



## STATISTICAL PRESS RELEASE

### NORTHERN IRELAND RESEARCH AND DEVELOPMENT (R&D) 2010 HEADLINE RESULTS

9 November 2011

#### Coverage

Northern Ireland, unless otherwise stated

#### Theme

The Economy

**Table 1: Total Expenditure on R&D in cash terms (£million)**

	2008	2009	2010
<b>Total expenditure on R&amp;D (of which)</b>	344.0	482.8	521.4
<b>Expenditure by Businesses</b>	183.9	323.7	344.0
<b>Expenditure by Higher Education<sup>1</sup></b>	144.2	143.0	161.8
<b>Other expenditure by Government</b>	15.9	16.1	15.6

<sup>1</sup>To avoid double counting, this figure excludes £1.2m in 2010, £1.1m in 2009, £1.0m in 2008 of expenditure on R&D by businesses that was undertaken by universities or higher education establishments.

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(detailed analysis of 2010 results)**



- Total expenditure on Research and Development in Northern Ireland in cash terms was £521.4 million (m) in 2010, of which £344.0m (66%) was spent by Businesses, £161.8m (31%) by the Higher Education sector and the remainder (£15.6m or 3%) was Government expenditure. There was an increase of £38.6m (8%) in cash terms in Northern Ireland total R&D expenditure between 2009 and 2010, driven almost equally by Businesses and the Higher Education sector.
- Total business R&D expenditure in 2010 was £344.0m, up £20.3m (6%) in cash terms on the previous year. Between 2005 and 2010, overall Business R&D expenditure has risen by 123% in cash terms (from £154.3m).
- The percentage increase in Northern Ireland (in-house) business R&D expenditure (9.1%) between 2009 and 2010 was the second biggest of the 12 UK regions. Of the 12 UK regions, nine showed an increase in cash terms over the period.
- Higher Education R&D expenditure rose in cash terms by £18.8m (13%) while Government expenditure decreased by £0.5m (-3%) over the year.
- The ten biggest spending companies accounted for 59% of the total R&D spend in Northern Ireland in 2010, slightly higher than in 2009 (57%).
- Externally owned companies accounted for 68% of Business R&D expenditure compared to 32% by locally owned companies. However, R&D spend by locally owned companies reported an annual increase of 27%.
- Expenditure by businesses with less than 250 employees fell by £10.9m (-8%) from 2009 to 2010, in cash terms. However, since 2005 such expenditure has increased by 78% to £133.4m.

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## Introduction

This Statistical Press Release provides information on the level of Research & Development (R&D) activity in Northern Ireland. R&D activity is defined as research or technological development with an appreciable element of novelty or innovation in line with international criteria (the Frascati manual). R&D activity contributes to the development of new technologies, products and processes and is a key driver of productivity growth. The Northern Ireland R&D surveys cover the business sector, higher education and other government financed activities. It provides important indicators of the extent to which Northern Ireland companies and higher education establishments are investing in the activities that underlie future economic development.

## Total Expenditure on R&D in Real Terms

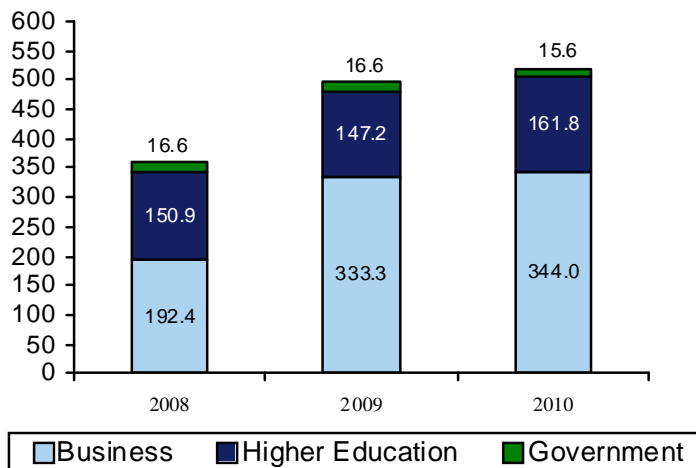
In addition to the measure of R&D activity in cash terms provided earlier (page 1) it is also of interest to examine change in spend in real terms. This takes out the effect of price changes over time through the use of deflators, enabling a more consistent measure of investment in R&D activity.

In real terms, total expenditure increased by £24.3m or 5% from £497.1m in 2009 to £521.4m in 2010.

In 2010 the Northern Ireland Business sector again accounted for a greater share of total R&D expenditure (66%) than the Higher Education sector (31%). In 2009 the figures were 67% and 30% respectively.

Over the last five years (2005-2010) total R&D spending in real terms in NI has risen by 45%.

**Figure 1: Main Split of R&D Expenditure in Real Terms (£million)**



Over the year to 2010 there was an increase in expenditure by Businesses and Higher Education and a decrease in Government expenditure. In real terms, expenditure by Businesses increased by £10.7m (3%) over the year and expenditure by Higher Education increased over the year by £14.6m (10%). Government expenditure decreased by £1.0m (6%) in real terms over the year.

Business R&D expenditure rose by 95% between 2005 and 2010 in real terms.

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**Detailed analysis of company spend in the rest of the survey is undertaken in cash terms, except where otherwise stated.**

## Business R&D: by Company Size

Companies with 250 or more employees accounted for 61% of business R&D expenditure in 2010, although they represented only 10% of R&D performing companies. Small firms (i.e. those with less than 50 employees) represented some 69% of R&D performing companies and accounted for just under a fifth (17%) of total business R&D expenditure while R&D expenditure by Small and Medium-sized companies (SMEs)\* accounted for 39% of the total business expenditure. Total SME expenditure fell by £10.9m (-8%) from 2009 to 2010, in cash terms. However, since 2005 SME expenditure has increased by 78% to £133.4m. The proportion that large companies (250+ employees) make to total R&D expenditure (61%) was more than in the previous two years (2009: 55%; 2008: 42%).

\*The European Commission definition of Small Medium Enterprises (SME) used is defined as being enterprises with less than 250 employees and large companies as being enterprises with more than 250 employees.

## In-house Business R&D: UK and Regional Comparisons

Spending carried out within a company in Northern Ireland (in-house), accounted for 94% (£324.2m) of total business expenditure in 2010.

Of the 12 UK regions, nine showed an increase in in-house business R&D expenditure in cash terms over the year to 2010, including Northern Ireland which increased by 9.1%. This was the second highest percentage increase across the UK regions. In the UK as a whole such expenditure increased by 3.7%. Changes varied from an increase of 14.5% in the East Midlands to a decrease of 3.5% in the North East.

**Table 2: In-house Expenditure by UK Government Office Region (Cash Terms)**

	Expenditure (£million)		%Change (2009-2010)
	2010	2009	
UK	16067	15497	3.7
England	14877	14327	3.8
North East	297	308	-3.5
North West	2047	1907	7.3
Yorkshire & The Humber	491	452	8.5
East Midlands	1143	998	14.5
West Midlands	892	847	5.2
South West	1362	1277	6.7
East of England	3986	3930	1.4
London	902	909	-0.8
South East	3758	3698	1.6
Wales	244	243	0.3
Scotland	622	630	-1.2
Northern Ireland	324	297	9.1

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## **R&D Investment Rate**

Regional Gross Value Added (GVA) for 2009 released by the Office for National Statistics (ONS) on 8th December 2010 shows that Northern Ireland 2010 in-house R&D as a proportion of GVA (1.1%) and was the sixth highest of the twelve UK regions (a lower proportion was recorded in West Midlands (1.0%), North East (0.7%), Scotland (0.6%), Yorkshire & The Humber (0.6%) Wales (0.5%), and London (0.3%)). Northern Ireland businesses would have needed to invest some £43m more in R&D in 2010 to reach the UK average rate (1.3%). Regional GVA figures for 2010 are due to be released by ONS on 14<sup>th</sup> December 2011.

UK R&D results can be found at the following link:

<http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Research+and+Development+in+Business>

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## Background Notes

### Northern Ireland Statistics and Research Agency

From the 1st April 2011, the responsibility for the collection of data and production of official labour market and economic statistics transferred from the Department of Enterprise, Trade and Investment to the Northern Ireland Statistics and Research Agency (NISRA), an agency of the Department of Finance and Personnel (DFP). This transfer mirrored the position in Great Britain where most business surveys and labour market data collection and statistical production have been transferred from the departments with policy responsibilities to the Office for National Statistics (ONS). However, it is important to note that there are no planned changes to the production of economic and labour market statistical publications and outputs as a result of the transfer.

### Background

The survey of Northern Ireland Business Expenditure on Research and Development during 2010 was undertaken by the Northern Ireland Statistics and Research Agency (NISRA). The sample and survey results only cover business enterprises as defined in the Frascati manual. This excludes government organisations, higher education establishments and charities.

The definition of R&D adopted for the purposes of the NI inquiry is the same as that used by ONS for the equivalent GB survey:

"The guiding line to distinguish between research and technological development activity (R&D) from non-research activity is the presence or absence of an appreciable element of novelty or innovation. If the activity departs from routine and breaks new ground it should be included; if it follows an established pattern it should be excluded".

The NI questionnaire follows the same structure and includes the same questions as the GB questionnaire, although there were some modifications to tailor the questions asked for use in NI.

The survey covers expenditure in the year ending December 2010, although companies were given the option of supplying data for a business year ending on any date between 6 April 2010 and 5 April 2011.

It is worth noting that a number of NI companies are part of national and international companies. Many concentrate their R&D at particular sites, not necessarily in NI, although all of their plants, including those in NI, will share in the benefits of research. Variations may occur in NI R&D data from year to year due to the influence of one or two large-scale projects.

### Survey Design

R&D surveys pose special problems for survey design – R&D takes place in only a small proportion of businesses but a comprehensive list of these businesses does not exist. A simple random sample of the business population would not be suitable for an R&D survey because many of the sample businesses would not undertake R&D and many significant R&D performers would be missed in such a sample.

The solution is to implement a stratified sample design. The stratification variable was the known level of R&D performance of the businesses. This information was gained from previous surveys (mainly the 2009 survey carried out by DETI) and extra information from various sources such as the Office for National Statistics (ONS), Invest NI and filter questions on the Annual Business Inquiry and Community Innovation Survey. For the purposes of the 2010 survey, businesses were stratified into 4 groups:

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- (i) Businesses responding to the 2009 DETI survey who returned or had estimated a total R&D expenditure value greater than zero;
- (ii) Businesses reporting positively to the R&D filter question in the Annual Business Inquiry and Community Innovation Survey; other identified potential R&D performers (principally, those companies who had received assistance from Invest NI during 2010); and companies newly identified to ONS as R&D spenders;
- (iii) Companies who have been identified as 'not R&D performers' when selected for past surveys;
- (iv) The remainder of Northern Ireland businesses.

The businesses making up strata (i) and (ii) formed a register of R&D performers and the sample for the 2010 survey was derived from this register. Indeed, each of these businesses was issued a questionnaire – in effect, therefore, a census of R&D performers was carried out. Strata (iii) and (iv) were not included as they were assumed to have zero R&D expenditure.

## Survey Response rate

For 2010, 1,141 forms were sent out to businesses believed to be performing R&D. Completed forms were returned by 1,021 businesses representing a response rate of 89 per cent. The total number of companies spending on R&D is relatively small – 424 in 2010 (and in 2009). Estimates were made for the R&D activity of non-responding businesses. Estimates for Invest NI companies were based on the value of offers made to promote R&D investment, the amount remaining to be claimed against these offers, the frequency of claims and the contribution of Invest NI's assistance to total planned R&D expenditure. Estimates for Invest NI companies make up 19% of the total non-respondent companies. The remaining 81% - non Invest NI estimates were based on historical information and other administrative surveys within Economic and Labour Market Statistics Branch.

Overall, all estimates make up 2.0% of total BERD spend for 2010 (compared to 1.1% in 2009). Estimates for Invest NI companies account for 0.8% of total BERD spend while estimates for non Invest NI companies account for 1.2% of total BERD spend. This should be borne in mind when considering the results.

The results are provisional and may be revised should additional information become available. Figures contained within all tables in this release may not add due to rounding. Percentages calculated on these rounded figures may differ from those that are detailed in the text.

**Figure 2: Deciles of Estimates as a percentage of 2010 BERD**

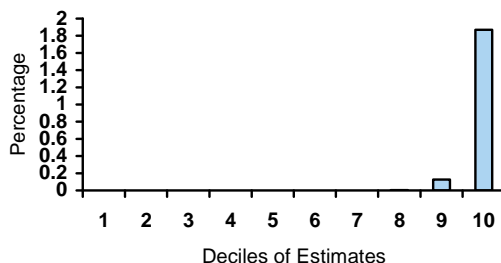


Figure 2 shows that all estimates made up 2.0% of total 2010 BERD spend. When estimates are ranked according to ascending size of spend, the last two deciles (i.e. the top 20% of companies) accounted for 99.8% of the total BERD estimated spend indicating that most of the estimates were small in magnitude. The bulk of the value of the estimates has been accounted for by a relatively small number of companies.

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## Definition of Terms

### Type of R&D Expenditure

Total Expenditure on R&D - This covers expenditure by businesses, expenditure by higher education and other expenditure by Government.

Other Expenditure by Government - The ONS also collect annual data on Government-funded Science, Engineering and Technology for the UK as a whole and publish this in the Forward Look report. By utilising Forward Look data in conjunction with the results from the NISRA survey, it has been possible to compile a more complete picture of total expenditure on R&D in NI. Forward Look figures will include financial assistance to both higher education and to businesses by Government as well as expenditure on R&D conducted within Government Departments. The figures shown in Table 1, expenditure by businesses and higher education and other expenditure by Government, should compliment each other; i.e. there should be no double counting.

In-house R&D – This is R&D carried out within the company and was previously referred to as intramural expenditure.

Purchase of R&D – This is R&D funded by plant(s) in Northern Ireland but undertaken by other firms or organisations in the UK and abroad and was previously referred to as extramural expenditure.

Capital Expenditure - Includes companies' expenditure on land, buildings, equipment and machinery (including vehicles). Capital expenditure on R&D is particularly subject to distortions and is likely to fluctuate significantly from year to year as a small number of projects could cause this percentage to increase or decrease sharply. For example, some R&D projects may have a duration of several years but involve heavy capital outlay in the formative years of the research. The erratic nature of R&D capital expenditure may partly explain differences in capital expenditure among companies of different sizes. Only by looking at underlying trends over several years will it be possible to see if some sectors or companies of differing sizes are more likely to require more expenditure of a capital nature.

## Results

Results are shown mainly by industrial sector and company size (based on the number of employees). The sectoral analyses are based on the Standard Industrial Classification 2007 (or SIC 2007) of industries. More details on SIC 2007 are available at the link below.

<http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html>

## Next Publication

Detailed analysis of the 2010 results will be published online at <http://www.detini.gov.uk/deti-stats-index/stats-surveys/stats-research-development.htm> on 14 December 2011.