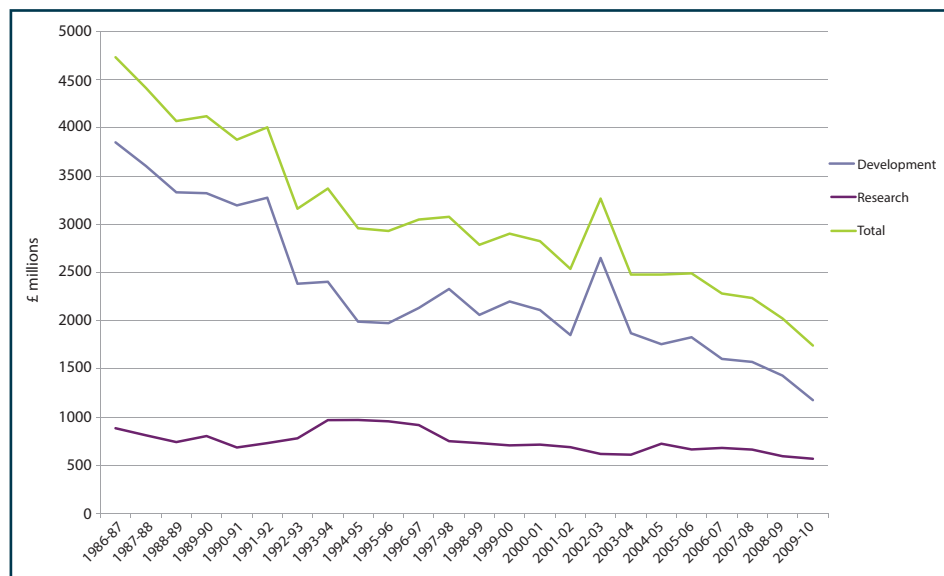


Special 20th anniversary issue

The decline of UK military R&D



UK Ministry of Defence spending on R&D from 1986 to 2010.¹

Latest official statistics show that UK government spending on military research and development has fallen considerably over the last ten years – something that SGR has been calling for. Stuart Parkinson assesses the significance of the changes.

The end of the Cold War led to high hopes that there would be major cuts in international military forces, together with its associated spending. While in Russia and other former Soviet countries spending cuts of about 90% took place, in the West the cuts were much more limited.²

The UK situation demonstrates this well. From a 1980s peak of over £40 billion (in 2010/11 figures), total military spending only fell by 30% by 1997 and then began to rise again. By 2009/10 it was approaching its Cold War peak following the major spending increases during the '9/11 wars'.³

However, UK public spending on military research and development (R&D) has followed a somewhat different pattern.

UK military R&D spending: charting the decline

Figure 1 shows the R&D spending by the Ministry of Defence (MoD) from 1986 to 2010.

During the 1980s, the MoD had dominated public R&D spending, being responsible for around 50% of the total spend. However, in the late 1980s, the spend fell significantly. Part of the cause was the declining tension between the West and the Soviet bloc, but an equally large factor was change within the way R&D was being funded in the UK. This was due to the deliberate government policy of encouraging a shift from public to private funding for science and technology. Annual spending on publicly funded military R&D thus fell from nearly £5 billion to £3 bn in the decade up to 1995. A particularly controversial example of the privatisation trend was the transfer of management of the Atomic Weapons Establishment to the company, Hunting-BRAE in 1993/4.⁴

However, during the late 1990s, the decline in spending virtually stopped, with the MoD's R&D budget remaining roughly constant at about 35% of the total government R&D spend. This was a much higher proportion than most other industrialised countries, except for the USA (see Box 2 on p.27 for more discussion of international comparisons). The UK was still pursuing the development of numerous major new weapons systems, despite the lack of a clearly perceived 'enemy threat'.

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Nevertheless, the trend towards privatisation continued. The Strategic Defence Review of 1998 – carried out by the incoming Labour government – accelerated the process of breaking up and part-privatising the Defence Evaluation Research Agency, the MoD's science and technology facilities. This led in 2001 to the creation of the Defence Science and Technology Laboratories – which remained in public hands – and a major new company, QinetiQ.⁵

A major driver of these initiatives was a desire for industry to fund more of the military R&D spend in the UK, as well as to 'increase innovation'. Numerous new collaborations – such as Defence Technology Centres and Defence and Aerospace Research Partnerships – were started with universities to tap into their expertise. Such initiatives were especially controversial as they attempted to draw in increasing numbers of civilian researchers, especially in engineering, computer science and physics.^{6,7,8}

This period of rapid change coincided with the early years of the 'War on Terror' following the September 11th attacks in 2001. With UK forces deployed first in Afghanistan and then Iraq, the UK military budget grew rapidly. However, apart from a brief spike in 2002-3 (which could have been a data collection error⁹), the MoD spending on R&D slowly began to fall again in real terms.

At the end of 2005, the government launched its Defence Industrial Strategy, aiming to improve collaboration between the MoD and the UK arms industry in the procurement of military equipment. This was followed – in late 2006 – by the Defence Technology Strategy, which outlined key areas for military R&D. These ranged from counter-terrorism to robotic aircraft (drones), submarines, and fighter aircraft.¹⁰

However, for the UK arms industry and its sympathisers, including the House of Commons Defence Committee, these programmes were not enough and they called for greater spending.^{11,12} They argued that the public spending on civilian R&D had increased considerably under Labour, and that extra money should also be made available for military R&D. This was despite the MoD's budget still representing 25% of the total public R&D spend.

These calls went unheeded and, of course, the economic situation has deteriorated drastically in the years since. In 2010, with the incoming coalition government – and especially the MoD – facing a

financial crisis, major cuts were announced across the public sector over the following five years. It remains to be seen how far this squeeze will eventually affect the MoD's science and technology spending, but the latest figures show that the R&D budget fell to £1.7 bn in 2009-10, this being 17% of total public R&D spend.

SGR's programme on military influence on science and technology

SGR decided to increase its research and campaign work on the military influence on science and technology in the early 2000s, as the 'War on Terror' mentality took hold of policy-makers in the UK and elsewhere.

We began a new research project in 2003, which led to the publication of the in-depth report *Soldiers in the Laboratory*, launched at a parliamentary event in early 2005. With the situation changing rapidly, we followed up with a short update entitled *More Soldiers in the Laboratory* in 2007, and then focused on military influence within UK universities – using data gathered under new freedom of information legislation – for our third report *Behind Closed Doors* in 2008.¹³ We carried out numerous education and campaign activities based on the evidence in these reports (see p.5).

Our latest project in this area began at the start of 2012 and is focused on developing specific proposals for shifting public R&D spending away from militaristic ends towards tackling the roots of insecurity and conflict (see p.3).

At this point, it is worth considering 'recommendation 1' from *Soldiers in the Laboratory*. In it, we called on the government to "begin a rapid and significant shift of funding from military R&D to civil R&D". In particular, we recommended "a shift in funds of the order of one-third to one-half of the current military R&D budget in the near term". The actual fall up until 2010 was approximately 37%.¹⁴ In real terms, this fall amounts to £1.0 bn in annual spending. Notably this is similar to the increase in the civilian budget over the same period, which amounts to approximately £0.8 bn. In terms of the proportion of the total public R&D spending that goes towards military projects, this has fallen from 29% to 17% during this period.

So, from this data, one could argue that the government has followed our recommendation closely!

Analysing the decline

Obviously, there are a range of factors at work that have led to the decline since the end of the 1990s. Although military spending increased considerably as the UK government chose to join the 9/11 wars, a significant consequence of the extended wars in Afghanistan and Iraq coupled with spiralling costs on major new military equipment programmes – including the Typhoon fighters, Astute submarines and Nimrod aircraft – was unanticipated budgetary pressures. Military spending could have been increased further to allow an increase in R&D spending, as called for by the arms industry and its supporters, but it was not. Meanwhile spending on civilian R&D was increased markedly, as it was seen by the government as key to the economy and quality of life. Official statistics reveal that the consequence was that total public R&D spending (civilian and military) as a fraction of GDP rose significantly.¹⁵ This was a key science policy goal – as stated in the UK ten year 'science plan'.¹⁶

This analysis indicates that, despite the Labour government's enthusiasm for the 9/11 wars and a militaristic approach to security more generally, in practice, it still accepted SGR's basic argument that civilian R&D – with its multiple benefits – should be prioritised over military R&D.

It is worth noting, however, that for a few years in the mid-2000s, business and overseas spending on military R&D carried out in the UK did rise.¹⁷ This briefly offset the fall in MoD R&D spending during this period, but by 2008, these other sources of funding had fallen back as well.

Will the decline continue?

With the MoD's budget planned to contract by 8% between 2010-11 and 2014-15,¹⁸ the contraction in R&D spending seems set to continue, at least in the near term. However, in February 2012, the MoD published its latest White Paper on military technology, creating a new target that its spending on 'science and technology' (which is predominantly scientific research) will not fall below 1.2% of its total budget.¹⁹ As Figure 1 shows, the MoD's research spending has long been significantly smaller than its spending on technological development. However, the fall in the former in real terms has been smaller. This new target is intended to slow that fall but, since it is a relative target, absolute spending by the MoD on research is likely to continue its downward trend until at least 2015.

Comparing current public R&D priorities

In presenting its research and development programmes to the public, the MoD often focuses on projects that attract widespread public support, such as medical prosthetics for injured soldiers or body armour. However, recent freedom of information requests to the MoD made by SGR reveal a very different set of priorities, which have hitherto not been clear from publicly released statistics.²¹ The MoD's R&D spending is dominated by the five programmes shown in Box 1.

Box 1 – Ministry of Defence – current major R&D programmes

- Future Submarines
- Nuclear Propulsion (for warships/ submarines)
- Typhoon (fighter aircraft)
- Joint Combat Aircraft
- Lynx (helicopters)

All are obviously major weapons systems and some have clear – and highly controversial – export markets. Government-funded R&D on nuclear warheads is also large-scale.²¹ It is clear that the UK is still using its R&D in ways that contribute to international arms races. More information about these R&D programmes will appear in SGR's forthcoming report on the issue.

SGR has repeatedly argued that many important areas of civilian R&D programmes are underfunded, especially when compared with the MoD spend. Renewable energy is a case in point. Public funding of R&D in this area stood at £166 million²² in 2010 – equivalent to less than one-tenth of the military spend.

Further reform is needed

Public funding of military R&D in the UK has fallen considerably in the last 25 years. Notably the fall has continued in the last ten years despite major increases in total military spending and civilian R&D spending. SGR has played an important role in challenging military R&D spending during this time.

Nevertheless, the MoD's R&D spending continues to be focused on developing major new offensive weapons capability, and remains considerably larger than numerous other areas of R&D that are needed to tackle severe problems such as climate change. Clearly, a more fundamental change in the UK's R&D priorities is needed.

Box 2 – International comparisons

The Organisation for Economic Co-operation and Development (OECD) publishes annual data on the public spending on R&D by many industrialised nations. The data shows that most of the top spenders have markedly reduced the fraction of their R&D budget spent for military purposes since the end of the Cold War. The one major exception is the USA, which has maintained the level at near 55% – a huge fraction. In absolute terms, the USA's military R&D spending dwarfs all other OECD members – see Table 1. Nevertheless, it is clear that the UK spending is still significantly higher than that of some other key nations, such as Germany and Japan.

Country	Public R&D spending for military purposes (\$bn)*	Proportion of total public R&D spending for military purposes
USA	76.7	57%
France	2.4	15%
UK	2.2	17%
South Korea	2.1	16%
Japan	1.4	5%
Germany	1.3	5%

* base year of 2005, purchasing power parity

Table 1. Public funding of military R&D in 2010: international comparison of leading spenders in the OECD²⁰

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