Whither the Crown Research Institutes? Funding Issues

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By

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In the course of another exercise (Johnson, Scrimgeour & Manning 2006) I compiled, with the help of CCMAU, a financial record of the crown research institutes from 1992 to 2005. In this paper I thought I would share with this audience some of the facts that emerged from the exercise and make some observations about present and future trends in the organisation of R&D funding in NZ. There has been a systematic clamour from the agricultural institutes that the initial plans for the CRIs discriminated against their activities. This led to job uncertainty as well as a huge increase in transaction costs in the process of obtaining funds. More recently, the activities of the agricultural interests has seen a re-activation of forward planning for this part of the science sector in the form of Dairy 21 an amalgamation of Dexcel, Dairy Insight and Fonterra interests along with AgResearch. In the meantime, the Government has yielded to CRI pressure to modify the contestable model for science funding with more emphasis on longer term planning and continuity for the funding of the institutes. Most recently, scientists at Otago University have pointed out that moves in this direction are likely to be at the expense of university funding of R&D.

Key Words: Crown Research Institutes, Funding, Contestability.

Introduction

The Crown Research Institutes (CRIs) are the product of the Upton reforms of the science industry in the early 1990s. They replaced the research division of the Ministry of Agriculture and Fisheries (later MAFTech) and all the divisons of the Department of Scientific and Industrial Research (DSIR). The science reform planners, possibly located in the Treasury mainly, were looking for examples of government departments where the trading activities could be put on a more commercial basis and savings in the fisc could be made. The principal reform was the establishment of 10 subject area research institutes from the existing staff of the two departments (plus the Meteorological Service) which would be run as incorporated companies and which would be funded by a competitive bidding process using the old departmental votes to start with. The money was to be held and managed by the Foundation for Research, Science and Technology (FRST) while a Ministry of Research, Science and Technology was established for policy advice services (MoRST).

Among the other aims of the reforms, was a desire to see less emphasis on government funding of most NZ research activity and increased participation by

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private industry. Areas such as agricultural science which were mainly funded by government in the past were told to look for alternative sources of funding. The planners believed that high levels of government funding `crowded out' private sector participation (Johnson 2000)

In preparing the Johnson *et al* (2006) paper on trends in public investment in agricultural research in 2005, we obtained from the Crown Company Monitoring Advisory Unit (CCMAU) a semi-official record of the accounts of the nine remaining institutes - the proposed institute of social research was disbanded after one year. A summary of the data is presented in the Appendix to this paper. This data set gives a good overview of the financial trends within the institutes over the 10 years since the reforms took place and helps to illustrate some of the administrative problems which appear to have emerged.

MoRST held a review of PGSF funding in 1999 and identified some of the research or `output areas' where funding was lagging and the reasons why. Some small changes in procedure were put in place. Some of the institutes had been quite vocal in their criticism of planning and more recently the dairy sector organisations have taken up the challenge to increase funding of research hopefully with increased contributions from the Government..

The paper discusses trends in funding and the crowding out issue first and then goes on to discuss trends in agricultural research funding and action. We conclude with some reference to government statements on the issues canvassed and the changes in funding arrangements which have been announced so far.

Crowding Out

The burden of the argument used by various commentators was that excessive government funding of R&D effort was a disincentive to the private sector investing in more R&D (Johnson 2000). This proposition is not itself capable of proof but it is possible to look at trends in funding by providers since then and determine if the private sector has increased its participation. Table 1 shows the shares of R&D expenditure attributed to `business', government and the universities in the MoRST surveys from 1990-91 to 2003-04.

Table 1: Research Expenditure by Major Providers(%)

	1990-91	1991-92	1992-93	1993-94	1995-96	1997-98	1999-00	2001-02	2003-04
Business	28.3	26.8	27.1	30.1	27.0	28.2	29.7	32.1	35.6
Universities	27.8	28.6	30.8	28.3	30.7	36.4	34.2	33.3	31.0
Government	43.9	44.6	42.1	41.6	42.2	35.3	36.0	34.6	33.4
Total $m	724.6	714.5	755.3	824.8	889.3	1107.4	1091.3	1262.4*	1398.3*
% GDP	0.99	0.98	1.00	1.03	0.98	1.10	1.01	1.02	1.02

* sample total estimated by MoRST[2].

Sources: MoRST 1999 Survey and Statistics New Zealand Updates.

[2] MoRST (2006a) have recently published a revised set of tables back to 1994 which corrects the earlier survey data to the same basis as the later surveys carried out by Statistics New Zealand. Total investment and provider shares therefore now vary slightly from the data in earlier years.

Going by this evidence there has been a slow shift in the delivery of research away from government towards the universities and the business sector. It should be noted that MoRST classifies research associations as business, and CRIs as government. Within the government sector, CRIs accounted for 45 per cent of estimated R&D expenditure in 1992-93 and 36 per cent in 2003-04. Within the CRIs the source of funding was also shifting away from government in some CRIs more than others. From 1993 to 2004 total revenue of the institutes increased by 57.8 per cent (Table A1). NIWA increased by far more than this while HORT, FRI and ESR[3] did not fare so well. Overall, the share of PGSF funding (as defined) fell from 62.6 per cent to 45.8 per cent. The increase in PGSF funding was 15.5 per cent over the 11 years. Of the institutes, NIWA, IRL, FRI, Landcare and ESR got more than average while AgRes, HORT and CROP fell behind . NON PGSF funding increased by 128 per cent with AgRes, NIWA, CROP, and GNS being the leaders and HORT, IRL, FRI, and ESR being less adventurous.

Thus AgRes, NIWA, CROP and GNS have followed the Treasury mantra and gone out and actively sought non-government funding. Whether this is a welfare improvement or just a saving on the fisc needs investigating. The main fact is that a far greater proportion of CRI income is derived from non-PGSF sources.

How has Agriculture Fared?

From early in the Upton reforms the agricultural science community felt that the new allocation processes were discriminating against them. The FRST system of competitive bidding still left the allocation decision to bureaucrats at the end of the day and they would have had directions to follow (see Johnson 2000, p 131). The net

Table 2: Nominal Share of CRI Income Generated in Agricultural CRIs $m

Year	Agricultural CRIs*	Non-Agricultural CRIs**
1993	185.5	153.2
1994	190.9	161.3
1995	192.8	171.8
1996	196.4	192.1
1997	202.0	191.3
1998	211.0	197.0
1999	213.5	207.0
2000	235.6	224.1
2001	254.5	234.3
2002	265.0	246.7
2003	266.2	256.5
2004	277.2	257.2
Growth 1993-04 %	49.4	67.9

* AgResearch, HortResearch, Crop & Food Research, Landcare Research.

** Environmental Science & Research, Geological &Nuclear Sciences, Industrial Research, Forest Research, National Institute of Water and Atmosphere.

[3] ESR is a special case as it is mainly funded by police grants and has a low proportion of PGSF funding.

result was a movement away from agricultural science particularly because that was where the bulk of government funds had previously been allocated. We can examine the share of total CRI funding going to the agricultural institutes (AgRes, HORT, Landcare and CROP) and the shares of PGSF funding in the same way. In addition there is further evidence in a 1999 MoRST survey of spending by `output areas'.

Table 2 shows the share of total CRI income gained by the agricultural institutes from 1993 to 2004. Of the total resources commanded by the CRIs the agricultural institutes have slowly lost out to the other institutes. Each has fared differently as the earlier discussion demonstrated. In terms of all income (Table 3) agricultural research as a percentage of all funding has fallen from 55 per cent to 52 per cent from 1993 to 2004, but as a percentage of their share of PGSF grants the institutes have fallen from 59 percent to 50 percent and as a result agr PGSF funding has fallen from 37 per cent to 23 per cent. It is this latter trend that AgResearch, Fonterra, Dexcel and Dairy Insight have found disturbing.

Table 3: Trends in CRI Income Sources

Fisc year	AR as a % of All Income	AR PGSF as % of All PGSF	AR PGSF as % All Income
1993-94	54.7	58.9	36.9
1994-95	54.2	57.9	35.4
1995-96	52.9	57.8	34.9
1996-97	50.6	56.7	32.8
1997-98	51.4	56.3	32.5
1998-99	51.7	55.3	32.3
1999-00	50.8	54.2	31.4
2000-01	51.3	54.4	30.0
2001-02	52.1	53.8	27.8
2002-03	51.8	54.1	27.2
2003-04	50.9	52.7	25.5
2004-05	51.9	50.1	23.0

Key: See Table 2.
Source: Annual reports at CCMAU.

In the early 1990s AgResearch was foremost in complaining that the competitive bidding process was discriminating against agricultural research endeavour. In 1997 MoRST instituted an investigation of PGSF funding mechanisms and employed reviewers to look at research fund allocations for 17 of the 19 output area classes then being employed (www.morst.govt.nz/PGSF/evaluations). The reports found that research into sheep and beef production systems and into forage and plant research were being neglected through the imposition of other priorities on FRST. In turn, the then funding decisions were starting to cause the breakdown of research teams built up over the years in some research institutes and the loss of key personnel. In response to the CRI providers, MoRST had earlier instituted another form of funding to support CRI staff capabilities and financial shortfalls – christened 'non-specific output funding' (NSOF) in 1993. In 1999-00, for example, $26.8m was allocated to non-specific output funding. This funding was determined as 10 per cent of the funds allocated the previous year from the PGSF to each institute. NSOF was for public good science and technology projects which were not subject to the Government's priorities (NZYB 2000, p.346).

Table 4 shows the allocations to the four agricultural 'output areas' after competitive bidding to the PGSF for the financial years from 1993-94 to 1999-2000. The table shows that the total PGSF fund increased by 17.6 per cent between these years and the agricultural output areas increased by 5.3 per cent in nominal dollars. As a result, agricultural funding decreased from 46.5 per cent of total PGSF funding to 41.7 per cent. More marked was the decline in the allocation to animal industries of -3.0 per cent and the small increase in forage activities of +0.3 per cent. In real terms, the reports say, the decline for animal industries was –14.8 per cent and for forage –11.6 per cent to 1997-98. With rising wages, these are considerable falls in CRI incomes particularly for AgResearch.

Table 4: PGSF Funding by Output Areas ($k)

Output Area	93-94	94-95	95-96	96-97	97-98	98-99	99-00
1. An. Industry	37923	38444	38293	36568	36639	36719	36763
2. Dairy	7845	9766	10409	12215	13292	13678	14065
3. Forage	21433	21083	20375	20600	21034	21266	21457
4. Hort group	50045	49840	49216	50942	50700	51300	51300
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Total Agr Group	117246	118833	118293	120325	121665	122963	123585
% of PGSF	46.5	46.4	45.9	44.9	42.2	42.6	41.7
Total PGSF	252000	256259	257452	267699	288000	288300	296700

Source: www.morst.govt.nz/pgsf/evaluations.

Although there were 17 output areas reviewed covering most of the PGSF, only four of the output areas relate to agricultural research. I present a summary of the main conclusions of the four agricultural reviews undertaken and then a summary of the overall review.

Output area 1: Animal industries: Over the period under review (to 1997-98), PGSF funding for Output area 1 declined in both nominal and real terms. While overall funding for PGSF increased, output area 1 was static, as new funds were directed to areas perceived to be of higher priority. The majority of the reduction appears to have resulted in a move away from sheep and beef production research. The main providers are AgResearch, followed by WRONZ, and MIRINZ. The report notes the commodity meat trade now has a high value-added component. The improvement in the value of these exports is the result of past research and development effort. The future development of these exports is dependent on the ability to consistently produce product to specification, and the increasing emphasis on food safety and quality. These attributes will increase the requirement for appropriate research at all stages in the supply chain including production research. The main commercial funding for the set of providers comes from the producers boards and could be considered at risk. The science reforms have encouraged collaboration between researchers including applications to FRST. However, the extensive nature of the industry, and the presence of some commodity trade biases 'makes it difficult for researchers to obtain appropriate direction for research' (ibid). Farmers as a group were well aware of the benefits of PGSF funding.

Output area 2: Dairy: In the dairy report, it is noted that funding has grown strongly over the previous 5 years - 69 per cent in nominal terms and 51 per cent in real terms. The share of the PGSF fund rose from 3.1 per cent to 4.7 per cent. The report noted that there was growth in the number of programmes supported and growth in the size of programmes. Research output was dominated by 3 providers: AgResearch, DRC and DRI. The providers derive considerable funds from outside the PGSF system. The over-all level of funding is considerably less than in output areas 1 and 3 which is surprising considering the size of the dairy industry. However, many of the programmes are generic to both animal and dairy outputs and thus support the dairy industry too. There is a high level of collaboration between AgRes and DRC. In a survey there was a high level of awareness of PGSF advantages among end-users. 'Vertical integration in the industry ensures research strategies are closely linked to commercial strategies. The report concludes that output area 2 is the only agriculturally focused output to attract a significant increase in funding level over the past five years',

Output area 3: Forage: Total funding declined by 1.9 per cent in nominal terms and 11.6 per cent in real terms to 1997-98. 'This decline is a cause for concern'. The report notes that forage production is the base that provides the competitive advantage for the single largest contributor to the NZ economy – the agricultural sector. The principal provider is AgResearch. A high level of collaboration was observed both internationally and within NZ. There was also a high level of awareness among end-users of the aims of the PGSF. 'Industry end-users included in the forage sector are two and a half times more likely to be involved in the licensing or commercialisation of products generated by PGSF research compared with other agricultural sectors' (ibid). Overall output funding declined from 8.5 per cent of PGSF funding to 7.3 per cent. The report says: 'the scientific capacity for forage research is under threat as the real level of funding has decreased over the five years'.

Output area 4: Horticulture: The full title of this report is *Horticulture, Arable and other Food and Beverage Industries.* The report notes that industry funding increased slightly over the 5 year period although there was a decrease immediately after 1993/94. A number of smaller fruit, crop, ornamentals, vegetables and the arable groups increased their private funding contributions. Government investment has been held at $51m. There was a range of collaborative networking and subcontracting. The main providers were HortResearch (56per cent) and Crop and Food (35 per cent). There was evidence of 'strong' involvement in PGSF research and also 'strong' evidence of capacity for accessing international research. The report notes that 'PGSF funding has made a 'strong' contribution to economic outcomes'. The size of individual programmes appeared to be decreasing. Total funding increased by 1.3 per cent in nominal terms but decreased by approximately15 per cent in real terms. The share of PGSF funding dropped from 19.8 per cent to 17.6 per cent. 'Prior to 1995, FRST policy was to direct funds away from research that was appropriable and this policy affected this output area. Since 1995, a change in instructions required greater account to be taken of the relevance of research and involvement of users. The industry has responded' (ibid).

The above reviews of output areas in the agricultural research sector shows that national priorities moved away from production research both on the plant and the animal area. FRST was under instruction from MoRST at all times so that is where

primary responsibility lay! The reasons for the decline in meat and wool production and forage research investment appear to be:

- a common belief that agriculture is an 'old industry' and support should be going to 'new' industries;
- the move from production output areas to infrastructure areas ;
- constraints on funding available;
- the movement away from public funding of providers of appropriable research;
- a shift away from output areas where PGSF was 'too dominant':
- an increase in 'complementary' funding to the private sector;
- the 'crowding out' belief held in some circles; and
- the possible over-application of 'market failure' theory[4].

The New Paradigm – Dairy 21

In the meantime, the agricultural research interests were not sitting quietly. One key development has been the development of a 'Strategic Framework for Dairy Farming's Future' and the formation of Dairy 21. The purpose of the framework is to 'set the strategic direction for all on-farm research, development, extension and education' Funding to achieve the targets and objectives 'will come from a number of sources: government, industry good, Agmardt, provider investment, industry and agribusiness'. The major dairy cooperative, Fonterra, can be seen as the driver behind this initiative as part of its quest to achieve industry growth and productivity goals.

The first version of the strategy document was adopted jointly by the Boards of Dairy Insight and Dexcel in 2004 and then endorsed by the wider industry. A second version, commissioned by Dairy 21 (a peak industry body with membership from Fonterra, Livestock Improvement, Dairy Companies Association, Dexcel and AgResearch) has been drafted after feedback and consultation.

The industry has set a goal of boosting farm productivity by 4 per cent per year. Dairy 21 has already lobbied Government for a $60m boost to pastoral farming research. The Chairman of Fonterra states that putting resources into 'core' agriculture is a safer bet than some less-established sectors, and that the above sum is a relatively small amount of money given the potential economic benefits to the country (*The Dominion Post*, 28.9.05).

Fonterra was clearly showing considerable leadership in getting the pastoral research participants together. According to the *National Business Review* (16.12.05), Fonterra has been pushing its own research agenda vigorously since cutting its $159m funding package to biotec subsidiary ViaLactia, in a major restructure in 2004. The CEO stated that the company wanted a more efficient model that makes sense for all parties involved. It wanted to avoid as much duplication in the farming sector as possible and to ensure the company was not burdened with spending money

[4] MoRST (2006b) have recently circulated a think-piece by P Morten on becoming more globally competitive. The paper returns to the export encouragement model of earlier years and ends up with a strong argument for more investment in agricultural R&D. Johnson (1999) is a a fairly recent presentation of the export led growth argument.

on research that does not directly benefit its value-added goals. Fonterra is said to have initiated the Dairy 21 project.

Not to be outdone, AgResearch was in the news on the 1st of November 2005. The CEO announced that AgResearch needed $73 m for buildings alone. Dr West argued that the extra $60m should go straight to the Crown research institutes who will then decide what to spend it on. He also argued that farmers' contributions to research investment should rise too. 'The $10m they contribute in levies is not much when you consider farm gate returns are $6 billion'. AgResearch's strategic plan for the next 15 years was based on the country investing in its core strengths, the husbandry of plants and animals, he said. He outlined that major investments were required in an animal health laboratory in Palmerston North, a new animal animal handling facility at Grasslands, a biosecurity and infectious diseases facility near Wellington, a centre for reproduction and genomics in Dunedin and other new buildings. Dr West said it was an article of faith that more funding would come.

Taken with Government showing a willingness to increase devolved funding to the CRIs [though the increase in the 2005-06 Budget is quite small] there is apparently a marked willingness in the agricultural research sector to expand their research activities. The agricultural research lobby has increased its mass and firepower and has started to put significant research programs in front of government for public good spending. Private participation will be needed as well. It appears unlikely Government will come to the party in a big way given other pressures on government expenditure. While the Minister talks of investing 3 per cent of GDP (a trebling) in future years, marked increases in research spending by the government or the private sector are not likely to be of that order.

The Future of Competitive Bidding

MoRST have, since 1999, been feeling their way toward more devolution in decision making. The latest manifestation is the *Picking up the Pace* document (MoRST 2005). A portfolio approach to applications to group them together is endorsed, and larger projects and longer terms of contract are to be considered by FRST in allocating research funds. At last report, FRST had delayed the beginning of the 2006 round of bidding while new directions for providers are worked out.

Discussions between the Government and the research industry have evolved toward a new approach to the bidding system. The aim appears to be a move away from short term contestable funding and a move toward long term commitment of resources to individual providers to plan their own priorities. I would interpret this as a return to the priority setting process under the DSIR and MAF where priorities were internalised within departments with the surety that the Minister of Finance would always provide the committed funds in following years. Duplication and crowding out were not then seen as a problem.

Before the Budget in May 2005, there was newspaper discussion of the replacement of non-specific output funding (NSOF) by a capability fund (*Dominion Post* 11.5.05). The article noted that NSOF had been paid out to help meet operating costs, pay for non-funded research and retain staff. CRIs had complained that 2004-05 funding of NSOF of $32.376m was inadequate to retain promising scientists, but funding agencies were concerned that providing money without specifying how it

should be used made accountability difficult. A CRI scientist was quoted as saying 'the key issue is uncertainty. Once you put in a funding application you don't know for nine months whether or not you are going to be successful. That makes it difficult to plan ahead'.

Minister Maharey then made a major announcement at the beginning of July 2005. He said that it is now time for less contestability and more annual 'devolved allocations' to CRIs. The methods of allocation were still being developed, he stated. He noted that research institutes needed sustainable funding to be able to maintain core competencies, finance capital works, and new equipment and address the loss of researchers and inability to recruit young scientists. 'Contestability is not completely the wrong answer, because it drives innovation, but it went to extremes'. He further noted that previously the aim of science policy under successive governments had been to reduce funding of research of benefit to industry from the public purse, requiring industries and producers to contribute directly to appropriate Crown research institute research programmes. He also indicated it was time CRI boards were given more of the discretionary roles they were set up for, instead of the funding bodies making all the key decisions.

In the 2005 statement of intent, *Sustaining Strong Investment: Excellence in Knowledge and Innovation (www.morst.govt.nz)*, the Minister (Mr Maharey) announced that the government would continue to sustain strong investment in RS&T, particularly on people and resources. The new Capability Fund will replace the former Non-Science Outputs Fund (NSOF), to assist the CRIs to maintain core capabilities.

In the *Picking up the Pace*, government confirmed that it had moved away from the competitive bidding model for R&D funding toward more long term arrangements with the science providers. It said they needed to step up from simplistic public choice theory models of the 1990s!. The needs of the industry were: long-term sustainable investment; a stable funding environment; support for high performers; a clear and purposeful R&D agenda; enhanced opportunities for collaboration, networking and technology transfer. One of the early indications of the approach is FRST's Outcome Based Investments (OBIs) which are focused on research sectors where the contracted research delivers benefits that are widely dispersed and not solely of value to a single individual or organization.

The government intention is stated to be investment that will keep pace with increasing research costs, innovative opportunities and OECD trends, and accompanied by matching growth in the private sector. They proposed development of a multi-year RS&T budget package: accelerated growth of R&D investment by private companies through leveraging public sector investment and applying other incentives; greater trust in research organisations to make decisions where they have an information advantage and can maximise the advantage of a devolved investment approach; devolve up to 60 per cent of PGSF to research organisations; ensure non-devoted funds (Health, NERF, Marsden and Technology NZ) provide regular opportunities for new ideas to be funded; to define what a successful CRI looks like; and to develop measures for financial and non-financial performance.

This shift in thinking is reflected in FRST's statement of intent dated April 2005 (FRST 2005a). 'To support the Government's strategies and address the Minister's challenges FRST's strategy focuses on:

- investing in areas that will help achieve measurable target outcomes where RS&T can make a real difference in improving wealth and wellbeing;
- investing in a manner that encourages improved performance in achieving these outcomes including greater devolution of decision making to RS&T providers;
- evaluating and bench marking performance to support making the right investment choices to reinforce and reward good performance; and
- enhancing the Foundation's role as facilitator of an integrated and responsive innovation system'.

FRST people have said that the Foundation is currently assisting MoRST as they work through the policy development process. 'Over the last couple of years we have been trying various ways to provide longer and larger investments while still ensuring that emerging research and researchers are able to succeed with proposals for investment. We have been working to identify practical implementation issues, identification of which is essential to achieve the improvements we are all looking for' (N.Allison, FRST, pers com, October 2005).

In a document about investment signals and requests for proposals on the website (FRST 2005b), the Foundation outlines how it will handle investment proposals for the round starting in July 2007. FRST notes that the Minister wishes to bring greater stability into the funding environment. This will involve reducing contestability in the system by devolving funding and detailed decision making to research organisations although some portfolios funds will be released for investment through fully contestable project rounds. FRST has received consistent feedback and support on the need for New Zealand to use its limited RS&T investment in a more focused manner where that is possible. FRST interprets this as investment that is narrower and deeper.

In his 2006 Budget statement (www.beehive.govt.nz), Mr Maharey reinforced the message concerning greater certainty for longer term research. `Talks will be held with the science sector about how we can take these changes forward'. `While contestability continues to be an important part of our science system too much contestability can affect the ability of our scientists and our science organisations to carry out research and apply their ideas over a longer period'. He mentioned negotiated investments for longer term programmes, systematic review of science programmes, steps to reduce costs and complexity, more certainty of funding for essential `backbone' infra structure, and continuing to increase the capability of New Zealand's Crown Research Institutes.

On 6th May 2006, the Minister sent a directive to FRST instructing them to give effect to government policy to improve the effectiveness and stability of the funding environment (FRST 2006). This states there is a need to progressively implement better negotiated funding for eligible programmes within Vote R,S and T. That to be considered for negotiated re-investment, a research programme will have to be of sufficient size and have received funding for at least six years, and from two successive bidding rounds. Eligible programmes wi;ll then need to satisfy quality and relevance criteria that include, but are not limited to, a combination of the following:

1. scientific and technical quality, including trackk-record of delivering benefit to New Zealand, and future poyential to deliver benefit to New Zealand;
2. long-term comparative advantage in an area of direct benefit to NZ, or unique significance to NZ;
3. alignment with relevant end-user and government strategies;
4. evidence of end-user support and industry co-funding; and
5. a track record of the research organisations' accountability for public money.

As a result of this Direction, FRST issued a Consultation Document called "New Investment Pathways and Processes". The emphasis in the consultative document is how would FRST administrative processes work in the future within the constraints of a relatively fixed Budget allocation and existing commitments to providers? As from the 2006-07 funding round, only a limited number of provider's programmes would qualify to be re-negotiated. It would take some time to move to more negotiated funding and less competitive bidding.

Very soon it became evident that the new funding proposals were not going well within organisations outside the CRI network. A riposte came from Otago University (*Dominion Post*, 31.5.06) following a meeting with FRST's chief science advisor. Their objection over longer term contracts was that major funding would only go those already holding large contracts – mainly the CRIs – with essentially no questions asked. This would put University applicants for new funding `playing with pocket money'. They objected to new administrative rules set out in a consultation document: (a) that negotiation will be only over renewal of existing long-term contracts worth more than $1m per year, and (b) that severe restrictions remained on the size and number of bids for new contracts. The professors ended by suggesting the Crown Research Institutes simply be made to face a performance based research fund the same as the universities have! Not to mention continued access to all FRST funds.

My take on all this is that the devil is in the detail. The professors spotted a flaw, from their point of view, in the contestable fund's administrative proposals. It seems to me that as long as science is organised on a public funding basis, and proposals have to be assessed project by project, and outcomes are uncertain and well in the future, then we have to have administrated science funding. This is no different from what DSIR and MAF did in the palmy old days when they internalised the proceess and were guided by very light supervision from NRAC. Someone like Tim Hazeldine should sit down and examine which system had the highest and lowest transaction costs.

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Glossary

AgResearch	National Institute for Pastoral Research Ltd
NIWA	National Institute of Water and Atmospheric Research Ltd
HORT	Horticulture and Food Research Institute of New Zealand Ltd
IRL	Industrial Research Ltd
FRI	New Zealnd Forest Research Institute
Landcare	Landcare Research New Zealand Ltd
Crop&Food	New Zealand Institute of Crop and Food Research Ltd
ESR	Institute of Environmental Health and Forensic Sciences Ltd
GNS	Institute of Geological and Nuclear Science Ltd

Appendix

Table A1: Financial Record of Income of the Crown Research Institutes 1993-2004

TOTAL REVENUE $m.

YEAR	AgrRes	NIWA	HORT	IRL	FRI	Landcare	Crop&Food	ESR	GNS	TOTAL
93	84.6	35.5	46.4	38.0	28.6	28.7	25.8	25.8	25.3	338.7
94	88.0	36.2	45.4	41.5	32.1	30.4	27.1	26.6	24.9	352.2
95	87.2	38.6	47.0	44.0	36.3	31.5	27.1	27.3	25.6	364.6
96	88.6	59.9	48.7	41.5	37.3	32.0	27.1	27.0	26.4	388.5
97	90.6	58.9	49.7	42.2	38.7	34.0	27.7	26.8	24.7	393.3
98	93.7	58.4	52.0	44.5	38.1	35.4	29.9	29.1	26.9	408.0
99	94.3	65.1	52.5	45.9	38.7	37.5	29.2	29.5	27.8	420.5
00	110.1	71.1	54.5	50.9	42.8	39.8	31.2	30.4	28.9	459.7
01	123.7	77.1	56.8	56.3	41.9	42.8	31.2	27.4	31.6	488.8
02	132.2	81.3	57.9	58.6	39.4	42.7	32.2	29.1	38.3	511.7
03	129.3	84.2	58.4	62.4	39.5	42.6	35.9	33.2	37.2	522.7
04	133.7	84.6	58.5	57.4	39.0	45.2	39.8	36.9	39.4	534.5
%change 93 to 04	58.0	138.3	26.1	51.1	36.4	57.5	54.3	43.0	55.7	57.8

PGSF FUNDING Morst(NSOF) and FRST added together

93	55.5	23.9*	30.3	26.8	16.7	20.5*	19.2*	1.1*	18.6	212.1
94	56.5	25.5*	30.4	27.8	18.1	20.6	17.2	1.1*	18.4	215.3
95	56.7	26.9*	30.3	25.8	20.2	20.6	19.8	1.5*	18.5	220.3
96	56.4	28.2*	30.7	28.4	20.5*	20.7	19.5	1.5*	18.4	224.3
97	55.6	29.2*	32.0	29.7	20.9	21.2	19.2	1.5*	17.9	227.2
98	55.5	31.5*	33.2	31.2	22.1	23.2	19.8	1.7*	20.0	238.2
99	53.4	35.1	33.8	31.1	23.4	24.5	20.4	1.5*	20.4	243.6
00	57.8	37.0	34.4	32.5	23.5	25.0	20.8	1.7	20.8	253.5
01	54.9	37.3	35.2	32.6	23.5	24.9	20.7	1.8	21.3	252.2
02	58.1	37.9	34.7	33.4	23.5	25.5	20.7	1.9	21.2	256.9
03	54.4	39.7	31.6	33.3	22.8	26.4	20.7	2.5	21.4	252.8
04	46.7	39.6	29.9	35.1	21.8	25.6	20.6	3.8*	21.7	245.0

- Non-audited data from CCMAU

%of TR in 04	34.9	42.3	50.9	61.3	55.9	56.6	46.0	10.3	55.1	45.8
93-04growth%	-15.9	65.6	-1.4	31.7	30.5	25.0	7.3	245.4	16.6	15.5

NON-PGSF REVENUE $m (by difference)

93	29.1	11.6	16.1	11.2	11.9	8.7	6.6	24.7	6.7	126.6
94	31.5	10.7	15.0	13.7	14.0	9.8	9.9	25.5	6.5	136.9
95	30.5	11.7	16.7	18.2	16.1	10.9	7.3	25.8	7.1	144.3
96	32.2	31.7	18.0	13.1	16.8	11.3	7.6	25.5	8.0	164.2
97	35.0	29.7	17.7	12.5	17.8	12.8	8.5	25.3	6.8	166.1
98	38.2	26.9	18.8	13.3	16.0	12.2	10.1	27.4	6.9	169.8
99	40.9	30.0	18.7	14.8	15.3	13.0	8.8	28.0	7.4	176.9
00	52.3	34.1	20.1	18.4	19.3	14.8	10.4	28.7	8.1	206.2
01	68.8	39.8	21.6	23.7	18.4	17.9	10.5	25.6	10.3	236.6
02	74.1	43.4	23.2	25.2	15.9	17.2	11.5	27.2	17.1	254.8
03	74.9	44.5	26.8	29.1	16.7	16.2	15.2	30.7	15.8	269.9
04	87.0	45.0	28.6	22.3	17.2	19.6	19.2	33.1	17.7	289.5
% change 93-04	199	287	78	99	44	125	191	34	164	128

Notes: The CRIs vary in their treatment of individual items of revenue. AgResearch is perhaps the fullest treatment. They include (besides FRST and MoRST) other CRIs, Govt depts, commercial arrangements, royalties, produce, dividends, and interest (others may include sale of assets). Due to these measurement errors the procedure was adopted of deducting PGSF/MoRST derived revenue from total revenue to create an entity `Non-PGSF' revenue to represent trends in the privatisation of public research. The last row shows the percentage increase in non-PGSF revenue from 1993 to 2004 for each CRI.

Source: Crown Company Monitoring and Advisory Unit. Thanks to Ed Butler and Adrian Wimmers for help with this compilation and for permission to publish in this form.