students and graduates provide significant benefits to the economy in the long run. The evidence presented in this report suggests that the contribution of students to the economy can equally be significant in the short-term. The contribution of student spending is an immediate positive effect of students on the economy. Future research could thus combine the short and long-term benefits and compare them with the costs of higher education investment – including opportunity costs such as foregone income tax receipts. Future research could also compare the tax benefits generated by student spending with State subsidies in order to elicit whether there is a short-term “loss” for the Exchequer, or not. Indeed the conventional rationale assumes that short-term losses are only compensated by long-run benefits derived from a highly educated workforce. Demonstrating that even short-term benefits outweigh the public costs of higher education would mean that the actual returns to higher education investment could be considerably higher than previously suggested.

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## Glossary

**Economic multipliers:** Every time there is an injection of new demand into the economy there is likely to be a multiplier effect. This is because an injection of extra income leads to more spending and investment, which creates more income, and so on. The multiplier effect refers to the total increase in final income arising from any new injection of spending. Type I multipliers measure the sum of direct and indirect impacts on an injection of demand in the economy. If there is an increase in final demand for a particular product, we can assume that there will be an increase in the output of that product, as producers react to meet the increased demand; this is the direct effect. As these producers increase their output, there will also be an increase in demand on their suppliers and so on down the supply chain; this is the indirect effect. Finally Type II multipliers also include induced impacts: as a result of the direct and indirect effects the level of household income throughout the economy will increase as a result of increased employment. A proportion of this increased income will be re-spent on final goods and services: this will be the induced effect.

**Gross Domestic Product (GDP):** The monetary value of all the finished goods and services produced within a country's borders in a specific time period, though GDP is usually calculated on an annual basis. It includes all of private and public consumption, government outlays, investments and exports less imports that occur within a defined territory. There are a variety of ways used to calculate GDP.

**Gross Value Added (GVA):** Gross value added is the value of output less the value of intermediate consumption; it is a measure of the contribution to GDP made by an individual producer, industry, sector or region.

**HEIs:** Higher Education Institutions

**Input-output tables:** An input-output table is a means of presenting a detailed analysis of the process of production, the use of goods and services (products) and the income generated in that production. An input-output table shows the supply-chain linkages in a production process: it shows how the goods and services produced by one industry are used as input into the production of the goods and services of another industry.

**Intermediate inputs (intermediate consumption):** The aggregate "intermediate consumption" is equal to the amount of the difference between Gross Output (roughly, the total sales value) and Net output (gross value added or GDP). It is the value of all the inputs "used up" in order to produce a unit of output (sales).

**Opportunity cost:** The cost of an alternative that must be forgone in order to pursue a certain action. Put another way, the benefits you could have received by taking an alternative course of action. The opportunity cost of pursuing a higher education degree could be the income foregone in order to undertake a degree.

**Present Value / Net Present Value (NPV):** The current worth of a future sum of money or stream of cash flows given a specified rate of return. Future cash flows are discounted at the discount rate, and the higher the discount rate, the lower the present value of the future cash flows. The Net Present Value is the equal the Present Value of benefits minus the Present Value of costs. It is the benefit, net of costs, of an intervention/policy/programme.



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