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Submission on the revised Exposure Draft legislation - The new research and development tax incentive

A clearer definition of core R&D

We would make the following comments and suggestions in connection with the proposed definition of core R&D.

First some definitions:

ABS definitions

Applied research¹

"Original work undertaken primarily to acquire new knowledge with a specific application in view. It is undertaken either to determine possible uses for the findings of basic research or to determine new ways of achieving some specific and predetermined objectives."

Experimental development¹

"Systematic work, using existing knowledge gained from research or practical experience, which is directed to producing new materials, products, devices, policies, behaviours or outlooks; to installing new processes, systems and services; or to improving substantially those already produced or installed."

Pure basic research¹

"Experimental and theoretical work undertaken to acquire new knowledge without looking for long term benefits other than the advancement of knowledge."

Strategic basic research¹

"Experimental and theoretical work undertaken to acquire new knowledge directed in specified broad areas in the expectation of practical discoveries."

¹ Source of definitions: ABS Website - Research and Development, Businesses, Australia 2007-08, Glossary

It provides the broad base of knowledge necessary for the solution of recognised practical problems."

Frascati Manual 2002 Definitions

Basic research

"Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view."

Applied research

"Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective."

Experimental development

"Experimental development is systematic work, drawing on knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed."

Australian Accounting Standards Board (AASB 138) definitions

"Development is the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use."

"Research is original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding."

Core R&D

The new definition of core R&D would appear to be something of an amalgamation of the three existing and well understood types of R&D:

1. Basic research (pure and strategic);
2. Applied research; and
3. Experimental development

(as used by both the ABS and the Frascati Manual 2002)

Basic research and applied research are largely undertaken using well-established techniques yet the results are often not what the researcher expected. More often than not, these types of research throw up more questions than answers (to the original hypothesis). While trying to prove one hypothesis,

the researcher will often produce results that not only contradict the expected but also, as history shows repeatedly, answer questions not yet asked.

This is the nature of basic and, to lesser extent, applied research: it produces vast amounts of seemingly useless data and very little useful new knowledge (in relation to the original hypothesis that is).

Such an outcome can be described as "failure". Whether this initial failure will lead to success remains to be seen. A successful outcome can be largely depended upon the way the next hypothesis is framed. Basic research by its nature lacks specificity. Applied research while directed towards some *specific practical aim or objective* is usually broad in its application.

Anyway, the point to be made in all of this is that the vast majority of research and development undertaken in Australia is neither *basic research* nor *applied research*; it is of the *experimental development* type. This should come as no surprise since companies operating in today's global markets must supply new and improved goods and services quickly and often.

In fact, some 62% of all expenditure on R&D in both the 2006-07 and 2007-08 years falls into the experimental development type: as can be seen from the Australian Bureau of Statistics data set out below.

Table source²

Type of Activity	2006-07 \$, 000	%	2007-08 \$, 000	%
Pure basic research	\$73,442	0.59	74,263	0.52
Strategic basic research	\$651,895	5.19	724,061	5.04
Applied research	\$4,091,792	32.61	4,615,386	32.10
Experimental development	\$7,731,753	61.61	8,966,187	62.35
Total	\$12,548,882	100	14,379,897	100

Experimental development is relatively fast paced and seeks to produce things and that can be exploited for value. Companies, with few exceptions, seek to develop their products and services as quickly as possible, which explains the high levels of experimental development.

² Australian Bureau of Statistics: Research and Experimental Development, Businesses, Australia 2007-08.

According to the ABS experimental development is "*Systematic work, using existing knowledge gained from research or practical experience, which is directed to producing new materials, products, devices, policies, behaviours or outlooks; to installing new processes, systems and services; or to improving substantially those already produced or installed.*"

The proposed new definition of Core R&D requires companies undertaking experimental development to produce *new knowledge* when this type of activity is rarely directed to such ends. This being the case, the new definition attempts to encourage something most companies just do not do. They are unlikely to change for a tax credit.

In proposing experimental activities be undertaken for the purpose of generating new knowledge, albeit including knowledge about the creation of new or improved materials, products, devices, processes or services, the Government is moving away from standard and accepted types of R&D to a new and untested type of R&D: experimental development conducted for the purpose of generating new knowledge.

This move into uncharted waters will likely bring uncertainty not clarity.

It is stated that the new definition uses clear language instead of ambiguous concepts such as 'considerable (or appreciable) novelty' and 'high levels of technical risk'. Whilst the removal of such ambiguous concepts is welcomed the new definition retains a defacto technical risk (experimental development) AND innovation (new knowledge) test without having to mention either of those things directly.

It is noted that new definition requires core R&D activities be *based on principles of established science*. The insertion of this phrase strongly suggests a move away from experimental development towards basic and applied research, or in other words: a move toward scientific or laboratory based R&D: as mentioned above and supported by the Government's BERD figures - market reality means this is not where the vast majority of Australian R&D is, or will be, directed.

The EM acknowledges at paragraph 2.21 that companies will have an ultimate commercial purpose in undertaking R&D activities and, therefore, makes it clear that of itself this should not preclude experimental activities being undertaken for the propose of new knowledge.

It might have been clearer if paragraph (b) the definition of core R&D activities had used words more like the ABS definition of experimental development:

"that are conducted for the purpose of drawing on knowledge gained from research and practical experience to produce new or improved materials, products, devices, processes or services."

It is also worth noting here that uniformity between accounting standards and the Tax Acts would more likely provide greater clarity and simplicity for businesses.

ASSB 138 relevantly defines research as "*original and planned investigation*

*undertaken with the **prospect of** gaining new scientific or technical knowledge and understanding" and development as "the **application of** research findings or other knowledge."* [Emphasis added]

The **prospect** of gaining new knowledge and its **application** simply makes sense because it reflects how **research** and **development** is actually carried out in Australia and overseas.

Conclusion

The definition of what is or is not R&D is central to the operation of the tax concession and to any credit system that will replace it. The proposed definition moves away from well understood and accepted types of research and of development to produce a new type of research. Logic suggests this will be unlikely to result in a clearer definition of core R&D.

Moreover, this new definition appears to move away from experimental development toward basic and applied research, which has never been the focus of the successful R&D tax concession.

As it stands, the proposed definition goes a long way to excluding experimental development: the place where most businesses direct their research efforts because it actually produces something readily exploitable.

Moreover, any step away from experimental development is a step away from spill over benefits. By its nature, laboratory based R&D (basic and applied) seldom produces useful new knowledge let alone knowledge that will spill over out of the laboratory: failure is a fundamental component of these types of research but one that seldom spills over.

Encouraging Australian businesses to carry out the type of R&D that leads to exploitable results and deliver value for money for taxpayers requires encouraging experimental development. Experimental development is defined succinctly and clearly by the ABS and in the Frascati Manual 2002.

Defining an entirely new type of research does not appear warranted or in line with the Government's stated objectives, particularly when it is so clearly at odds with the tried and tested definitions used across the globe, and those employed here in Australia by the AASB.

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