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**Enterprise, Trade
and Investment**
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Business Activity

Statistics Bulletin

Northern Ireland Research & Development Statistics 2006

26 November 2007

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NORTHERN IRELAND RESEARCH AND DEVELOPMENT STATISTICS 2006

Published 26th November 2007

- **Total expenditure on Research and Development in Northern Ireland was £319.2 million in 2006, of which £155.4 million (48.7%) was spent by businesses, £150.1 million (47.0%) by the Higher Education sector and the remainder (£13.7m) was Government expenditure.**
- **There was a rise of £16.8 million (5.5%) in cash terms and a rise of £8.4 million (2.7%) in real terms in Northern Ireland total R&D expenditure between 2005 and 2006 (from £310.8m to £319.2m).**
- **For the first time in four years Northern Ireland Business accounts for a greater share of total R&D expenditure (48.7%) than the Higher Education sector (47.0%).**
- **Higher Education and Government expenditure fell in real terms by £0.1 million (-0.1%) and £0.3 million (-2.2%) respectively.**
- **Total business R&D expenditure in 2006 was £155.4 million, up £8.8 million (6.0%) in real terms on the previous year. Business spending in cash terms was similar to the level in 2002.**
- **Within company expenditure (intramural), a subset of business R&D expenditure, increased by 3.8% in real terms in Northern Ireland from £140 million to £145.0 million. Such spending in the UK increased by 4.6%.**
- **There was an increase (6.0%) in R&D expenditure in cash terms by the Manufacturing sector from £88.3 million in 2005 to £93.7 million in 2006. A larger increase occurred in the Services and Other sector with R&D expenditure increasing by 13.7% from £54.3 million to £61.7 million in the same period.**
- **However, between 2002 and 2006, overall Business R&D expenditure has fallen by 10.5% in real terms from £173.5 million to £155.4 million**

Department of Enterprise,
Trade and Investment

Northern Ireland Research & Development Statistics 2006

26 November 2007

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Executive Summary

1

Introduction

This bulletin provides information on the level of Research & Development (R&D) activity in Northern Ireland. 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 includes information on: the level of R&D; sources of funding for R&D; employment in R&D.

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.

Coverage and Results

All companies believed to be performing R&D are included in the survey - in effect, therefore, a 'census' of known R&D performers was carried out. A total of 707 returns were received by the Department – some 89% of those identified. Estimates are made for those companies that failed to respond to the survey, either on the basis of historical information or using administrative surveys.

All results contained in this bulletin are provisional and may be subject to revision to take account of any additional information received subsequent to publication.

Total Expenditure on R&D in Cash Terms

Total expenditure on Research and Development in Northern Ireland in cash terms was £319.2 million in 2006, of which £155.4 million (48.7%) was spent by businesses, £150.1 million (47.0%) by the Higher Education sector and the remainder was other government expenditure.

There was a rise of £16.8 million (5.5%) in cash terms in Northern Ireland total R&D expenditure between 2005 and 2006 to £319.2million. Over the last five years total R&D spending in cash terms in NI has risen by 20.9%.

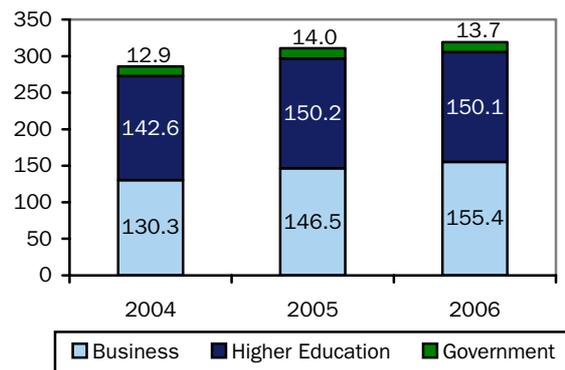
Total expenditure on R&D in real terms

In 2006 the Northern Ireland Business sector accounted for a greater share of total R&D expenditure (48.7%) than the Higher Education sector (47.0%) unlike in 2005 when the reverse was true. (47.2% and 48.3% respectively).

In real terms, total expenditure increased by £8.4m or 2.7% from £310.8 million in 2005 to £319.2m in 2006.

Over the last five years (2002-2006) total R&D spending in real terms in NI has risen by 5.7%.

Figure 1
Main Split of R&D Expenditure in Real Terms



Over the year to 2006 there was an increase in expenditure by Businesses but expenditure by Higher Education and Government decreased. In real terms, expenditure by Business increased by £8.8m (6.0%) whilst Government expenditure decreased by £0.3m (-2.2%). Expenditure by Higher Education also decreased over the year by £0.1m (-0.1%) while remaining relatively constant in cash terms.

Overall R&D business expenditure fell by 10.5% between 2002 and 2006 in real terms.

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

Business R&D: Intramural Expenditure

Spending carried out within a company in Northern Ireland (intramural), accounted for 93.3% (£145.0 million) of total business expenditure in 2006. Intramural expenditure increased by 6.6% between 2005 and 2006.

Business R&D: Sectoral Analysis

In 2006, the majority of R&D was carried out within the Manufacturing sector (60.3%) with the remaining 39.7% carried out in Services & Other industries categories. This shows a slightly increased share of expenditure in the Services & Other sector compared to previous years (for example, in 2005 Manufacturing accounted for 61.9% and Services & Other 38.1%).

Over the year to 2006, increases in expenditure occurred in both the Manufacturing and Services & Other sectors. The increase in expenditure in the Services & Other sector, (£7.4m or 13.7%) was larger in value and proportional terms than the increase of £5.3m (6.0%) in the Manufacturing sector.

Business R&D: by Company Size

Companies with 250 or more employees accounted for 47% of business R&D expenditure in 2006, although they represented only 11% of R&D performing companies. Smaller firms (i.e. those with less than 50 employees) represented some 63% of R&D companies and accounted for just over a quarter (26%) of total business R&D expenditure while R&D expenditure by Small and Medium-sized companies (SMEs)* accounted for 53% of the total business expenditure. The proportion that large companies make to total R&D expenditure (47%) was approximately the same in the previous two years (2005: 47% and 2004: 50%) but lower than in 2003 (54%). See Annex 3 for further details.

*The definition of Small Medium Enterprises (SME) used is that under the European Commission Recommendation (96/280/EC) of 3 April 1996, in which SMEs are defined as being enterprises with less than 250 employees and large companies as being enterprises with more than 250 employees.

Business R&D: Source of funds

The majority of funding came from companies' own funds (77.0%), with 12.0% from Government, 5.0% from overseas and 6.0% from other sources. The proportion of funding from own funds decreased from 82.9% in 2005 to 77.0% in 2006.

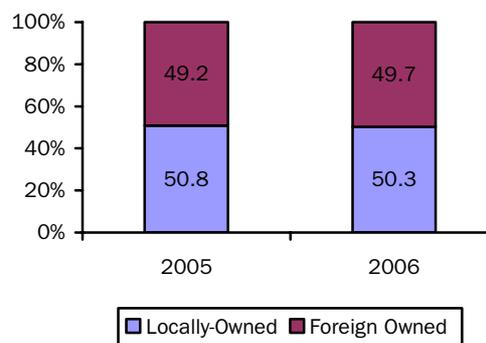
Business R&D: Ownership

Companies with ownership outside NI play an important role in financing R&D activities in the region. Almost half, £77.2m (49.7%) of total R&D spend was by such foreign owned companies although they accounted for only one-fifth (20.3%) of all R&D-performing companies. Their contribution to the total R&D spend was marginally higher than in 2005 (49.2%) and their cash value increased by £7.0m over the same period.

R&D expenditure by locally-owned companies increased by 7.9% (£5.7m) between 2005 and 2006 while R&D Expenditure by foreign-owned companies increased by 10.1% (£7.0m).

The majority of R&D expenditure in Manufacturing is carried out by foreign-owned companies (58.9%), whereas the converse is true for Services & Other sector (35.6%).

Figure 2
Expenditure by Ownership 2005-2006
(percentages)



Business R&D: Employment

In 2006, companies surveyed reported a total of 3,040 employees working on R&D, some 6.3% of all employees in companies carrying out R&D. The whole time equivalent figure (WTE) for the same period was 2,870.

The number of R&D employees increased by nearly 12% over the year to 2006.

Table 1: R&D Employment

	2003	2004	2005	2006
Number	2,930	2,880	2,720	3,040
WTE	2,770	2,660	2,600	2,870

89.2% of all R&D employees were full-time. Of all R&D employees, 61.4% were scientists, 19.7% were technicians and a further 18.9% were classed as other employees e.g. professional, administrative, clerical and industrial). In terms of WTE the proportions were 62.7%, 19.6%, and 17.8% for scientists, technicians and other employees respectively.

Intramural Business R&D: UK and Regional Comparisons

Of the 12 UK regions, eight showed a rise in intramural business R&D expenditure in cash terms over the period 2005-2006 including Northern Ireland which increased by 6.6%, while four showed a fall. This was the 5th highest percentage increase across the UK regions. In the UK as a whole such expenditure increased by 7.5%. Changes varied from an increase of 82.2% in London to a decrease of 14.0% in the North West of England.

Over the two year period 2004-2006, intramural business R&D expenditure in cash terms in Northern Ireland increased by 25.5%. In the UK as a whole such expenditure rose by 12.9%. Over the five year period 2001-2006 intramural business R&D expenditure in cash terms for NI is approximately the same (£155 million)

Higher Education R&D: Summary

R&D expenditure in the Higher Education sector increased by 2.6% in cash terms between 2005 and 2006 (from £146.8m to £150.7m) reflecting its importance to Northern Ireland. Net expenditure in 2006 (excluding spend by businesses undertaken by higher education) was £150.1m.

Half of funding (50.9%) for Higher Education R&D in 2006 came from the Government block grant (£76.7m). In 2006, there were some 1,700 full-time equivalent employees in the Higher Education sector engaged in R&D, decreasing from 1,770 employees in 2005.

R&D Investment Rate

The most recent information for R&D expenditure as a percentage of Regional Gross Value Added relates to 2005. This shows that Northern Ireland (0.56%) was the third lowest of the twelve UK regions (a lower proportion was recorded in Yorkshire & Humber (0.44%) and London (0.30%)). Northern Ireland businesses would have needed to invest some £164 million more in R&D in 2005 to reach the UK average rate. Regional GVA figures for 2006 will be published by the Office for National Statistics in Dec 2007.

Other Sources

The most recent UK Innovation (2005) Survey estimated that 55.9% of all NI businesses had undertaken some form of innovation activity over the 3-year sample period (2002-2004) compared to 56.6% of all firms in the UK. In addition, the survey showed that 54.4% of NI and UK enterprises had some innovation-related expenditure.

Northern Ireland results from the 2005 Innovation Survey are available at <http://www.detini.gov.uk/cgi-bin/downdoc?id=2197>

UK results along with further details from this survey are available at <http://www.dti.gov.uk/innovation/innovation-statistics/cis/page10957.html>

Results from the subsequent Northern Ireland Innovation Survey 2006¹, show that in the three-year period 2003-2005, 51.8 per cent of enterprises in NI were innovation active compared to 55.9 per cent in 2002-2004.

Results from the 2006 Northern Ireland Innovation Survey are available at <http://www.detini.gov.uk/cgi-bin/downdoc?id=2942>

According to the 2005 Northern Ireland Annual Business Inquiry (NIABI) 6.0% of companies had someone in their business engaged in research and development work during the year. This is slightly less than the 6.5% of companies reported by the 2004 NIABI. The Manufacturing sector was the sector with the highest proportion (16.3%), while the proportion in the Service sector was 2.7%. Results from the 2006 NIABI are due to be published results in Dec 2007.

¹ This survey was conducted using the methodology employed in the fourth European Community Innovation Survey (CIS4) and the UK Innovation Survey 2005, but was only carried out in Northern Ireland.

Introduction

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The performance and funding of most research & development (R&D) activity occurs in three main economic sectors:- the Business sector, Higher Education Institutions and Government.

The Department of Enterprise, Trade and Investment (DETI) carries out annual surveys of R&D expenditure in the Business sector and Higher Education Institutions in Northern Ireland (see Sections 3 and 7 respectively of this Statistics Bulletin). Information on Government R&D comes from an annual survey conducted by the Office for National Statistics (ONS), which is addressed to all Government departments, including those in Northern Ireland².

Headline results from the surveys are provided in both cash and real terms while detailed analysis is provided mainly in cash terms.

RESULTS

Total expenditure on Research and Development in Northern Ireland in cash terms was £319.2 million in 2006, of which £155.4 million (48.7%) was spent by businesses, £150.1 million (47.0%) by the Higher Education sector and the remainder was other government expenditure.

Total expenditure was 5.5% higher than that in 2005 (£302.4m) and 17.0% higher than that in 2004 (£272.7).

Table 2: Total Expenditure on R&D³ in cash terms (£million)

	2004	2005	2006
Total expenditure on R&D (of which)	272.7	302.4	319.2
Expenditure by Businesses	124.3	142.6	155.4
Expenditure by Higher Education⁴	136.1	146.2	150.1
Other expenditure by Government⁵	12.3	13.6	13.7

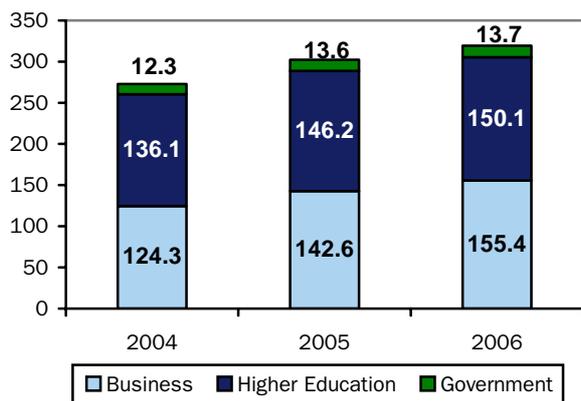
³ Figures contained within all tables in this Bulletin may not add due to rounding.

⁴ To avoid double counting, this figure excludes £0.6m in 2006, £0.7m in 2005, £0.9m in 2004 of expenditure on R&D by businesses that was undertaken by universities or higher education establishments.

⁵ 2005/06 Forward Look expenditure by NI Departments (see Notes to Editors, note 5) excluding grants to businesses to conduct R&D and funding to higher education institutions. The figure does not include expenditure by higher education establishments as this is detailed separately.

² The latest details are available on the Department for Business Enterprise & Regulatory Reform website at www.berr.gov.uk

Figure 3: Main Split of R&D Expenditure in cash terms (£million)



In 2006 expenditure by Business was greater than Higher Education (48.7% and 47.0% respectively). However, Higher Education accounted for the greater proportion of expenditure in the previous two years, (48.3% in 2005 and 49.9% in 2004).

Table 3: Total Expenditure on R&D in real terms⁶ (£million)

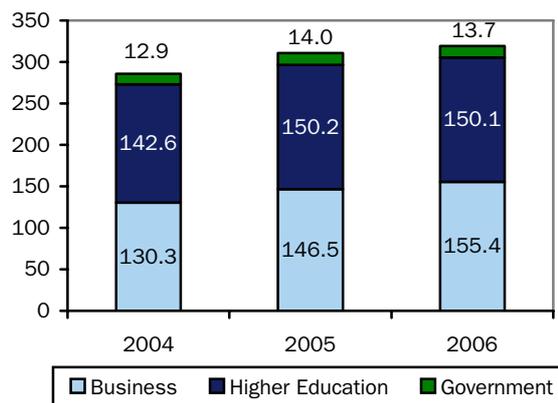
	2004	2005	2006
Total expenditure on R&D (of which)	285.8	310.8	319.2
Expenditure by Businesses	130.3	146.5	155.4
Expenditure by Higher Education⁷	142.6	150.2	150.1
Other expenditure by Government⁸	12.9	14.0	13.7

⁶ GDP deflator used to convert cash terms to real terms: 95.4 (2004) and 97.3 (2005) where 2006 = 100

⁷ To avoid double counting, this figure excludes ££0.6m in 2006, 0.7m in 2005, £0.9m in 2004 of expenditure on R&D by businesses that was undertaken by universities or higher education establishments.

⁸ 2005/06 Forward Look expenditure by NI Departments (see Notes to Editors, note 5) excluding grants to businesses to conduct R&D and funding to higher education institutions. The figure does not include expenditure by higher education establishments as this is detailed separately.

Figure 4: Main Split of R&D Expenditure in real terms (£million)



In real terms total expenditure in 2006 (£319.2m) has increased by 2.7% (£8.4m) from expenditure in 2005 (£310.8m).

Over the year to 2006 there was an increase in expenditure by Businesses but expenditure by Higher Education and Government decreased. In real terms, expenditure by Businesses increased by £8.8m (6.0%) whilst Government expenditure decreased by £0.3m (-2.2%). Expenditure by Higher Education decreased over the year by £0.1m (-0.1%).

Business Expenditure on Research & Development in 2006

3

Table 4 details the headline results from the 2006 Business Expenditure on Research & Development (BERD) survey. The table shows that in 2006, total expenditure (in cash terms) on R&D by Northern Ireland businesses was an estimated £155.4 million.

Total BERD consists of intramural expenditure (i.e. R&D carried out within the company) and extramural expenditure (i.e. R&D funded by firms in Northern Ireland but undertaken by other firms in the UK and abroad). The vast majority of total BERD was intramural expenditure (£145.0m or 93.3%) with £10.4m or 6.7% being extramural expenditure which increased from £6.5m in the previous year. Of this £10.4m of extramural expenditure in Northern Ireland, some £0.6m was undertaken by the Higher Education sector.

77.0% of funding for R&D in 2006 came from the companies' own resources (£119.6m) while government provided a further 12.0% (or £18.7m) and the remainder came from overseas (5.0% or £7.7m) and other sources (6.0% or £9.3m).

Table 4: Business Expenditure on R&D - 2006

	Total Expenditure by Business (£million)	As % of Total Expenditure
Total Expenditure	155.4	100.0
Intramural Expenditure ⁹	145.0	93.3
of which:		
Current Expenditure	130.9	84.2
Capital Expenditure	14.1	9.1
Extramural Expenditure	10.4	6.7
Higher Education	0.6	0.4
Other	9.8	6.3
Government	18.7	12.0
Overseas	7.7	5.0
Other	9.3	6.0

Total employment on R&D in businesses for 2006 was 2,870 (based on whole time equivalent figures), which was higher than that in 2005 (2,600) and 2004 (2,660).

^{9,10,11} For definitions see Notes to Editors, note 5

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – SOME HISTORICAL COMPARISONS

Prior to 2001, the Research and Development Survey was conducted every three years (in 1993, 1996 and 1999). Since 2001, DETI has undertaken to survey companies annually. Table 5 below makes comparisons with earlier DETI surveys. To allow comparability of current with previous results, all figures relate to Total Business Expenditure - i.e. civil and defence expenditure by business on R&D (including grants given by government). Higher Education spending and other direct expenditure by Government are excluded.

Key Findings

Between 2005 and 2006 total business expenditure on R&D increased by 6.0% in real terms, with intramural and extramural expenditure increasing by 3.7% and 54.6% respectively. Government funding increased by 9.6% over the year, business expenditure from own funds decreased by 1.5% and other sources of funding increased by 16.1%.

Table 5: 2006 Business Expenditure on R&D compared with 2005, 2004, 2003, and 2002 (figures in £millions).

	Cash Terms					Real Terms (2005 Prices) ¹²					% Change Real Terms	
	2006	2005	2004	2003	2002	2006	2005	2004	2003	2002	05-06	02-06
	Total Expenditure	155.4	142.6	124.3	121.3	156.6	155.4	146.6	130.3	130.6	173.5	6.0
Intramural	145.0	136.1	115.5	116.5	149.3	145.0	139.8	121.1	125.5	165.5	3.7	-12.4
Extramural	10.4	6.5	8.8	4.8	7.3	10.4	6.7	9.2	5.2	8.1	54.6	28.5
Funded by Government	18.7	16.6	18.9	15.8	11.3	18.7	17.1	19.8	17.0	12.5	9.6	49.5
Funded from own funds	119.6	118.2	95.5	99.9	122.4	119.6	121.4	100.1	107.6	135.6	-1.5	-11.8
Other	9.3	7.8	9.9	5.6	23.0	9.3	8.0	10.4	6.0	25.5	16.1	-63.4

¹² GDP deflator used to convert cash terms to real terms: 2002 (90.2), 2003 (92.9), 2004 (95.4), 2005 (97.3), 2006=100

The ten biggest R&D spenders in 2006 accounted for 41% of total expenditure which is lower than the proportion in 2005 (43%). This follows the downward trend from 2001 – 43% in 2004, 46% in 2003, 60% in 2002, 69% in 2001. Five companies have appeared in the top ten in the last five DETI surveys (i.e. 2002, 2003, 2004, 2005 and 2006). Three further companies appearing in the top ten four times out of the last five surveys.

In cash terms

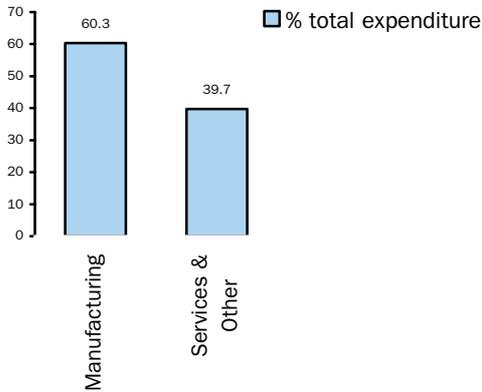
In 2006, thirty-one companies spent more than £1 million on R&D, one more than the number in 2005 and 2004. This is compared with 26 in 2003, 25 companies in 2002, 19 in 2001, 20 in 1999, 16 in 1996 and nine in 1993.

Average expenditure was £54,104 per R&D employee in 2006, 1.4% lower than the figure of £54,864 for 2005 (employees are on a whole time equivalent basis).

In 2006, 2,870 employees (on a whole time equivalent basis) were engaged in R&D work – 5.9% of all employees of companies involved in R&D. Comparable figures for 2005 were 2,600 employees or 5.2% of all employees of R&D companies (2004: 5.2% and 2003: 6.3%).

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – SECTORAL BREAKDOWNS

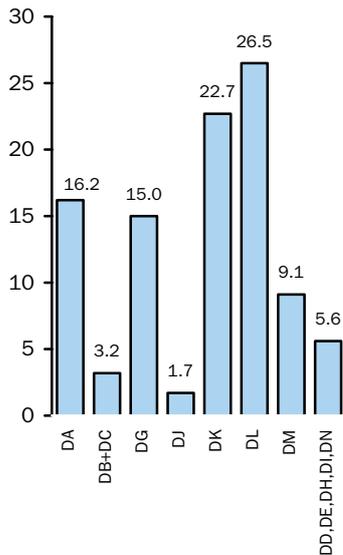
Figure 5: Total R&D Expenditure in 2006



In 2006, the majority of R&D was carried out within the Manufacturing sector (60%) with the remaining 40% carried out in the Services & Other industries category. This continues the upward trend in contribution of the Services & Other industries to total expenditure, increasing from 29% in 2003, 33% in 2004 and 38% in 2005.

The Electrical and Optical Equipment division (DL) accounted for (27%) of all Manufacturing R&D (see Figure 6) with the manufacture of machinery and equipment division (DK) accounting for 23% and food products, beverages and tobacco division (DA) a further 16%.

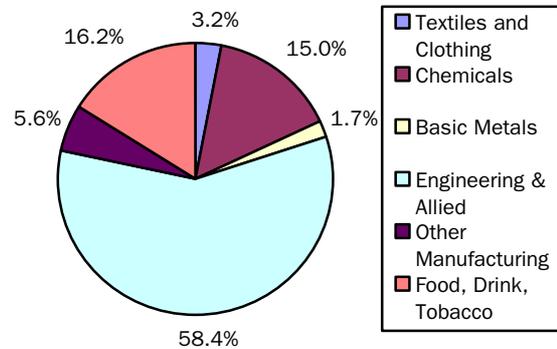
Figure 6: % of Manufacturing R&D Expenditure in 2006 by Division (SIC 2003 basis)¹³



¹³ For a description of subsection headings see Notes to Editors note 6.

Figure 7 below, highlights that 58% of R&D spending within the Manufacturing sector was accounted for by companies involved in Engineering & Allied Industries (DK, DL & DM).

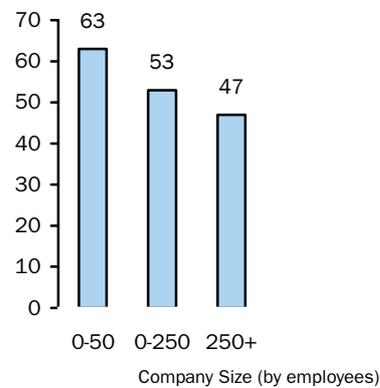
Figure 7: % of Manufacturing Expenditure by SIC 2003 Subsection



Companies with 250 or more employees accounted for 47% of business R&D expenditure in 2006, although they represented only 11% of R&D performing companies.

Smaller firms (i.e. those with less than 50 employees) represented some 63% of R&D companies and accounted for just over a quarter (26%) of total business R&D expenditure while R&D expenditure by Small and Medium-sized companies (SMEs) (i.e. those firms with between 0 and 250 employees) accounted for 53% of the total business expenditure. The proportion that large companies make to total R&D expenditure (47%) was approximately the same in the previous two years (2005: 47% and 2004: 50%) but lower than in 2003 (54%). See Annex 3 for further details.

Figure 8: % of Total R&D Expenditure in 2006 by Company Size



BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – INTRAMURAL EXPENDITURE

Intramural expenditure is perhaps the most important component of total R&D as it shows the amount spent on R&D by firms in NI that was undertaken within Northern Ireland (extramural expenditure by companies in NI may be carried out in other parts of the UK or abroad). Intramural expenditure in Northern Ireland (in cash terms) increased by 6.6% between 2005 and 2006: this is compared to a 7.5% increase in the UK as a whole. Of the 11 other UK regions, seven showed a rise in intramural expenditure and four showed a decrease.

As Table 7 shows, intramural expenditure, i.e. spending carried out within the company, accounted for about 93% (£145.0 million) of total expenditure in Northern Ireland in 2006, lower than the proportion in 2005 (95%) but equal to the proportion in 2004. The majority of both intramural and extramural expenditure was in the Manufacturing sector.

The two components of intramural expenditure are current expenditure (salaries & wages and other costs) and capital expenditure (land & buildings and plant & machinery).

Table 6: Intramural Expenditure by UK Government Office Region (Cash Terms)

	penditure (£million)		%Change (2005-2006)
	2006	2005	
UK	14,306	13,310	7.5
England	13,361	12,355	8.1
North East	293	289	1.4
North West	1,627	1,892	-14.0
Yorkshire & the Humber	386	344	12.2
East Midlands	977	1,001	-2.4
West Midlands	933	719	29.8
East of England	3,570	3,287	8.6
London	980	538	82.2
South East	3,279	3,035	8.0
South West	1,316	1,249	5.4
Wales	222	233	-4.7
Scotland	579	586	-1.2
Northern Ireland	145	136	6.6

Note: Data for UK and GB regions are from the Office for National Statistics. GB regional intramural expenditure figures for 2005 have been revised from ONS and will therefore differ from those appearing in our previous NI R&D publication.

Table 7: Intramural and Extramural Expenditure by Sector

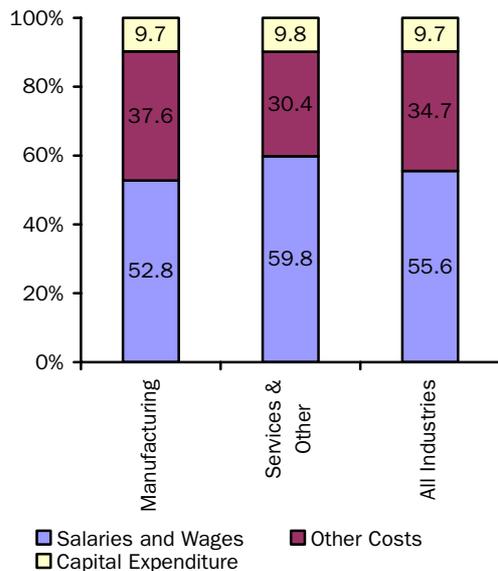
	Intramural		Extramural	
	£m	% of Total Expenditure	£m	% of Total Expenditure
Manufacturing	86.6	55.7	7.1	4.6
Services & Other	58.4	37.6	3.3	2.1
All Industries ¹⁴	145.0	93.3	10.4	6.7

¹⁴ All industries include Manufacturing, service sector industries plus a range of other industries. For full details of the other industries covered see Notes to Editors note 6.

Table 8: Breakdown of Intramural Expenditure by Sector (£m)

	Manufacturing		Services & Other		All Industries	
	£m	%	£m	%	£m	%
Current Expenditure						
Salaries & Wages	45.7	52.8	34.9	59.8	80.6	55.6
Other Costs	32.5	37.6	17.8	30.4	50.3	34.7
Capital Expenditure						
Land & Buildings	1.2	1.4	2.6	4.4	3.7	2.6
Plant & Machinery	7.2	8.3	3.2	5.4	10.4	7.1
Intramural Expenditure	86.6	100.0	58.4	100.0	145.0	100.0

Figure 9: Intramural Expenditure by Sector



Current expenditure makes up 90% of intramural expenditure, higher than in 2005 and 2004 (87% in both years). Table 8 and Figure 9 highlight that there were differences between sectors in the categories of intramural R&D spend.

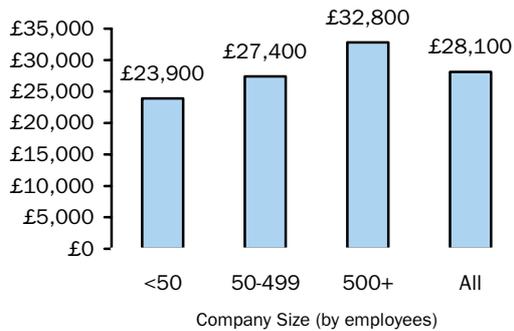
The proportions spent on current (90%) and capital (10%) expenditure was the same in Manufacturing and Services & Other, although the breakdown within current and capital expenditure was not. A larger proportion of Current Expenditure was spent on salaries and wages in the Services & Other sector (60% of total intramural expenditure) compared to 53% in the Manufacturing Sector. Within Capital Expenditure both sectors had more expenditure in Plant & Machinery than Land & Buildings. Plant & Machinery formed a higher proportion in Manufacturing than in Services & Other, (8% and 5% of total intramural expenditure respectively). Salaries and Wages as a proportion of Intramural Expenditure has increased in Manufacturing from the proportion in 2005 (50%) but decreased in Services & Other (63% in 2005).

Over the year to 2006 the proportion spent on Capital Expenditure in both Manufacturing and Services & Other decreased from 13% to 10%.

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – CURRENT EXPENDITURE

As Figure 10 below shows, there is a distinct difference in the level of salaries & wages per head between companies of different size (based on whole time equivalent (WTE) figures).

Figure 10: Salaries & Wages per Head by Company Size (rounded to nearest 100)

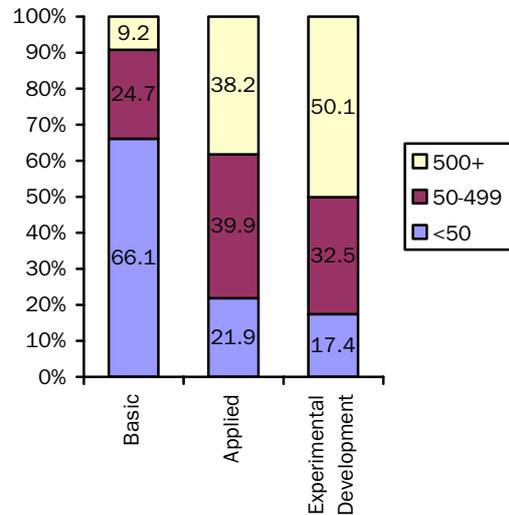


Overall the salaries and wages per R&D WTE was £28,100 a decrease of 2.4% from £28,800 in the previous year. Salaries and wages per head for large companies (500+ employees) are £32,800 per head, while for small and medium sized companies the figure is considerably lower at £23,900 and £27,400 respectively. Average salaries in 2005 were £27,200 for small companies and £27,100 for medium sized.

Table 9: Type of Research by Sector as % of All Research (Current Expenditure)

	Manufacturing	Services and Other	All Industries
Basic	2.1	4.1	6.2
Applied	22.0	21.9	43.9
Experimental Development	35.7	14.3	49.9
All Research	59.7	40.3	100.0

Figure 11: Type of Research by Company Size (by employees)



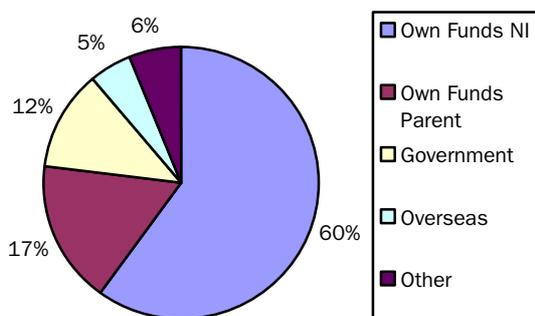
Current expenditure can also be analysed in terms of type of research carried out. Experimental development accounts for 49.9% of current expenditure, lower than that in 2005 (55.5%) and 2004 (55.4%), with applied research and basic research accounting for 43.9% and 6.2% respectively.

Figure 11 shows that the majority of spending on basic research is carried out by small-sized companies (i.e. those firms with less than 50 employees) (66.1%), almost 40% of spending on applied is carried out by medium sized companies (50-499 employees) and that large companies (500+ employees) are dominant in terms of spend on experimental development (50.1%). A detailed breakdown of the type of research carried out by both industry and company size is given in Annex 1.

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – SOURCES OF FUNDS

The funding of R&D (intramural and extramural) comes from a number of sources: the companies' own funds, from Government, overseas funding (e.g. EU) and other businesses.

Figure 12: Sources of R&D Funding (%)



The majority of funding (77%) came from the companies' own funds, with 12% from government, 5% from overseas and 6% from other sources. The proportion of funding from own funds decreased from 83% in 2005 but was the same as that in 2004. Funding from overseas was higher than that in 2005 while funding from government remained constant at 12%.

Table 10: Percentage of R&D Funding by Source split by Company Size

	<50	50-499	500+	All
Own Funds NI	56.7	67.2	55.5	60.0
Own Funds Parent	19.0	16.9	15.9	17.0
Government	16.4	3.7	16.8	12.0
Overseas	3.3	0.5	10.1	5.0
Other	4.6	11.7	1.7	6.0
Total	100.0	100.0	100.0	100.0

Table 10 shows that the greatest proportion of R&D funding was from Own Funds NI. Over two thirds of R&D (67%) was funded by Own Funds NI in medium sized firms compared to 57% and 56% in small and large firms respectively.

Small medium and large firms received similar proportions of funds from parent companies (19% 17% and 16% respectively). However the proportion of funding for R&D from own funds, NI and parent, was largest for medium sized firms (84%), compared to 76% for small sized firms and 71% for large firms.

Large firms reported the greatest proportion of funds from Government at 17% of expenditure, with a slightly lower proportion for small firms (16%), while medium sized firms received 4% of funds from this source.

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – OWNERSHIP ANALYSIS

2005 was the first year since analysis of expenditure by ownership began in 2002, that locally owned companies accounted for a higher proportion of expenditure than foreign owned firms. In 2002 foreign firms accounted for 65% of expenditure, 53% in 2003, 55% in 2004, before falling to 49% in 2005. In 2006 R&D spend was similar for both locally owned and foreign companies (50.3% and 49.7% respectively).

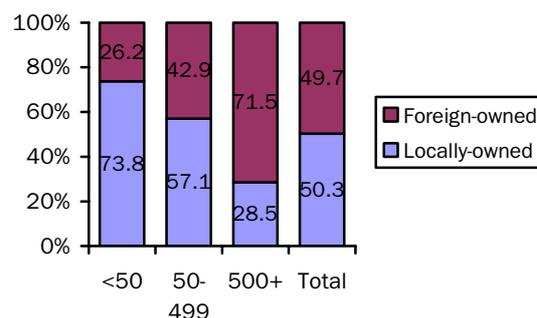
Table 11: Breakdown of R&D expenditure by ownership of company

	£m	%	Number of companies	%
Locally-owned companies	78.2	50.3	271	79.7
Foreign-owned companies	77.2	49.7	69	20.3
Total (All companies)	155.4	100.0	340	100.0

Expenditure by locally owned companies (£78.2m) has increased by 8% from £72.5m in 2005 however the number of these companies who reported R&D expenditure decreased by 2% from 277 to 271.

Northern Ireland owned companies in 2006 accounted for almost four-fifths of all R&D performing companies and approximately a half of the total £155.4m expenditure. This can be compared to foreign-owned companies accounting for an approximately equal proportion of the R&D expenditure and only one-fifth of R&D performing companies.

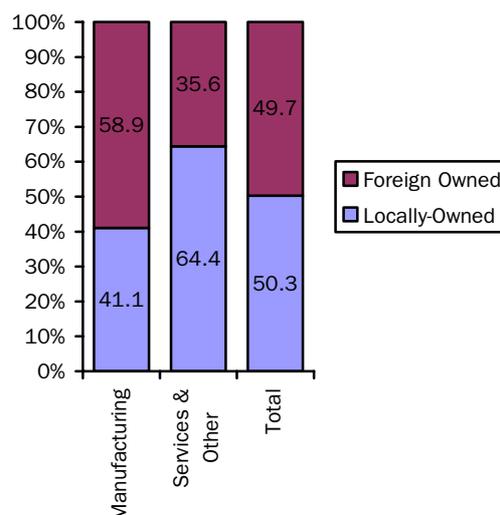
Figure 13: Expenditure by ownership by company size



The majority of R&D spend in small companies (73.8%) and medium-sized companies (57.1%) was by Northern Ireland owned firms.

However, the analysis shows that, in large companies (500+ employees) the majority of R&D expenditure (71.5%) was by foreign-owned firms.

Figure 14: Expenditure by ownership by sector



Analysis of R&D spend split by ownership and sector shows that 58.9% of R&D spend in the Manufacturing sector was by externally-owned companies.

However, the situation was reversed in the Services & Other sector, where Northern Ireland owned companies accounted for 64.4% of R&D expenditure.

Compared to the previous year foreign-owned companies decreased their proportion of expenditure in Manufacturing (from 62.1% to 58.9%) but increased their share of the Services & Other sector (from 28.1% to 35.6%).

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – EMPLOYMENT ON R&D

In 2006, companies surveyed reported a total of 3,040 employees working on R&D, approximately 6.3% of all employees in companies carrying out R&D which is higher than in 2005 (5.5%). [The whole time equivalent figure¹⁵ for the same period was 2,870 or 5.9%].

Figure 15: Total R&D Employment - Full-time Part-time and Whole Time Equivalent

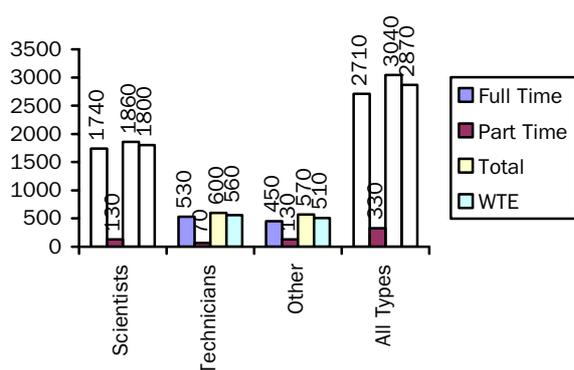


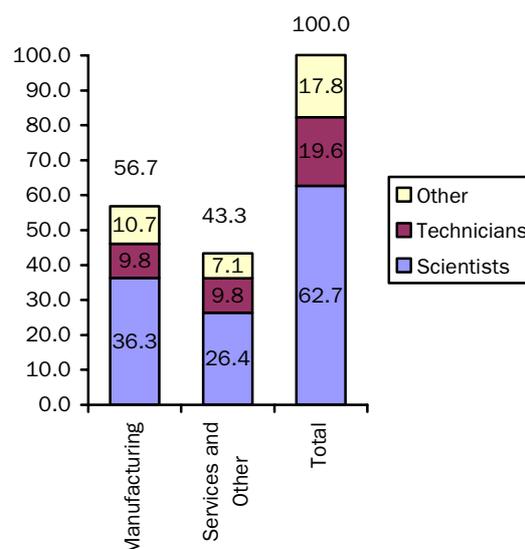
Table 12: Number of R&D Employees by Type

	Full time	Part time	Total
Scientists	1,740	130	1,860
Technicians	530	70	600
Other	450	130	570
All Types	2,710	330	3,040

In the 2005 survey, a question was added on the number and gender split of employees working on R&D activities, regardless of the number of hours worked i.e. headcount. In 2006 there were 3,130 employees involved in R&D activities, 2,410 males and 730 females. This compared to 3,090 employees in 2005 with 2,400 males and 700 females.

Approximately 89% of all R&D employees were full-time. By type of R&D employee, scientists accounted for 61%, technicians for 20% and other employees (e.g. professional, administrative, clerical and industrial) for 19% of all R&D employees. Comparable whole time equivalent figures show that 1,800 employees were scientists (63%), 560 employees were technicians (20%) and the number of other employees was 510 (18%).

Figure 16: % of R&D Employment (whole time equivalent) by Sector



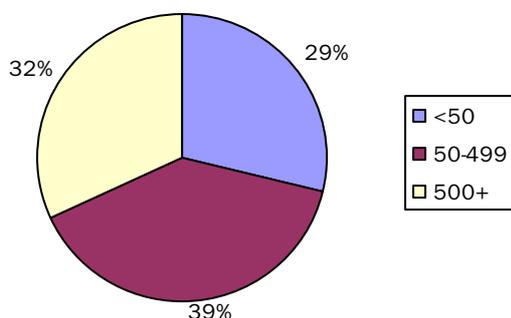
On a whole time equivalent basis there were 1,630 employees in Manufacturing and 1,240 in the Services & Other sectors. Within Manufacturing, scientists accounted for 64% of R&D employees with the level of technicians at 17% and other employees at 19%.

Within the Services & Other sectors, scientists made up 61% of R&D employees, technicians 23% and other employees 16%.

¹⁵ For an explanation of how Whole Time Equivalent employment is calculated see Notes to Editors note 5

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – EMPLOYMENT ON R&D

Figure 17: R&D Employment by Company Size

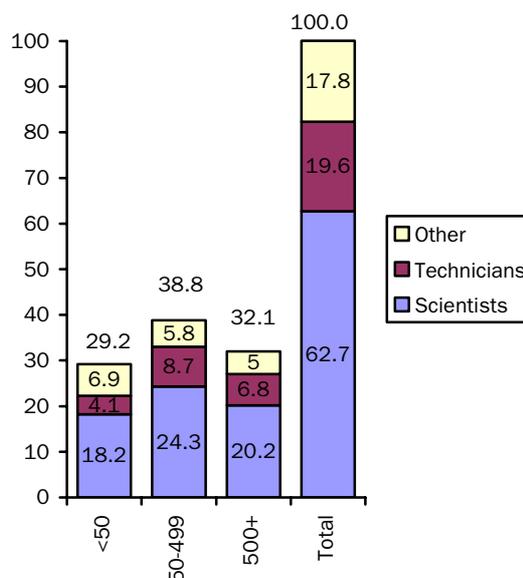


Using whole time equivalent employment figures, Figure 17 shows how total R&D employment is split across companies of different sizes. The greater proportion of R&D employees is in the medium sized companies (39%), followed by large companies (32%) and small companies (29%). These show a decrease in the proportion of R&D employment in medium sized companies compared to 47% in 2005, and an increase in proportion of R&D in large and small companies from 27% and 26% respectively. The R&D employment split for 2006 is the same as in 2004.

The proportion of R&D employees who are scientists is similar across companies of different sizes. Scientists in large, medium and small firms accounted for 62.3%, 62.6% and 63.1% of R&D employees respectively. Small companies employ more persons in the 'other' category (23.7%) than either medium (15.0%) or large (15.6%) companies, but fewer persons in the 'technicians' category.

Figure 18 also shows the spread of R&D employees across different size bands, with 29% of all R&D employees working in firms with less than 50 employees, 39% in medium-sized firms and 32% of all R&D workers employed by large companies.

Figure 18: % of R&D Employment (whole time equivalent) by Type and Company Size



Businesses were asked if they received any R&D tax credits and if their R&D work was part of a joint project in 2006, following the introduction of the question in the 2004 survey.

57 R&D performing companies reported that they received tax credits amounting to £9.6 million in total (excluding 8 companies who did not quantify the amount they received). This represents an increase in the number of R&D performing companies receiving tax credits and the amount received when compared with last year. In 2005 31 companies reported receiving tax credits which amounted to £5.6m.

62 companies reported that their R&D work was part of a joint project with a source outside their company. 26 companies had a joint project with Higher Education Establishments and 36 with other Businesses. This shows an increase in the number of companies engaging in joint projects from last year (46 in total). Both the number of joint projects with Higher Education establishments and Businesses increased, from 19 and 25 respectively.

R&D Information from other sources

4

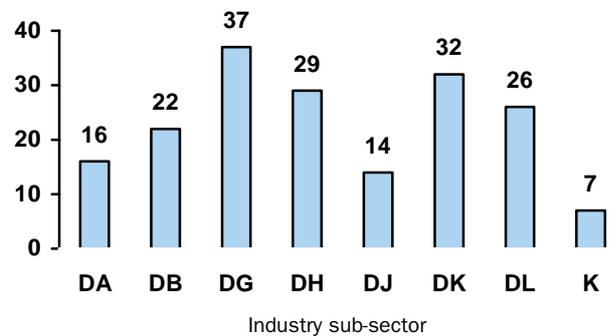
Northern Ireland Annual Business Inquiry (NIABI)

Information on the extent to which research and development is carried out by companies in Northern Ireland is available from the Northern Ireland Annual Business Inquiry (NIABI) carried out annually by DETI.

The latest 2005 NIABI reported that out of about 3,500 companies in the survey, 6% (209) had someone in the business engaged in research and development work during the year. The Manufacturing sector was the sector with the highest proportion of companies who carried out R&D work (16%), while the proportion for the Service industries was 3%.

Figure 19 shows the percentage of companies who carried out R&D work in 2005, for those sectors and sub-sectors of the Manufacturing industries where there were more than ten companies who did so. These were concentrated in the Manufacturing sector, where nearly two fifths (37%) of companies in the manufacture of chemicals, chemical products and man-made fibres did so. The only other non-manufacturing sector with more than ten companies who carried out R&D work was Real Estate, Renting and Business activities (K) (which includes companies in the Computer and related activities (SIC 72) and Research and Development (SIC 73) industries).

Figure 19: Percentage of companies who carried out R&D work by industry



- DA Manufacture of Food Products, Beverages and Tobacco
- DB Manufacture of Textiles and Textile Products
- DG Manufacture of Chemicals, Chemical Products and Man-made Fibres
- DH Manufacture of Rubber and Plastic Products
- DJ Manufacture of Basic Metals and Fabricated Metal Products
- DK Manufacture of Machinery and Equipment
- DL Manufacture of Electrical and Optical Equipment
- K Real Estate, Renting and Business activities.

Business Expenditure on Research & Development in the Republic of Ireland

5

The Business Sector Research and Development Survey has been conducted biennially by Forfas and its predecessors for over two decades. The latest survey was carried out in the period May to October 2006, with the reference year for data collected being the calendar year 2005.

Research & development expenditure performed by the business sector in Ireland rose to €1.33 billion in 2005. This represented an annual average increase of 9.7% between 2003 and 2005. R&D spending in real terms in the business sector has nearly tripled in the last decade.

A small number of sectors dominated business R&D activity, Software and Computer sector (30.4%), Electrical and Electronics sector (21%), Pharmaceuticals (20%). The largest performing sector for business R&D in Ireland continued to be the Software/Computer Related areas accounting for 30.4% of all R&D investments in 2005. However, R&D spending growth in this sector was a relatively sluggish 6.8% between 2003 and 2005. R&D performed by business in the Irish Pharmaceuticals sector increased by 40.4% between 2003 and 2005. This sector now accounts for 20.1% of total business R&D.

R&D expenditure by foreign-owned firms rose to €939 million in 2005, with spending by Irish-owned firms increasing to €390 million. Spending growth of 10% per annum in foreign-owned firms slightly outpaced the overall 9% annual average increase for Irish-owned firms.

R&D spending by medium/large sized firms (>50 employees) rose by 9.6% per annum on average between 2003 and 2005. R&D expenditure by small firms (<50 employees) also increased during this period by 9.9% on average per annum.

The number of full-time equivalent (FTE) R&D human resources has increased sharply in the last 10 years from 5,680 FTE in 1995 to 10,338 FTE in 2005. Over the period 2003 to 2005 the total number of R&D personnel (FTE) increased by 11%. In 2005, just less than two thirds of the FTE R&D staff were researchers (65.5%).

The bulk of the funding for business R&D in the Republic of Ireland continues to come from private sources with private funding representing 95.5% of total funding in 2005. Funding of €55.0 million for business R&D activities performed was sourced from the Irish government (4.1% of the total, up from 2.9% in 2003).

Business Expenditure on Research & Development – Notes to Editors

6

1. The survey of Northern Ireland Civil and Defence Expenditure on Research and Development during 2006 was undertaken by Statistics Research Branch of the Department of Enterprise, Trade and Investment (DETI). The sample and survey results only cover ‘business enterprises’ as defined in the ‘Frascati’ manual. This excludes government organisations, higher education establishments and charities.

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 2005 survey carried out by DETI) and extra information from various sources such as ONS, Invest NI and filter questions on the Annual Business Inquiry and Community Innovation Survey. For the purposes of the 2006 survey, businesses were stratified into 4 groups:

- (i) Businesses responding to the 2005 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 2005 or 2006); 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 2006 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.

For 2006, 794 forms were sent out to businesses believed to be performing R&D. Completed forms were returned by 707 businesses representing a response rate of 89 per cent. Estimates were made for the R&D activity of non-responding businesses. The response rate this year was higher than the previous year (87%), these estimated results account for about 3.5% of expenditure (compared to 6% in 2005). This should be borne in mind when considering the results. The results are provisional and may be revised should additional information become available.

2. This is the ninth business R&D survey carried out by DETI - it was carried out triennially between 1993 and 1999, but is now collected on an annual basis (from 2001 onwards). Prior to 2001, the Office for National Statistics (ONS) published regional intramural R&D estimates – including figures for Northern Ireland - from an annual UK-wide survey. The ONS Survey, as it relates to Northern Ireland, was based on a relatively small sample of companies and was not detailed enough for DETI requirements. DETI therefore conducted its own benchmark survey every three years. In those years when both a UK-wide and a separate DETI survey were conducted, two estimates of intramural business R&D expenditure for Northern Ireland were therefore available.

However, from 2001 onwards data from the DETI survey is passed to ONS colleagues and intramural R&D figures for Northern Ireland from both sources therefore are equal.

3. 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&TD) 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 sources of funding question for the NI survey, for example, specifically identified Invest NI as one of the government sources.]

A new question was included in both the NI and GB questionnaires for 2005 to comply with a new EU directive, asking firms for a headcount and gender breakdown of all employees involved in R&D activities, regardless of the number of hours worked.

4. The survey covers expenditure in the year ending December 2006, although companies were given the option of supplying data for the business year ending on any date between 4 April 2006 to 2 April 2007.

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.

5. Definition of Terms

a) Type of R&D Expenditure

Total Expenditure on R&D - This covers civil expenditure by businesses, defence expenditure by businesses and other expenditure by Government. Due to disclosure rules, it is not possible to obtain a split between civil and defence R&D expenditure, for the 2006 survey.

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' document. By utilising Forward Look data in conjunction with the results from the DETI 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 2, expenditure by businesses and higher education and other expenditure by Government, should compliment each other; i.e. there should be no double counting.

Intramural R&D - This is R&D carried out within the company.

Extramural 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.

Capital Expenditure - Includes companies' expenditure on land, buildings, plant 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.

b) Type of Research

Basic Research - work undertaken primarily for the advancement of scientific knowledge without a specific practical application in view.

Applied Research - Research undertaken with a general or a particular application in view.

Experimental Development - covers the use of the results of basic and applied research directed to the introduction of new materials, processes, products, devices and systems, or the improvement of existing ones. This includes the prototype or pilot plant stage, design and drawing

required during R&TD and innovation work done on contracts with outside organisations, Government departments and public bodies.

c) Sources of Funding

Business - Funds from individual plants within NI or from parent or other companies within the group.

Government - Funds from Invest NI (including IFI) and other government sources.

Overseas - This includes EU Funds as well as other funds from outside the UK. EU funds are those from the European Commission's Structural or Framework Funds.

Other Funds - Funds from private individuals, private non-profit making bodies, higher education establishments and any other sources.

d) Employment on R&D

Staff Types - Average employment on R&D splits into the following categories; scientists and engineers, technicians, laboratory assistants and draughtsmen etc., and other (including Professional, Administrative, Clerical and Industrial Employees).

Whole Time Equivalent Employment - This is calculated by dividing the number of part-time employees by 2 and adding to the number of full-time employees.

6. 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 (or SIC 2003 classification) of industries.

Manufacturing is defined to cover Section D, which includes the following subsections:

DA	Food products, Beverages & Tobacco
DB	Textiles & Textile Products
DC	Leather & Leather Products
DD	Wood & Wood Products
DE	Pulp, Paper & Paper Products; Publishing and Printing
DG	Chemicals, Chemical Products & Man-Made Fibres
DH	Rubber & Plastic Products
DI	Other Non-metallic Mineral Products
DJ	Basic Metals & Fabricated Metal Products
DK	Machinery & Equipment Not Elsewhere Classified

DL	Electrical & Optical Equipment
DM	Transport Equipment
DN	Other Manufacturing Not Elsewhere Classified

Where aggregation of subsections within Manufacturing is required this would normally be as follows (for example, see Figure 7):

DA	Food, Drink & Tobacco
DB+DC	Textiles, Leather, Footwear & Clothing
DG	Chemicals & Chemical Products
DJ	Basic Metals & Fabricated Metal Products
DK, DL	Engineering & Allied Industries + DM
DD, DE,	Other Manufacturing
DH, DI, DN	

The Service Sector covers Sections G through to O, namely:

G	Wholesale & Retail Trades
H	Hotels & Restaurants
I	Transport, Storage & Communication
J	Financial Intermediation
K	Real Estate, Renting & Business Activities
L	Public Administration and Defence
M	Education
N	Health & Social Work
O	Other Community, Social & Personal Service Activities

The Other Industries category covers:

A	Agriculture, Hunting and Forestry
B	Fishing
C	Mining & Quarrying
E	Electricity, Gas & Water
F	Construction

7. Figures contained within all tables in this Bulletin may not add due to rounding. Percentages calculated on these rounded figures may differ from those that are detailed in the text.

8. The annual NIABI conducted by the Department of Enterprise Trade and Investment (DETI) provides estimates for the year of the value of mainly business based economic activity across some two thirds of the Northern Ireland economy. The survey covers most of the Production, Construction, Distribution and Service industries but excludes central government public sector activities for the most part. In particular, since 2002 it has contained a question on whether there is anyone in the business engaged in research and development work on a regular basis during the year.

Northern Ireland Higher Education Expenditure on Research & Development during 2006

7

Table 13 details the headline results from the 2004, 2005 and 2006 Higher Education Expenditure on Research & Development (HERD) surveys.

Table 13 Higher Education Expenditure on R&D

	£million		
	2006	2005	2004
HERD Expenditure ¹⁶	150.7	146.8	136.9
of which:			
Current Expenditure	127.0	125.4	115.0
Capital Expenditure	23.7	21.5	21.9
Source of funding of R&D:			
Government Block Grant	76.7	73.6	70.2
OST Research Councils ¹⁷	9.1	7.9	6.8
UK-based charities	6.3	5.6	5.9
UK Cent Gov/Local Auth/Health ¹⁸	37.9	36.8	33.3
UK Ind/Comm/Pub Corp ¹⁹	3.0	3.2	3.0
EU Government	6.2	7.1	6.2
EU Other	3.3	2.8	1.9
Other Overseas	5.0	3.8	1.1
Other Sources	3.3	6.0	8.6
	Number	Number	Number
HERD Employment ²⁰	1,700	1,770	1,850
of which:			
Academic staff	800	930	810
TLAD's ²¹	720	700	700
Other ²²	180	150	340

¹⁶ Expenditure for 2006 includes £0.6 million of expenditure funded by Northern Ireland businesses (£0.7m in 2005 and £0.9m in 2004). Therefore, net HERD in 2006 was £150.1m (this is as detailed in Table 2). All university expenditure on R&D is intramural expenditure - i.e. R&D work carried out within the university. Figures given are in £millions and constituent parts may not add due to rounding.

¹⁷ Office of Science and Technology Research Councils

¹⁸ Funding from UK Central Government, Local Authorities and Health Trusts/Hospitals

¹⁹ Funding from UK industry/commerce/public corporations

²⁰ This is the number of full-time equivalents. Figures are rounded to the nearest 10 and constituent parts may not add due to rounding

²¹ Technicians, Laboratory Assistants and Draughtsmen etc.

²² Includes Administrative, Clerical and Industrial Employees.

Total HERD expenditure increased by 2.6% from £146.8 in 2005 to £150.7m in 2006, lower than the increase of 7.2% from 2004 to 2005. The increase in intramural expenditure was made up of a 1.3% increase in current expenditure and a 10.5% increase in capital expenditure. This is in contrast to the previous period where current expenditure increased by 9% and capital expenditure actually fell by 2%.

Employment totals decreased between 2005 and 2006, from 1,770 full-time equivalent persons in 2005 to 1,700 in 2006. The change in R&D employment consisted of a decrease in the number of academic staff (from 930 to 800) and an increase in TLAD (from 700 to 720) and other staff (from 150 to 180) employed in R&D.

Block grants remained the largest source of funds with their relative contribution increasing slightly from 50% in 2005 to 51% in 2006, equal to the proportion in 2004. Funding from UK Central Government/Local Authorities and Health Trusts/Hospitals increased by 3.0% from £36.8m in 2005 to £37.9m in 2006, accounting for one quarter of HERD funding in 2006 as in 2005. EU Government funding decreased by 12% between 2004 and 2005, from £7.1m to £6.2m. This was in contrast to the previous period where EU Government funding increased from £6.2m to £7.1m.

See Notes to Editors overleaf.

Higher Education Expenditure on Research & Development – Notes to Editors

8

Table 13 details Higher Education Expenditure on R&D (HERD). The table gives combined results from the two main Northern Ireland universities - i.e. Queens University Belfast (QUB) and the University of Ulster (UU). The data collected refers to the academic year 2005/2006 ending 31/7/06. The universities have made data available for this period on the basis of Transparency Review data collected within each respective institution.

Transparency Review

The Transparency Review is a Government initiative, introduced with the Comprehensive Spending Review (CSR) in 1998. The CSR awarded £1.5bn of additional funding for Higher Education, but the Treasury made this conditional on the sector becoming more open about the way public funds are spent in universities and colleges.

A Steering Group was set up to implement the policy and their advice was referred to Government in the Transparency Review Report. This was endorsed in June 1999 and is now required policy for the sector. All institutions had to report transparently on the costs of their Teaching, Research, and other activities for 1999/2000 in July 2001 and each year thereafter. As a consequence, accurate and comparable R&D data for each university can now be obtained and this is presented in Table 13.

More detailed information on Transparency Review procedures in each of the local universities can be found at <http://www.qub.ac.uk/costing/> for QUB and at <http://www.ulst.ac.uk/finance/time/> for UU.

Total R&D Expenditure - Following consultation with the universities, it was agreed that all university expenditure on R&D is 'intramural' expenditure - i.e. R&D work carried out within the university.

Current Expenditure – Includes expenditure on salaries and wages and other costs (fuel, rent etc.).

Capital Expenditure - Includes expenditure on land, buildings, machinery and equipment. It should be noted that capital expenditure on R&D within universities is likely to fluctuate significantly from year to year. For example, an R&D project may have duration of several years but involve heavy capital outlay in the formative years of the research.

Source of funding – this is split into nine separate categories as shown in table 13. For the purposes of this survey, the Government Block Grant was used as a 'balancing figure' with values for the other eight categories completed using data from the Transparency Review.

Employment on R&D – it is possible, using the results from the Transparency Review, to determine how much time members of staff spend on R&D. This has been converted to numbers of full-time equivalents in each of the three categories shown. Figures shown have been rounded to the nearest 10.

Annexes

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ANNEX 1

Breakdown of Intramural Expenditure (Civil & Defence) 2006 £000's (rounded to nearest £100,000)

	Current Expenditure					Capital Expenditure			Total Intramural Expenditure	
	Salaries & Wages	Other Costs	Current Expenditure	Basic Research	Applied Research	Experimental Development	Lands & Building	Plant & Machinery		Capital Expenditure
Manufacturing										
	5,300	3,300	8,600	1,000	3,700	3,900	500	1,600	2,200	10,800
	40,400	29,200	69,600	1,700	25,100	42,700	600	5,600	6,200	75,800
Total	45,700	32,500	78,200	2,800	28,800	46,700	1,200	7,200	8,400	86,600
Services										
	14,600	6,000	20,600	4,300	8,900	7,300	1,600	1,400	3,000	23,600
	19,800	11,600	31,400	900	19,500	11,000	1000	1,700	2,700	34,100
Total	34,500	17,600	52,000	5,200	28,500	18,300	2,600	3,100	5,700	57,700
All Industries										
	20,000	9,300	29,300	5,400	12,600	11,400	2,100	3,000	5,100	34,500
	60,600	41,000	101,600	2,800	44,800	54,000	1,600	7,300	8,900	110,500
Total	80,600	50,300	130,900	8,100	57,400	65,400	3,700	10,400	14,100	145,000

ANNEX 2

Breakdown of Extramural Expenditure (Civil & Defence) 2006 £000's (rounded to nearest £100,000)

Extramural Expenditure				
	Expenditure within NI	Expenditure within GB	Expenditure outside UK	Total Extramural Expenditure
Manufacturing				
Total	3,800	1,900	1,300	7,100
Services				
	200	800	200	1,300
	900	400	700	1,900
Total	1,100	1,200	900	3,200
All Industries				
	3,500	1,100	1,000	5,600
	1,500	2,100	1,200	4,800
Total	5,000	3,200	2,200	10,400

ANNEX 3

Breakdown of R&D Expenditure by Small and Medium Sized Enterprises (SMEs <250) 2001-2006 (£m)²³

R&D Expenditure						
	2001	2002	2003	2004	2005	2006
	40.2	63.2	53.2	54.8	69.4	73.4
	3.3	3.6	3.2	7.5	5.5	8.2
Total	43.4	66.8	56.4	62.3	74.9	81.6
	109.8	86.1	63.3	60.7	66.7	71.6
Extramural	1.8	3.8	1.6	1.4	1.0	2.2
Total	111.6	89.9	64.9	62.0	67.7	73.8
	149.9	149.3	116.5	115.5	136.1	145.0
	5.1	7.3	4.8	8.8	6.5	10.4
Total	155.0	156.6	121.3	124.3	142.6	155.4

²³ The definition of SME used is that under the European Commission Recommendation (96/280/EC) of 3 April 1996, in which SMEs are defined as being enterprises with less than 250 employees.

ANNEX 4

Breakdown of Employment on R&D 2006
(rounded to nearest 10)

	Scientists				Technicians				Other				All Types			
	Full-time	Part-time	Total	WTE	Full-time	Part-time	Total	WTE	Full-time	Part-time	Total	WTE	Full-time	Part-time	Total	WTE
Manufacturing																
	140	20	160	150	40	20	60	50	60	40	100	80	240	80	320	280
	340	20	360	350	110	20	130	120	100	40	140	120	550	80	620	580
	540	10	550	540	110	10	120	120	100	10	110	100	750	30	780	770
Total	1,010	60	1,070	1,040	260	50	310	280	270	80	350	310	1,540	190	1,720	1,630
Services																
	340	60	400	370	60	20	80	70	80	40	120	100	480	110	590	540
	380	10	380	380	200	10	210	210	80	10	90	80	660	30	680	670
Total	720	60	780	750	260	30	290	280	160	50	210	190	1140	140	1280	1210
All Industries																
	480	80	560	520	100	30	130	120	160	80	240	200	740	190	930	840
	680	30	710	700	230	30	260	250	150	50	190	170	1060	110	1170	1110
	570	20	590	580	190	10	200	200	140	10	150	140	910	30	940	920
Total	1,740	130	1,860	1,800	530	70	600	560	450	130	570	510	2710	330	3040	2870