

Why R&D as % of GDP is a poor measure of innovation. David Hughes

There has recently been a revival in the idea that the UK should set a target of 3% of GDP spent on R&D. This is a bad idea for stimulating innovation. In this context, I use the definition of innovation as *the creation of new value*. More practically, innovation covers the implementation of a new or significantly improved product, process, marketing method, or organizational approach. This includes scientific, technological, organizational, financial and commercial activities which lead to the commercialisation of inventions and research.

In relation to the R&D as % GDP metric, we have been here before. In 2002 the EU Lisbon agreement and subsequently the 2003 “Barcelona target” set the target at 3%. In those days, R&D was mostly focussed on research as defined by Frascati. The UK government embodied this target (albeit at a reduced 2.5% level) in the 2004 Science and Innovation Investment Framework¹. Despite being championed by arguably the strongest Chancellor in the last 30 years, policies never achieved this target or even prior to the financial crisis any progress towards it.

So why doesn't this target encourage more R&D especially in business? There are several reasons but perhaps the most significant are:

- Companies do not measure their R&D expenditure against national GDP
- There is huge variation in corporate R&D intensity (R&D as % of sales) within sectors – clearly R&D investment decisions involve complex management trade-offs

Pharma:	GSK 13% v Astra Zeneca 23%
Auto:	Toyota 3.7% v VW 6.4%
Software:	Apple 3.45% v Microsoft 14%

- Many companies now capitalise R&D spend amortised as part of their intangible assets. This is not picked up in the analysis of company financial accounts for the R&D % of GDP statistics. So for example Rolls Royce report their research activity as R&D but capitalise the development. You can also see this in high tech companies such as BP (R&D intensity 0.19%).
- The statistic also misses huge technical spend/capability in software/ professional services companies. For example, WS Atkins, a high tech professional services company with turnover approaching £2 billion, adding significant value and with some of the best and brightest engineers in the country, barely report 'R&D' spend.

So is there a better way to focus Industrial Strategy? The key to policy actions in this area is to focus on the commercialisation of technology. A recent book by Uday Phadke based on extensive company research highlights some possibilities.² And there are signs that some of our large company CEOs are recognising this emphasis. For example, Emma Walmsley (GSK) recently demanded bigger returns from R&D, she said:

*“The clear priority here is making the right choices **to develop** our pharma pipeline which is promising but unproven. We have a lot of work to do here to make sure our R&D and commercial organisations are partnering really effectively together.”*

CEOs with a clear focus on adding value and growth can drive their businesses forward by focusing the whole organisation on the commercialisation process of new ideas.

¹ http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/media/7/8/bud06_science_332v1.pdf

² <http://www.worldscientific.com/worldscibooks/10.1142/q0093>