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Business Activity

Statistics Bulletin

Northern Ireland Research & Development Statistics 2008

11 December 2009

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Northern Ireland Statistics & Research Agency

Department of Enterprise, Trade and Investment
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Business Activity **Statistics Bulletin**

NORTHERN IRELAND RESEARCH AND DEVELOPMENT STATISTICS 2008

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- **Total expenditure on Research and Development in Northern Ireland was £344.0 million (m) in 2008, of which £183.9m (53.5%) was spent by businesses, £144.2m (41.9%) by the Higher Education sector and the remainder (£15.9m) was Government expenditure.**

- **There was a fall of £7.1m (-2.0%) in cash terms in Northern Ireland total R&D expenditure between 2007 and 2008 (from £351.1m to £344.0m).**

- **Total business R&D expenditure in 2008 was £183.9m, down £1.2m (-0.6%) in cash terms on the previous year. This is the first time Business R&D expenditure has fallen since 2003. However, between 2003 and 2008, overall Business R&D expenditure has risen by 51.6% in cash terms (from £121.3m to £183.9m).**

- **There was an increase (10.2%) in R&D expenditure in cash terms by the Manufacturing sector from £103.7m in 2007 to £114.3m in 2008. A large decrease occurred in the Services and Other sector with R&D expenditure falling by 14.4% from £81.4m to £69.7m in the same period.**

- **R&D expenditure by locally owned companies decreased by 9.1% (£7.3m) in cash terms between 2007 and 2008 while externally-owned companies increased by 5.9% (£6.1m).**

- **Total Small Medium Enterprises (SME) expenditure fell by £11.1m (-9.5%) from 2007 to 2008, in cash terms. However, since 2003 SME expenditure has increased by 88.1% to £106.1m.**

- **Higher Education R&D expenditure fell in cash terms by £7.1m (-4.7%) while Government expenditure increased by £1.2m (8.2%) over the year.**

- **Northern Ireland Business accounted for a greater share of total R&D expenditure in 2008 (53.5%) compared to 2003 (46.3%) when Higher Education was the biggest spender (48.8%).**

- **In real terms, total R&D expenditure fell by £15.7m (-4.4%). Business R&D expenditure fell by £5.7m (-3.0%), Higher Education R&D expenditure fell by £10.8m (-7.0%) and Government expenditure increased by £0.8m (5.6%) over the year.**

Department of Enterprise,
Trade and Investment

Northern Ireland Research & Development Statistics 2008

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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 were included in the survey - in effect, therefore, a census of known R&D performers was carried out. A total of 811 returns were received by the Department – some 80% of those identified.

Where companies failed to respond, their level of R&D spend was estimated from Invest NI administrative records, other business surveys and historical records as appropriate. Overall, estimates accounted for 5.5% of the value of total Business Expenditure on R&D (BERD) for 2008. For further information see Chapter 6 - Notes to Editors, note 1.

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 £344.0 million(m) in 2008, of which £183.9m (53.5%) was spent by businesses, £144.2m (41.9%) by the Higher Education sector and the remainder, £15.9m (4.6%) was Government expenditure.

There was a fall of £7.1m (-2.0%) in cash terms in Northern Ireland total R&D expenditure between 2007 and 2008 to £344.0m. This decrease was comprised of falls in Business R&D expenditure of £1.2m (-0.6%) and Higher Education expenditure of £7.1m (-4.7%) and an increase in Government expenditure of £1.2m (8.2%). Over the last five years total R&D spending in cash terms in NI has risen by 31.4%.

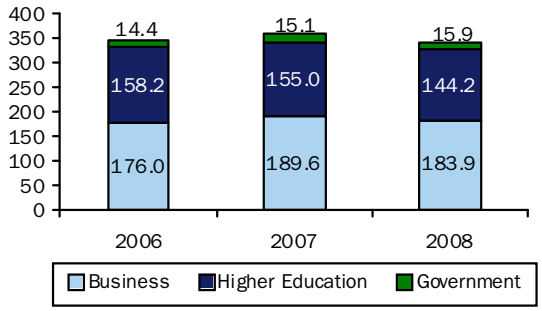
Total Expenditure on R&D in Real Terms

In real terms, total expenditure decreased by £15.7m or 4.4% from £359.7m in 2007 to £344.0m in 2008.

In 2008 the Northern Ireland Business sector accounted for a greater share of total R&D expenditure (53.5%) than the Higher Education sector (41.9%). In 2007 the figures were 52.7% and 43.1% respectively.

Over the last five years (2003-2008) total R&D spending in real terms in NI has risen by 15.6%.

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



Over the year to 2008 there was a decrease in expenditure by Businesses and Higher Education while there was an increase in expenditure by Government. In real terms, expenditure by Businesses decreased by £5.7m (-3.0%) over the year and expenditure by Higher Education decreased over the year by £10.8m (-7.0%). Government expenditure increased by £0.8m (5.6%) in real terms over the year.

Overall business R&D expenditure rose by 33.4% between 2003 and 2008 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: In-house Expenditure

Spending carried out within a company in Northern Ireland (in-house), accounted for 92.8% (£170.6m) of total business expenditure in 2008. In-house expenditure decreased by 3.6% between 2007 and 2008.

Business R&D: Sectoral Analysis

In 2008, the majority of R&D was carried out within the Manufacturing sector (62.1%) with the remainder (37.9%) carried out in the Services & Other sector. This shows an increased share of expenditure in the Manufacturing sector compared to the previous year (for example, in 2007 Manufacturing accounted for 56.0% and Services & Other for 44.0%).

Over the year to 2008, an increase in expenditure occurred in the Manufacturing sector, while the Services & Other sector reported a decrease. The increase in expenditure in the Manufacturing sector, (£10.6m or 10.2%) was smaller in value and proportional terms than the decrease of £11.7m (-14.4%) in the Services & Other sector.

Business R&D: by Company Size

Companies with 250 or more employees accounted for 42.3% of business R&D expenditure in 2008, although they represented only 7.5% of R&D performing companies. Smaller firms (i.e. those with less than 50 employees) represented some 71.4% of R&D performing companies and accounted for over a quarter (26.4%) of total business R&D expenditure while R&D expenditure by Small and Medium-sized companies (SMEs)* accounted for 57.7% of the total business expenditure. Total SME expenditure fell by £11.1m (-9.5%) from 2007 to 2008, in cash terms. However, since 2003 SME expenditure has increased by 88.1% to £106.1m.The proportion that large companies make to total R&D expenditure (42.3%) was more than in the previous year (2007: 36.7%) but less than in 2006 (51.2%) See Annex 1 Table 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 (85.5%), with 13.3% from Government, 0.7% from overseas and 0.6% from other sources. The proportion of funding from own funds increased from 78.9% in 2007 to 85.5% in 2008.

Business R&D: Ownership

Companies with ownership outside NI play an important role in financing R&D activities in the region. Over half, £110.8m (60.3%) of total R&D spend was by such externally-owned companies although they accounted for just over one-sixth (16.7%) of all R&D performing companies. Their contribution to the total R&D spend was higher than in 2007 (56.6%) and their cash value increased by £6.1m over the same period.

R&D expenditure by locally-owned companies decreased by 9.1% (£7.3m) between 2007 and 2008 while R&D Expenditure by externally-owned companies increased by 5.9% (£6.1m).

The majority of R&D expenditure in Manufacturing is carried out by externally-owned companies (68.3%), whereas the converse is true for Services & Other sector (47.1%).

Figure 2: Expenditure by Ownership 2007-2008 (percentages)

Business R&D: Employment

In 2008, companies surveyed reported a total of 3,750 employees working on R&D, some 7.2% of all employees in companies carrying out R&D. The full time equivalent figure (FTE) for the same period was 2,940.

The number of R&D employees increased by 13.4% over the year to 2008.

Table 1: R&D Employment

	2005	2006	2007	2008
Number	2,720	3,040	3,310	3,750
FTE	2,600	2,870	2,760	2,940

Of all R&D employees, 56.4% were researchers, 22.2% were technicians and a further 21.4% were classed as other employees. In terms of FTE the proportions were 60.2%, 20.2%, and 19.6% for researchers, technicians and other employees respectively.

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

Of the 12 UK regions, seven showed a decrease in in-house business R&D expenditure in cash terms over the period 2007-2008 including Northern Ireland which decreased by 3.6%. This was the third biggest percentage decrease across the UK regions. In the UK as a whole such expenditure increased by 1.7%. Changes varied from an increase of 12.9% in the North West of England to a decrease of 11.1% in the West Midlands.

Over the two year period 2006-2008, in-house business R&D expenditure in cash terms in Northern Ireland increased by 8.9%. In the UK as a whole such expenditure rose by 12.4%.

Higher Education R&D: Summary

R&D expenditure in the Higher Education sector decreased by 4.5% in cash terms between 2007 and 2008 (from £152.0m to 145.2m). Net expenditure in 2008 (excluding spend by businesses undertaken by higher education) was £144.2m.

Over half of funding (51.3%) for Higher Education R&D in 2008 came from the Government block grant (£74.5m). In 2008, there were some 1,600 full-time equivalent employees in the Higher Education sector engaged in R&D, decreasing from 1,680 employees in 2007.

R&D Investment Rate

Regional Gross Value Added (GVA) released by the Office for National Statistics on 9th December 2009 shows that Northern Ireland 2008 in-house R&D as a proportion of GVA (0.60%) was the fifth lowest of the twelve UK regions (a lower proportion was recorded in London (0.40%), Yorkshire & Humber (0.48%), Wales (0.53%) and Scotland (0.53%)). Northern Ireland businesses would have needed to invest some £181m more in R&D in 2008 to reach the UK average rate.

Other Sources

The most recent UK Innovation Survey (2007) estimated that 57% of enterprises in NI had undertaken some form of innovation activity over the 3-year sample period 2004-06. This was lower than the equivalent UK figure of 64%. While NI's performance had remained relatively constant since 2002-04 (56%), the UK rate increased from 57% to 64%.

In terms of introducing new products (20% of businesses) and processes (11%) NI business activity was similar to that in the UK (22% and 12% respectively).

Northern Ireland results from the 2007 and earlier Innovation Surveys are available at:
http://www.detini.gov.uk/deti-stats-index/stats-surveys/stats-innovation-survey.htm

UK first findings and statistical annex from the 2007 Innovation Survey are available at:
http://www.dius.gov.uk/science/science_and_innovation_analysis/~/media/publications/E/ELMR_Apr08_Robson
http://www.dius.gov.uk/science/science_and_innovation_analysis/~/media/publications/5/52-08-S_on

According to the 2007 Northern Ireland Annual Business Inquiry (NIABI), 6.3% of companies had someone in their business engaged in research and development work during the year. This is similar to the percentage reported the previous year (6.2%). The Manufacturing sector was the sector with the highest proportion (17.2%), while the proportion in the Service sector was 3.0%. Results from the 2008 NIABI are due to be published in December 2009.

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 Ireland[1].

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 £344.0m in 2008, of which £183.9m (53.5%) was spent by Businesses, £144.2m (41.9%) by the Higher Education sector and the remainder was other Government expenditure.

Total expenditure was 2.0% lower than that in 2007 (£351.1m) and 4.0% higher than that in 2006 (£330.8m).

Table 2: Total Expenditure on R&D[2] in cash terms
(£million)

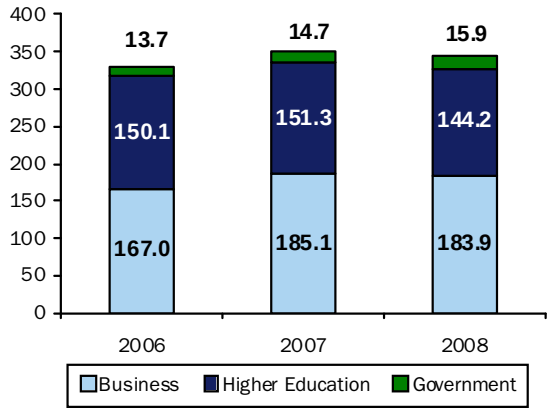
	2006	2007	2008
Total expenditure on R&D (of which)	330.8	351.1	344.0
Expenditure by Businesses	167.0	185.1	183.9
Expenditure by Higher Education[3]	150.1	151.3	144.2
Other expenditure by Government	13.7	14.7	15.9

[1] The latest details are available on the Department for Business, Innovation & Skills website at http://www.bis.gov.uk/

[2] Figures contained within all tables in this Bulletin may not add due to rounding.

[3] To avoid double counting, this figure excludes £1.0m in 2008, £0.7m in 2007, £0.6m in 2006 of expenditure on R&D by businesses that was undertaken by universities or higher education establishments.

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

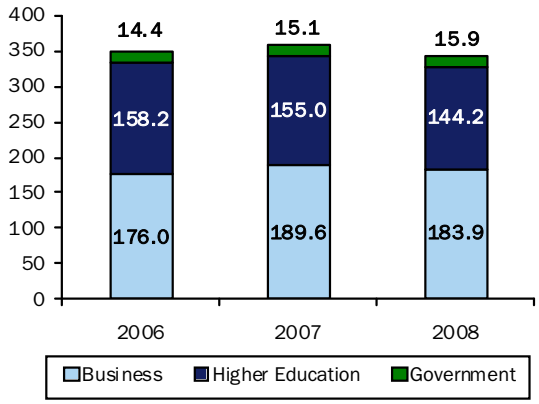


In 2008 expenditure by Business was greater than Higher Education (53.5% and 41.9% respectively). Business also accounted for the greater proportion of expenditure in the previous two years, (52.7% in 2007 and 50.5% in 2006).

Table 3: Total Expenditure on R&D in real terms[4] (£million)

	2006	2007	2008
Total expenditure on R&D (of which)	348.7	359.7	344.0
Expenditure by Businesses	176.0	189.6	183.9
Expenditure by Higher Education[5]	158.2	155.0	144.2
Other expenditure by Government	14.4	15.1	15.9

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



In real terms total expenditure in 2008 (£344.0m) has decreased by 4.4% (£15.7m) from expenditure in 2007 (£359.7m).

Figure 3 shows that over the year to 2008 there were decreases in expenditure by Businesses and Higher Education and an increase in expenditure by Government. This can also be seen in real terms (Figure 4) where expenditure by Businesses decreased by £5.7m (-3.0%), expenditure by Higher Education decreased by £10.8m (-7.0%) whilst Government expenditure increased by £0.8m (5.6%) over the year.

[4]GDP deflator used to convert cash terms to real terms: 94.9 (2006) and 97.6 (2007) where 2008 = 100.
[5]To avoid double counting, this figure excludes £1.0m in 2008, £0.7m in 2007, 0.6m in 2006 of expenditure on R&D by businesses that was undertaken by universities or higher education establishments.

Business Expenditure on Research & Development in 2008

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Table 4 details the headline results from the 2008 Business Expenditure on Research & Development (BERD) survey. The table shows that in 2008, total expenditure (in cash terms) on R&D by Northern Ireland businesses was an estimated £183.9 million.

Total BERD consists of in-house R&D expenditure (i.e. R&D carried out within the company) and purchased R&D 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 in-house expenditure (£170.6m or 92.8%) with £13.3m or 7.2% being purchased R&D expenditure which increased from £8.2m in the previous year. Of this £13.3m of purchased R&D expenditure in Northern Ireland, some £1.0m was undertaken by the Higher Education sector.

85.5% of funding for in-house R&D in 2008 came from the companies' own resources (£145.8m) while government provided a further 13.3% (or £22.7m) and the remainder came from overseas (0.7% or £1.1m) and other sources (0.6% or £1.0m).

Table 4: Business Expenditure on R&D - 2008

	Total Expenditure by Business (£million)	As % of Total Expenditure
Total Expenditure	183.9	100.0
In-house R&D Expenditure[6]	170.6	92.8
of which:		
Non Capital Expenditure	152.2	82.7
Capital Expenditure	18.4	10.0
Purchased R&D Expenditure[7]	13.3	7.2
Of which:		
Undertaken by Higher Education	1.0	0.5
Source of funding:		
Business	145.8	85.5
Government	22.7	13.3
Overseas	1.1	0.7
Other[8]	1.0	0.6

Total employment on R&D in businesses for 2008 was 2,940 (based on full time equivalent figures), which was higher than that in 2007 (2,760) and 2006 (2,870).

[6,7,8] 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. total 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 2007 and 2008 total business expenditure on R&D decreased by 3.0% in real terms, with in-house R&D decreasing by 5.9% and purchased R&D expenditure increasing by 58.3%. Government funding increased by 7.6% over the year, business expenditure from own funds increased by 1.9% and other sources of funding decreased by 87.8%.

The ten biggest R&D spenders in 2008 accounted for 41% of total expenditure which is lower than the proportion in 2007 (49%). This is the lowest proportion of total spend since the survey began in 1993. The proportion of total expenditure by the top ten companies for each R&D survey from 2001 is as follows – 44% in 2006, 47% in 2005, 44% in 2004, 46% in 2003, 60% in 2002 and 69% in 2001. Three companies have appeared in the top ten in the last seven DETI surveys (i.e. 2002, 2003, 2004, 2005, 2006, 2007 and 2008). Four companies have appeared in the top ten in the last three surveys and nine companies have appeared in the last two surveys.

In cash terms

In 2008, 41 companies spent more than £1 million on R&D, seven more than the number in 2007, ten more than the number in 2006 and eleven more than 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 9 in 1993. Average expenditure was £62,478 per R&D employee in 2008, 6.8% lower than the figure of £67,013 for 2007 (employees are on a Full-Time Equivalent basis).

In 2008, 2,940 employees (on a Full-time Equivalent (FTE) basis) were engaged in R&D work - 5.7% of all employees of companies involved in R&D. Comparable figures for 2007 were 2,760 employees or 5.7% of all employees of R&D companies (2006: 5.9%, 2005: 5.2%, 2004: 5.2% and 2003: 6.3%).

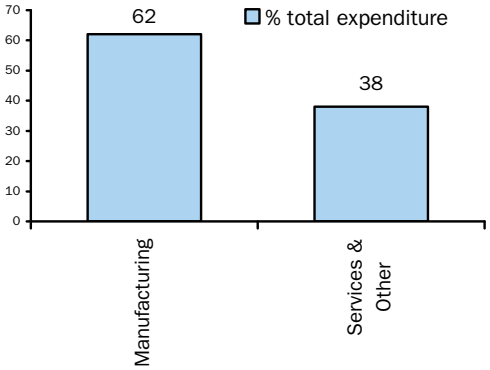
Table 5: Business Expenditure on R&D 2004 – 2008 (figures in £millions).

	Cash Terms					Real Terms (2008 Prices)[9]					% Change Real Terms	
	2008	2007	2006	2005	2004	2008	2007	2006	2005	2004	07-08	04-08
Total Expenditure	183.9	185.1	167.0	154.3	129.0	183.9	189.6	176.0	167.5	142.6	-3.0	28.9
In-house R&D	170.6	176.9	156.6	147.8	120.2	170.6	181.2	165.1	160.4	132.9	-5.9	28.4
Purchased R&D	13.3	8.2	10.4	6.5	8.8	13.3	8.4	11.0	7.1	9.7	58.3	36.7
R&D Funded by Government	22.7	20.6	24.2	17.3	19.0	22.7	21.1	25.5	18.8	21.0	7.6	8.1
R&D Funded from own funds	145.8	139.6	127.5	129.3	103.3	145.8	143.0	134.4	140.3	114.2	1.9	27.7
R&D Other	2.1	16.8	15.2	7.6	6.8	2.1	17.2	16.0	8.2	7.5	-87.8	-72.1

[9] GDP deflator used to convert cash terms to real terms: 2004 (90.5), 2005 (92.1), 2006 (94.9), 2007 (97.6), 2008=100

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – SECTORAL BREAKDOWNS

Figure 5: Total R&D Expenditure in 2008



In 2008, the majority of R&D was carried out within the Manufacturing sector (62%) with the remaining 38% carried out in the Services & Other industries category. This is a slight reversal in the upward trend in contribution of the Services & Other industries to total expenditure which had been increasing from 29% in 2003, 33% in 2004, 35% in 2005, 37% in 2006 and 44% in 2007.

The Electrical and Optical Equipment division (DL) accounted for 25% of all Manufacturing R&D (see Figure 6) with the manufacture of machinery and equipment division (DK) accounting for 17% and food products, beverages and tobacco division (DA) a further 13%.

Figure 6: Percentage of Manufacturing R&D Expenditure in 2008 by Division (SIC 2003 basis)[10]

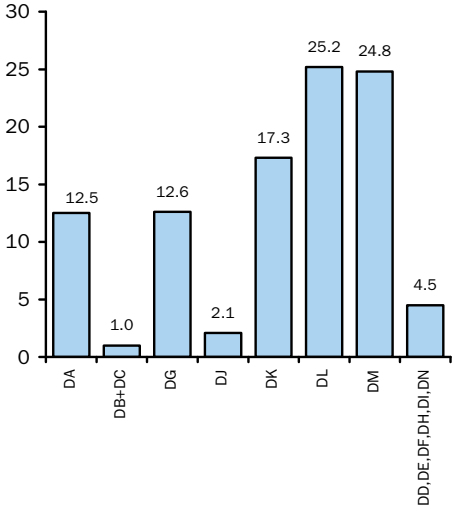
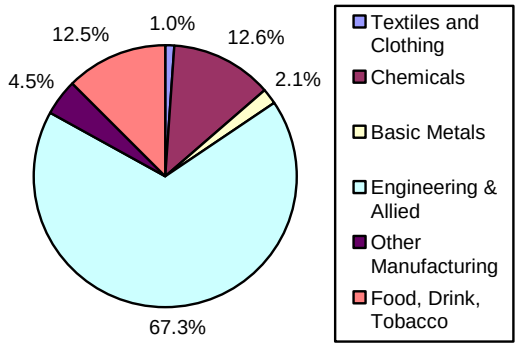


Figure 7 below, highlights that 67% of R&D spending within the Manufacturing sector was accounted for by companies involved in Engineering & Allied Industries (DK, DL & DM).

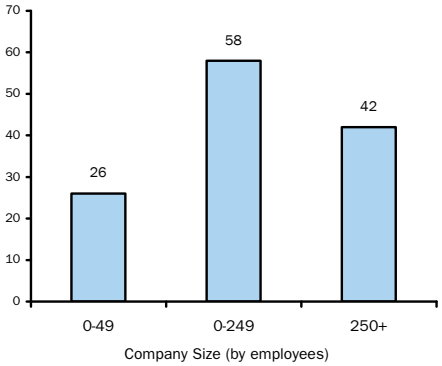
Figure 7: Percentage of Manufacturing Expenditure by SIC 2003 Subsection



Companies with 250 or more employees accounted for 42% of business R&D expenditure in 2008, although they represented only 8% of R&D performing companies.

Smaller firms (i.e. those with less than 50 employees) represented some 71% of R&D performing companies and accounted for 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 less than 250 employees (0-249)) accounted for 58% of the total business expenditure. Total SME expenditure fell by £11.1m (-9.5%) from 2007 to 2008, in cash terms. However, since 2003 SME expenditure has increased by 88.1% to £106.1m. The proportion that large companies make to total R&D expenditure (42%) was higher than in the previous year (2007: 37%) but lower than the six years previous to that (2006: 51%, 2005: 51%, 2004: 52%, 2003: 54%, 2002: 57% and 2001: 72%). See Annex 1 Table 3 for further details.

Figure 8: Percentage of Total BERD Expenditure in 2008 by Company Size



[10] For a description of subsection headings see Notes to Editors note 6.

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – IN-HOUSE EXPENDITURE

In-house 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 (purchased R&D expenditure by companies in NI may be carried out in other parts of the UK or abroad). In-house expenditure in Northern Ireland (in cash terms) decreased by 3.6% between 2007 and 2008: this is compared to a 1.7% increase in the UK as a whole. Of the 11 other UK regions, six showed a decrease in in-house expenditure and five showed an increase.

As Table 7 shows, in-house R&D expenditure, i.e. spending carried out within the company, accounted for almost 93% (£170.6 million) of total expenditure in Northern Ireland in 2008, lower than the proportion in 2007 (96%) and 2006 (94%). The majority of both in-house and purchased R&D expenditure was in the Manufacturing sector.

The two components of in-house R&D expenditure are non capital expenditure (salaries & wages and other costs) and capital expenditure (land & buildings and plant & machinery).

Table 6: In-house Expenditure by UK Government Office Region (Cash Terms)

	Expenditure (£million)		%Change (2007-2008)
	2008	2007	
UK	15,895	15,630	1.7
England	14,935	14,676	1.8
North East	325	332	-2.1
North West	2,290	2,028	12.9
Yorkshire & The Humber	426	440	-3.1
East Midlands	991	1,070	-7.3
West Midlands	892	1,004	-11.1
South West	1,374	1,264	8.7
East of England	4,140	3,997	3.6
London	1,058	1,018	3.9
South East	3,438	3,523	-2.4
Wales	243	244	-0.4
Scotland	547	533	2.5
Northern Ireland	171	177	-3.6

Note: Data for UK and GB regions are from the Office for National Statistics.

Table 7: In-house and Purchased R&D Expenditure by Sector

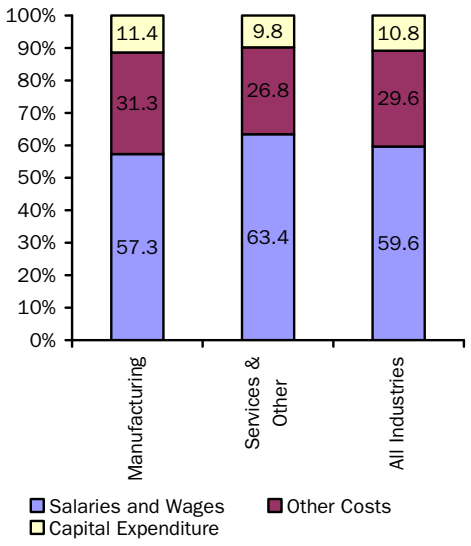
	IN-HOUSE		PURCHASED	
	£m	% of Total Expenditure	£m	% of Total Expenditure
Manufacturing	105.5	57.4	8.7	4.7
Services & Other	65.1	35.4	4.6	2.5
All Industries[11]	170.6	92.8	13.3	7.2

[11] 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 In-house R&D Expenditure by Sector (£m)

	Manufacturing		Services & Other		All Industries	
	£m	%	£m	%	£m	%
Non Capital Expenditure						
Salaries & Wages	60.4	57.3	41.2	63.4	101.7	59.6
Other Costs	33.0	31.3	17.4	26.8	50.5	29.6
Capital Expenditure						
Land & Buildings	1.3	1.2	1.8	2.7	3.0	1.8
Plant & Machinery	10.8	10.2	4.6	7.1	15.4	9.0
In-house Expenditure	105.5	100.0	65.1	100.0	170.6	100.0

Figure 9: Percentage of In-house R&D Expenditure by Sector



Non capital expenditure makes up 89% of in-house expenditure, lower than in 2007 (93%) and 2006 (91%). Table 8 and Figure 9 highlight that there were differences between sectors in the categories of in-house R&D spend.

The proportion spent on non capital is much greater than capital expenditure in both Manufacturing and in Services & Other. A larger proportion of non capital expenditure was spent on salaries and wages in the Services & Other sector (63% of total in-house expenditure) compared to 57% in the Manufacturing Sector. Within capital expenditure both sectors had more expenditure in Plant & Machinery than Land & Buildings.

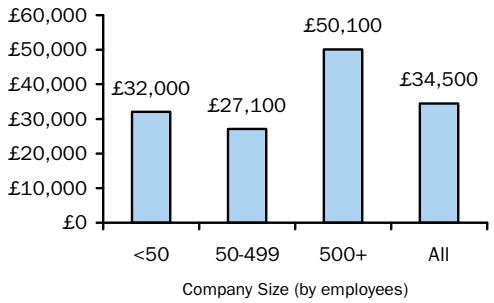
Salaries and Wages as a proportion of in-house expenditure has increased from the proportion in 2007 in both Manufacturing (53% in 2007) and in Services & Other (59% in 2007).

Over the year to 2008 the proportion spent on capital expenditure increased from 7% to 11%.

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – NON CAPITAL EXPENDITURE

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

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

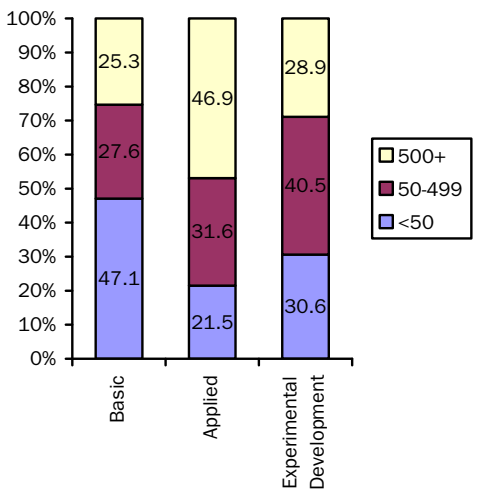


Overall the salaries and wages per R&D FTE was £34,500 a decrease of 3.6% from £35,800 in the previous year. Salaries and wages per head for companies with 500 or more employees were £50,100. This compares with £32,000 per head for companies with less than 50 employees and £27,100 per head for companies with between 50 and 499 employees.

Table 9: Type of Research by Sector as percentage of All Research (Non Capital Expenditure)

	Manufacturing	Services and Other	All Industries
Basic	2.6	2.7	5.3
Applied	29.9	18.8	48.7
Experimental Development	29.0	17.1	46.1
All Research	61.4	38.6	100.0

Figure 11: Type of Research by Company Size (no. of employees)



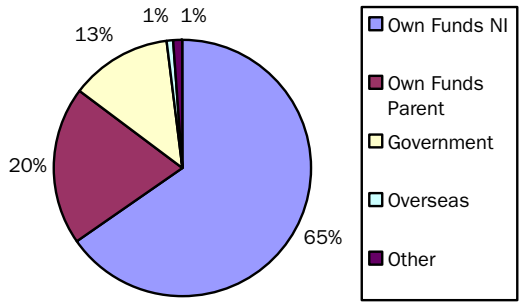
Non capital expenditure can also be analysed in terms of type of research carried out. Experimental development accounts for 46.1% of non capital expenditure, higher than that in 2007 (41.3%) but lower than in 2006 (47.3%), with applied research and basic research accounting for 48.7% and 5.3% respectively.

Figure 11 shows that the majority of spending on basic research is carried out by companies with between 0 and 499 employees (74.7%). Nearly 80% of spending on applied research is carried out by companies with 50 or more employees and that companies with between 50 and 499 employees are dominant in terms of spend on only experimental development research. 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 in-house R&D expenditure comes from a number of sources: the companies' own funds, from Government, overseas funding (e.g. EU) and other businesses and organisations.

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



The majority of funding (86%) came from the companies' own funds, with 13% from government, 1% from overseas and 1% from other sources. The proportion of funding from own funds increased from 79% in 2007 and 76% in 2006. Funding from overseas was similar to that in 2007 while funding from other sources was down.

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

	<50	50-499	500+	All
Own Funds NI	52.4	72.3	68.6	65.7
Own Funds Parent	31.6	22.0	9.4	19.8
Government	12.3	5.5	21.4	13.3
Overseas	1.6	0.2	0.5	0.7
Other	2.1	0.1	0.0	0.6
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. Almost three quarters of R&D (72.3%) was funded by Own Funds NI in firms with between 50 and 499 employees compared to 52% and 69% in firms with under 50 and more than 500 employees respectively.

Firms with under 50 employees and between 50 and 499 employees received a greater proportion of funds from parent companies (32% and 22% respectively) than firms with 500 or more employees (9%) while the proportion of funding for R&D from own funds, NI and parent, was 84% for firms with under 50 employees, 94% for firms with between 50 and 499 employees and 78% for firms with 500 or more employees.

Firms with 500 or more employees reported the greatest proportion of funds from Government at 21% of expenditure, with a lower proportion for firms with under 50 employees (12%), while firms with between 50 and 499 employees received 6% of funds from this source.

BUSINESS EXPENDITURE ON RESEARCH & DEVELOPMENT – OWNERSHIP ANALYSIS

In 2002 externally-owned firms accounted for 65% of expenditure, 53% in 2003, 57% in 2004, before falling to 53% in both 2005 and 2006. It increased to 57% in 2007 and in 2008 R&D spend was again higher for externally-owned companies compared to locally-owned companies (60.3% and 39.7% respectively).

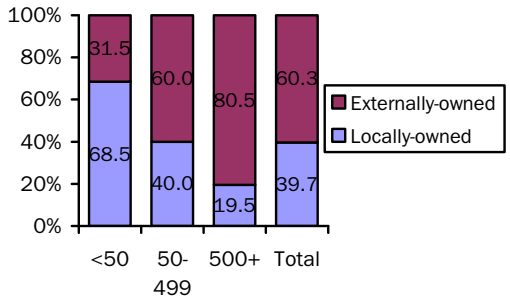
Table 11: Breakdown of R&D expenditure by ownership of company

	£m	%	Number of companies	%
Locally-owned companies	73.1	39.7	378	83.3
Externally-owned companies	110.8	60.3	76	16.7
Total (All companies)	183.9	100.0	454	100.0

Expenditure by locally owned companies (£73.1m) has decreased by 9% from £80.4m in 2007 while the number of these companies who reported R&D expenditure increased by 8% from 350 to 378.

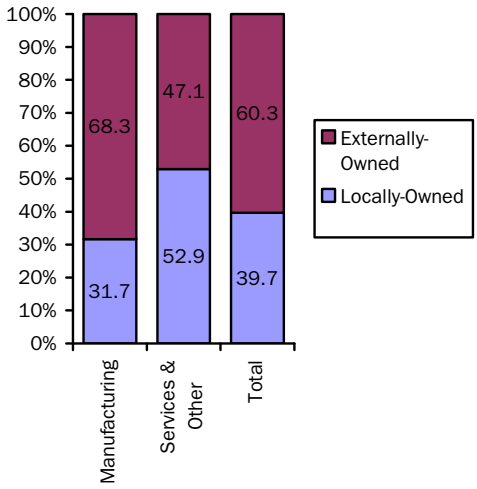
Northern Ireland owned companies in 2008 accounted for over four-fifths of all R&D performing companies and approximately 40% of the total £183.9m expenditure. This can be compared with externally-owned companies accounting for approximately 60% of the R&D expenditure and under one-fifth of R&D performing companies.

Figure 13: Expenditure by ownership by company size



The majority of R&D spend in companies with under 50 employees (68.5%) was by Northern Ireland owned firms. However, the analysis shows that, in companies with between 50 and 499 employees and companies with 500 or more employees the majority of R&D expenditure (60.0% and 80.5% respectively) was by externally-owned firms.

Figure 14: Expenditure by ownership by sector



Analysis of R&D spend split by ownership and sector showed that 68.3% 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 52.9% of R&D expenditure.

Compared to the previous year externally-owned companies increased their proportion of expenditure in Manufacturing (from 64.4% to 68.3%) and increased their share of the Services & Other sector (from 46.5% to 47.1%).

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

In 2008, companies surveyed reported a total of 3,750 employees working on R&D, approximately 7.2% of all employees in companies carrying out R&D which is slightly higher than in 2007 (6.8%). [The full-time equivalent figure[12] for the same period was 2,940 or 5.7%].

Figure 15: Total R&D Employment – Male, Female and Full Time Equivalent

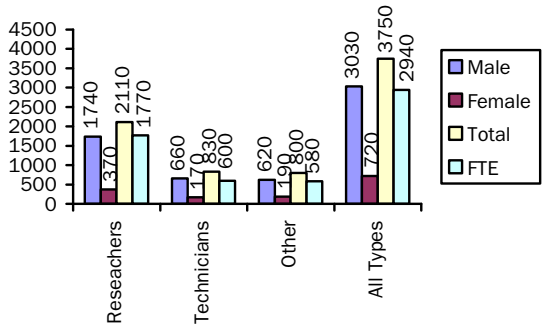


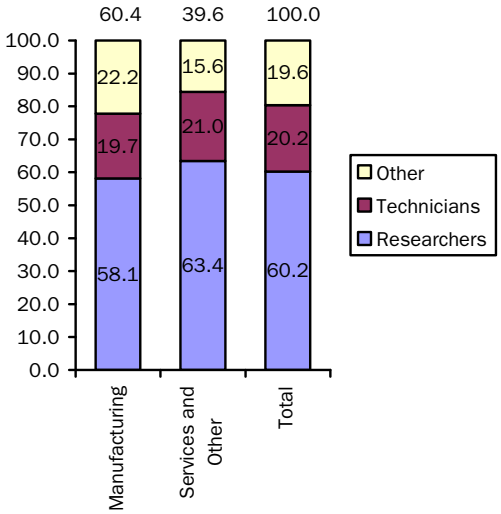
Table 12: Number of R&D Employees by Type

	Male	Female	Total
Researchers	1,740	370	2,110
Technicians	660	170	830
Other	620	190	800
All Types	3,030	720	3,750

In 2008 there were 3,750 employees involved in R&D activities, 3,030 males and 720 females. This compared to 3,310 employees in 2007 with 2,580 males and 730 females.

Approximately 81% of all R&D employees were male. By type of R&D employee, researchers accounted for 56%, technicians for 22% and other employees (e.g. support staff including skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects) for 21% of all R&D employees. Comparable full-time equivalent figures show that 1,770 employees were researchers (60%), 600 employees were technicians (20%) and the number of other employees was 580 (20%).

Figure 16: Percentage of R&D Employment (full-time equivalent) by Sector



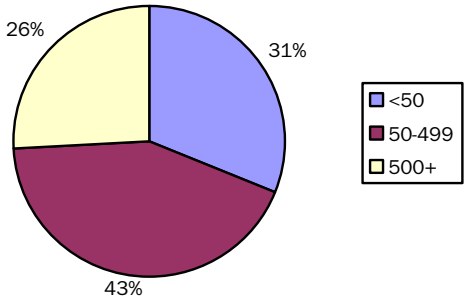
On a full-time equivalent basis there were 1,780 employees in Manufacturing and 1,160 in the Services & Other sectors. Within Manufacturing, researchers accounted for 58% of R&D employees with the level of technicians at 20% and other employees at 22%.

Within the Services & Other sectors, researchers made up 63% of R&D employees, technicians 21% and other employees 16%.

[12] For an explanation of full time equivalent employment see Notes to Editors note 5

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

Figure 17: R&D Employment by Company Size

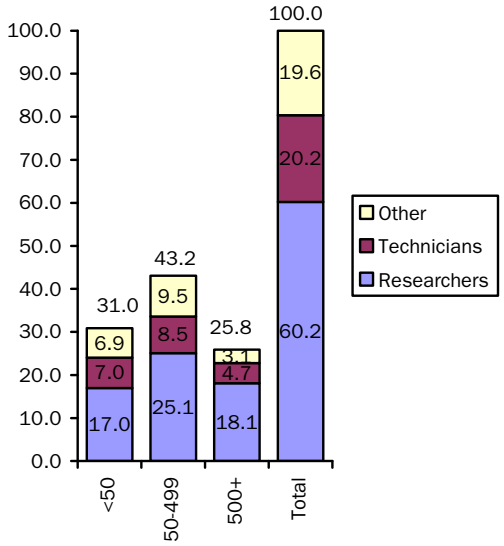


Using full time equivalent employment figures, Figure 17 shows how total R&D employment is split across companies of different sizes. The greater proportion of R&D employees is in the companies with between 50 and 499 employees (43%), followed by companies with under 50 employees (31%) and companies with 500 or more employees (26%). These show a decrease in the proportion of R&D employment in companies with between 50 and 499 employees and companies with under 50 employees from 46% and 33% respectively in 2007. However, an increase occurred in the proportion of R&D employment in companies with 500 or more employees from 21% in 2007.

The proportion of R&D employees who are researchers is greatest in firms with 500 or more employees (69.9%). Researchers in firms with between 50 and 499 employees and in firms with under 50 employees accounted for 58.2% and 55.0% of R&D employees respectively. Companies with under 50 employees employ more persons in the 'other' category (22.3%) than either companies with between 50 and 499 employees (22.1%) or companies with 500 or more employees (12.0%), while the greatest proportion of technicians' was in companies with under 50 employees (22.7%) followed by companies with between 50 and 499 employees (19.7%) and companies with 500 or more employees (18.1%).

Figure 18 also shows the spread of R&D employees across different size bands, with 31% of all R&D employees working in firms with less than 50 employees, 43% in firms with between 50 and 499 employees and 26% of all R&D workers employed by companies with 500 or more employees.

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



TAX CREDITS

Businesses were asked if they received any R&D tax credits and if their R&D work was part of a joint project in 2008, following the introduction of the question in the 2004 survey.

57 R&D performing companies reported that they received tax credits amounting to £9.5 million in total. This represents an increase in the number of R&D performing companies receiving tax credits and a decrease in the amount received when compared with last year. In 2007 52 companies reported receiving tax credits which amounted to £26.3m and in 2006 57 companies reported receiving tax credits which amounted to £9.6m.

JOINT PROJECTS

42 companies reported that their R&D work was part of a joint project with a source outside their company. 14 companies had a joint project with Higher Education Establishments, 12 with other Businesses and 16 with both. This shows a decrease in the number of companies engaging in joint projects from last year (47 in total).

R&D Information from other sources

4

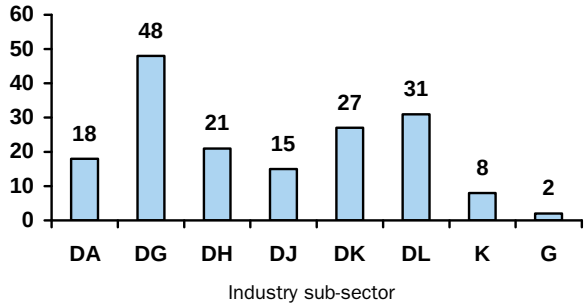
Northern Ireland Annual Business Inquiry (NIABI)

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

The latest 2007 NIABI reported that out of approximately 3,550 business returns to the survey, 6% (222) 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 businesses that carried out R&D work (17%), while the proportion for the Service industries was 3%.

Figure 19 shows the percentage of businesses that carried out R&D work in 2007, for those sectors and sub-sectors of the Manufacturing industries where there were ten or more businesses that did so. These were concentrated in the Manufacturing sector, where nearly half (48%) of businesses in the Manufacture of Chemicals, Chemical Products and Man-Made Fibres did so. The main non-manufacturing sector with ten or more businesses that carried out R&D work was Real Estate, Renting and Business activities (K) (which includes businesses in the Computer and Related activities (SIC 72) and Research and Development (SIC 73) industries). The Wholesale and Retail sector (G) also carried out some R&D in 2007.

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



DA Manufacture of Food Products, Beverages and Tobacco
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
G Wholesale and Retail

Business Expenditure on Research & Development in the Republic of Ireland

5

The Business Sector Research and Development Survey was conducted biennially by Forfás and its predecessors for over two decades. The most recent survey was jointly conducted by the Central Statistics Office (CSO) and Forfás and collected information about research and development activities of enterprises in 2007 and 2008. The next survey will relate to the period 2009/2010 and is expected to be published in 2011.

Research & development expenditure performed by the business sector in Ireland was more than €1.6 billion in 2007. Nearly 83% of all expenditure was on current (non capital) costs while 17% was spent on capital costs.

Research and development spending in 2007 was highest in the manufacturing sector which accounted for 57% of all spending. Spending in this sector was €915m in 2007 while the services and non manufacturing sector spent €690m. Three quarters of the spend in manufacturing was on current costs compared to services where current costs accounted for 92% of expenditure.

In excess of 68% of total R&D expenditure was concentrated in five sectors 'Computer and related activities', 'Manufacture of chemicals, chemical products and man-made fibres', 'Manufacture of medical, precision and optical instruments, watches and clocks', 'Research and development' and 'Manufacture of electrical machinery and apparatus not elsewhere classified'.

Foreign owned enterprises spent almost €1.2bn on research and development in 2007, (72% of all R&D expenditure) while Irish owned enterprises spent €445m. Almost 79% of all spending by foreign owned enterprises was on current costs compared to 93% for Irish owned enterprises.

R&D spending by medium/large sized firms (50 or more employees) accounted for more than €1.3 billion or 83% of the total spend on R&D in 2007 while R&D expenditure by small firms (less than 50 employees) accounted for €280 million or 17% of the total spend in the period.

There were 10,950 Full Time Equivalent (FTE) research staff in Ireland in 2007. There were approximately 7,250 FTE researchers of which 1,050 were FTE PhD qualified researchers. Just over 39% of all FTE research staff were engaged by Irish owned enterprises compared to 61% of such staff being engaged by foreign owned enterprises. Almost 6,100 FTE research staff worked in the services sectors accounting for 56% of all FTEs while 4,850 worked in the manufacturing sector.

Almost 87% of all research and development expenditure was funded by enterprises' own company/internal funds, while 6% of expenditure was funded from public funds.

Business Expenditure on Research & Development – Notes to Editors

6

1. The survey of Northern Ireland Business Expenditure on Research and Development during 2008 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 2007 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 2008 survey, businesses were stratified into 4 groups:

(i) Businesses responding to the 2007 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 2007 or 2008); 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 2008 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 2008, 1,016 forms were sent out to businesses believed to be performing R&D. Completed forms were returned by 811 businesses representing a response rate of 80 per cent. 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 36% of the total non-respondent companies. The remaining 64% - non Invest NI estimates were based on historical information and other administrative surveys within Statistics Research Branch.

Overall, all estimates make up 5.5% of total BERD spend for 2008 (compared to 5.3% in 2007). Estimates for Invest NI companies account for 1.7% of total BERD spend while estimates for non Invest NI companies account for 3.8% 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.

Figure 20: Deciles of Estimates as a % 2008 BERD

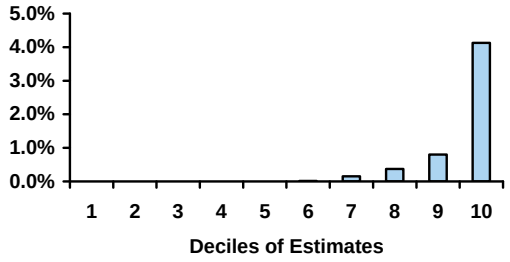


Figure 20 shows that all estimates made up 5.5% of total 2008 BERD spend. When estimates are ranked according to ascending size of spend, the last two deciles (i.e. top 20% of companies) accounted for 90% of the total BERD estimated spend indicating that most of the estimates were small in magnitude. The bulk of the value of the estimates has been accounted for by a relatively small number of companies.

2. This is the eleventh 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 (now in-house) 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 in-house 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 in-house R&D figures for Northern Ireland from both sources are therefore 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&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 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. The 2007 NI R&D questionnaire was modified inline with GB after a GB review.

4. The survey covers expenditure in the year ending December 2008, although companies were given the option of supplying data for a business year ending on any date between 6 April 2008 and 5 April 2009.

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 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 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.

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.

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&D 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 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 businesses, other public organisations and any other organisations within the UK.

d) Employment on R&D

Staff Types - Employment on R&D splits into the following categories; researchers – engaged in the conception or creation of new knowledge, products, methods and systems; technicians – who perform scientific and technical tasks normally under the supervision of researchers; and others – support staff including skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects.

Full Time Equivalent Employment – One full time equivalent (FTE) may be thought of as one person-year. For example, a person who normally spends 30% of their time on R&D and the rest on other activities would be considered as 0.3 FTE. Similarly, if a full-time R&D worker is employed at an R&D unit for only six months, this results in the FTE of 0.5. A person who works half of a standard week and spends half of their time on R&D and the rest on other activities should be considered as 0.25 FTE.

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
DF	Coke, refined petroleum products and nuclear fuel
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 + DM	Engineering & Allied Industries
DD, DE, DF DH, DI, DN	Other Manufacturing

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 2008

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Table 13 details the headline results from the 2006, 2007 and 2008 Higher Education Expenditure on Research & Development (HERD) surveys.

Table 13 Higher Education Expenditure on R&D

	£million	£million	£million
	2008	2007	2006
HERD Expenditure[13]	145.2	152.0	150.7
of which:			
Non Capital Expenditure	129.9	129.3	127.0
Capital Expenditure	15.3	22.7	23.7
Source of funding of R&D:			
Government Block Grant	74.5	76.5	76.7
OST Research Councils[14]	10.6	8.5	9.1
UK-based charities	7.6	6.5	6.3
UK Cent Gov/Local Auth/Health[15]	33.0	38.4	37.9
UK Ind/Comm/Pub Corp[16]	3.3	2.8	3.0
EU Government	6.8	5.9	6.2
EU Other	2.8	2.7	3.3
Other Overseas	3.8	7.6	5.0
Other Sources	2.8	3.1	3.3
	Number	Number	Number
HERD Employment[17]	1,600	1,680	1,700
of which:			
Academic staff	1190	1,260	800
Technicians[18]	220	230	720
Other[19]	190	200	180

[13]Expenditure for 2008 includes £1.0 million of expenditure funded by Northern Ireland businesses (£0.7m in 2007, £0.6m in 2006, £0.7m in 2005 and £0.9m in 2004). Therefore, net HERD in 2008 was £144.2m (this is as detailed in Table 2). All university expenditure on R&D is in-house 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.

[14] Office of Science and Technology Research Councils

[15] Funding from UK Central Government, Local Authorities and Health Trusts/Hospitals

[16] Funding from UK industry/commerce/public corporations

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

[18] Technicians – Perform scientific and technical tasks normally under the supervision of researchers.

[19] Others -Support staff including skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects.

Total HERD expenditure decreased by 4.5% from £152.0 in 2007 to £145.2m in 2008, compared with an increase of 0.9% from 2006 to 2007. The decrease in in-house expenditure was comprised of a 32.6% decrease in capital expenditure and a slight increase (0.4%) in non capital expenditure. This compares to the previous period where capital expenditure decreased by 4.4% and non capital expenditure increased by 1.9%.

Employment totals decreased between 2007 and 2008, from 1,680 full-time equivalent persons in 2007 to 1,600 in 2008. The change in R&D employment consisted of a decrease in the number of academic staff (from 1260 to 1190) a decrease in the number of technicians (from 230 to 220) and a decrease in other staff (from 200 to 190) employed in R&D.

Block grants remained the largest source of funds with their relative contribution increasing slightly from 50% in 2007 to 51% in 2008. Funding from UK Central Government/Local Authorities and Health Trusts/Hospitals decreased by 14.0% from £38.4m in 2007 to £33.0m in 2008, accounting for just under one quarter of HERD funding in 2008 compared to one quarter in 2007. EU Government funding increased by 14.7% between 2007 and 2008, from £5.9m to £6.8m.

See Notes to Editors overleaf.

Higher Education Expenditure on Research & Development – Notes to Editors

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Table 13 details Higher Education Expenditure on R&D (HERD). The table gives combined results from the two Northern Ireland universities - i.e. Queen's University Belfast (QUB) and the University of Ulster (UU). The data collected refers to the academic year 2007/2008 ending 31/7/2008. 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/directorates/FinanceDirectorate/CapitalandCosting/Costing/ for QUB and at http://www.ulster.ac.uk/finance/transparency_reviews.html for UU.

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

Non Capital Expenditure – Includes expenditure on salaries and wages and other costs (materials, supplies, equipment and services).

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. Figures shown have been rounded to the nearest 10.

Annex 1

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Table 1: Breakdown of In-House R&D Expenditure 2008 by employment size-bands (< 50 employees and 50+ employees) in £000's (rounded to nearest £100,000)

		Non Capital Expenditure						Capital Expenditure			Total In–House R&D Expenditure
		Salaries & Wages	Other Costs	Total Expenditure	Basic Research	Applied Research	Experimental Development	Lands & Building	Plant & Machinery	Total Expenditure	
Manufacturing											
	<50	6,900	3,600	10,500	700	4,700	5,100	100	1,700	1,800	12,300
	50+	53,500	29,500	83,000	3,100	40,800	39,000	1,200	9,100	10,200	93,200
	Total	60,400	33,000	93,500	3,900	45,500	44,100	1,300	10,800	12,000	105,500
Services & Other											
	<50	22,300	8,400	30,700	3,000	11,200	16,400	300	1,800	2,100	32,700
	50+	19,000	9,000	28,000	1,100	17,300	9,600	1,500	2,900	4,300	32,300
	Total	41,200	17,400	58,700	4,100	28,600	26,000	1,800	4,600	6,400	65,100
All Industries											
	<50	29,200	12,000	41,100	3,800	15,900	21,500	400	3,500	3,900	45,000
	50+	72,500	38,500	111,000	4,200	58,100	48,700	2,600	11,900	14,600	125,600
	Total	101,700	50,500	152,200	8,000	74,100	70,100	3,000	15,400	18,400	170,600

Table 2: Breakdown of Purchased R&D Expenditure 2008 by employment size-bands (< 50 employees and 50+ employees) in £000's (rounded to nearest £100,000)

		Purchased R&D Expenditure			
		Work commissioned within NI	Work commissioned within GB	Worked carried out outside the UK	Total Purchased R&D Expenditure
Manufacturing					
	Total	3,500	3,700	1,100	8,700
Services & Other					
	<50	900	400	500	1,700
	50+	500	300	2,100	2,900
	Total	1,300	700	2,500	4,600
All Industries					
	<50	2,300	500	600	3,500
	50+	2,500	3,900	3,100	9,800
	Total	4,800	4,400	3,700	13,300

Table 3: Breakdown of Business Expenditure on R&D (BERD) Expenditure by Small and Medium Sized Enterprises (SMEs <250 employees) 2001-2008 (£m)[20]

	R&D Expenditure							
	2001	2002	2003	2004	2005	2006	2007	2008
SMEs (<250)								
In- house	40.2	63.2	53.2	54.8	69.4	73.4	110.5	98.3
Purchased	3.3	3.6	3.2	7.5	5.5	8.2	6.8	7.9
Total	43.4	66.8	56.4	62.3	74.9	81.6	117.2	106.1
(250+)								
In- house	109.8	86.1	63.3	65.4	78.4	83.2	66.4	72.3
Purchased	1.8	3.8	1.6	1.4	1.0	2.2	1.4	5.5
Total	111.6	89.9	64.9	66.8	79.4	85.4	67.9	77.8
All								
In- house	149.9	149.3	116.5	120.2	147.8	156.6	176.9	170.6
Purchased	5.1	7.3	4.8	8.8	6.5	10.4	8.2	13.3
Total	155.0	156.6	121.3	129.0	154.3	167.0	185.1	183.9

[20]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.

Table 4: Breakdown of 2008 R&D Employment by gender, employment size-band and Full-time Equivalent (FTE) (rounded to nearest 10)

		Researchers				Technicians				Other				All Types			
		Male	Female	Total	FTE	Male	Female	Total	FTE	Male	Female	Total	FTE	Male	Female	Total	FTE
Manufacturing																	
Employment Size-bands	<50	160	20	170	140	90	10	100	50	110	30	140	80	350	50	400	270
	50-499	380	70	450	370	210	40	260	170	280	50	330	220	870	160	1,030	760
	500+	470	120	590	520	70	70	140	140	60	30	90	90	600	220	820	750
	Total	1,010	200	1,210	1,030	370	120	490	350	450	110	560	390	1,830	430	2,260	1,780
Services & Other																	
Employment Size-bands	<50	360	80	440	360	210	30	230	160	110	60	170	120	680	160	840	650
	50+	370	100	470	370	90	20	110	90	60	10	70	50	520	130	650	510
	Total	740	170	910	740	290	50	340	240	170	80	250	190	1,200	300	1,490	1,160
All Industries																	
Employment Size-bands	<50	520	90	610	500	290	30	330	210	220	90	310	200	1,030	210	1,240	910
	50-499	740	160	900	740	300	60	360	250	340	60	400	280	1,370	290	1,660	1,270
	500+	490	120	600	530	70	70	140	140	60	30	100	90	620	220	840	760
	Total	1,740	370	2,110	1,770	660	170	830	600	620	190	800	580	3,030	720	3,750	2,940