

Funding Research and Development

I am making this submission to provide some analysis I have undertaken on the funding of agricultural R&D.

The following analysis suggests that the agricultural sector will need to fund a larger share of the R&D that is essential to the profitability and sustainability of agriculture.

As discussed in the 1995 Industry Commission report on *Research and Development*¹, the fundamental reason for government action to support and undertake R&D is the “public good” characteristics of knowledge. This is reflected in externalities or spillovers where the knowledge generated by R&D becomes available to competitors who do not need to cover the cost of generating the knowledge in the first place.

When the number of firms in an industry is relatively small there is greater capacity and incentive to undertake research cooperatively, because it is less costly for such firms to negotiate and establish legally binding contracts to share the benefits of research. However, as the number of firms increases there is greater incentive to free ride on the efforts of others and it is more costly to establish collaborative arrangements. The latter situation is more typical of the agricultural sector, although this is changing as consolidation of farms continues.

Even where there is market failure, governments have a range of policy options to address the undersupply of R&D such as direct funding of research, formation of collective industry arrangements and protecting property rights over R&D. The case for these interventions depends on the nature of market failure in the industry and the costs involved for each type of intervention.

There is a general view that market failures in rural R&D are larger than in other industries due to the large number of small producers and the similarity and homogeneity of products and processes which allows the research to be broadly disseminated. While there is some validity to these arguments, the extent of government subsidy for agricultural R&D relative to other industries is hard to explain in terms of market failure alone.

The following table of R&D expenditure in Australia in 2002-03 shows that the business sector funded only 23% of R&D expenditure on plant and animal production compared with 71% for other economic development objectives.

State, Territory and local governments contributed 31% of R&D expenditure on plant and animal production, well above the 22% share State, Territory and local governments contribute to environmental R&D.

The \$1billion spent on Plant and Animal Production R&D was 8% of total research expenditure in 2002-03. This compares with an agriculture sector that directly generated around 4 per cent of GDP in 2003-04.

The level of government funding for plant and animal production R&D seems relatively high given market failures that necessitate government involvement are likely to be higher in environmental R&D than plant and animal production R&D. For example, there is more

¹ *Research and Development*, Industry Commission, Report No. 44, May 1995

likely to be a market to recover the cost of plant and animal production R&D, than there is for environmental R&D where markets for environmental services are poorly developed.

R&D Expenditure by Socioeconomic Objective, by funding source 2002-03 (\$billion)

Socioeconomic Objective	Total	State/ Territory/ local			
		Commonwealth (c)	Business	Other (a)	
Total economic development	7.7	1.8	0.4	5.0	0.5
- <i>Plant and Animal production</i>	1.0	0.4	0.3	0.2	0.1
- <i>Other economic development (b)</i>	6.7	1.4	0.1	4.8	0.4
	-	-	-	-	-
Total environment	0.8	0.5	0.2	0.1	0.1
Total other (eg defence, society)	3.7	2.4	0.2	0.6	0.4
Total	12.2	4.7	0.8	5.8	1.0

Share of R&D Expenditure by Socioeconomic Objective, by funding source 2002-03

Socioeconomic Objective	Total	State/ Territory/ local			
		Commonwealth	Business	Other	
Total economic development	100%	23%	5%	65%	7%
- <i>Plant and Animal production</i>	100%	37%	31%	23%	9%
- <i>Other economic development</i>	100%	21%	2%	71%	6%
Total environment	100%	58%	22%	13%	7%
Total other (eg defence, society)	100%	66%	6%	17%	11%
Total	100%	38%	7%	47%	8%

Source: Compiled from ABS data on Research and Experimental Development, Australia, 2002-03

Note: (a) Other funding sources include overseas funding, private non-profit funds and other Australian funding not identified

(b) Other economic development includes manufacturing, information, communication, mineral resources, commercial services and energy.

(c) Commonwealth includes funding from universities

The data in the above table was generated by re-assigning published ABS data on the basis of funding source. The published ABS data is grouped by provider and socioeconomic objective and some assumptions were required to split a small proportion of the expenditure data into funding source. If the Reference Group is interested in this data I suggest it ask the ABS to use its source data to generate a similar table by funding source.

The Research and Development Corporations set up at a national level are a good example of using collective industry arrangements to fund research in agriculture, forestry and fisheries sectors. However, the analysis above suggests that these arrangements are not generating a significant share of business funding for agricultural R&D.

With increasing demands on limited Government funding from a growing and ageing population, there will be increasing pressure on the agriculture sector to pay for research that underpins its profitability.

There are incentives for agriculture sector to pay for research. The strong link between research and profitability is obvious and is essential to overcome the impact of declining terms of trade on productivity. With most of Australia's agricultural production exported and subject to international prices, any improvements to productivity from research will not be competed away, but will flow mainly to the profitability of Australian agriculture.

The challenge for industry and Government is to strengthen collective industry arrangements so they can fund and set priorities for the research essential to the sustainable development of agriculture in Australia.

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