4 May 2016

New Models for Tertiary Education Inquiry
New Zealand Productivity Commission
P O Box 8036
The Terrace
WELLINGTON 6143

Dear Sirs

The Society writes in response to the discussion paper on new models for tertiary education.

Context

The Royal Society of New Zealand (the Society) is the country's national academy for research and scholarship. It is non-aligned and independent, although the Society's Fellows (who form the Academy) and other members are largely drawn from the research and tertiary education sectors.

There are misgivings amongst the Society's Fellowship in regard to the assumptions on which the analysis in the discussion paper is based. For example, given the relatively high international rankings of our Universities despite their relatively low levels of funding per student is there any real evidence of inefficiency? We expect that such concerns will be raised directly with the Commission through submissions by tertiary institutions involved in research. In making the comments set out below, the Society is not endorsing the validity of the analysis in the discussion paper.

Types of education providers and business models
Commentary in relation to Questions 1, 3, 4, 5, 6, 7, 11 and 52

These questions all relate to overall system design. That design should reflect international good practice, whilst taking into account the special relationships created by the Treaty of Waitangi, the small size of the country, and the nature of New Zealand's economy.
It is reasonable to expect that a country with a population of only 4.68 million would require a modest number of tertiary education providers. Yet, the discussion paper states New Zealand has over 250, including 8 universities, 17 ITPs, 11 ITOs, 3 wānanga, and a host of PTEs. Excluding ITOs, we have 28 public tertiary institutions for 4.68 m people. In contrast, Australia has approximately 80 public tertiary institutions (Universities and TAFEs) for 24.0 million people, about half the number in relative terms.

Yet having a large number of institutions does not seem to have led to substantive specialisation; rather there has been a blurring of the roles of New Zealand universities, institutes of technology and polytechnics (ITPs), wānanga, industry training organisations (ITOs), and private training establishments (PTEs). New Zealand's dispersed population, as well as the financial importance to educational "businesses" of attracting fee paying

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international students, may well be factors increasing blurring and overlap. Two examples of the types of issues that have arisen are:

1. The development and delivery by many ITPs of qualifications that duplicated ITO-designed qualifications, with consequential confusion for employers. For example, the previous nationally-consistent New Zealand Certificate's of Engineering, and Science were replaced by a multitude of programme variants.

   A major project in 2007-2010 was facilitated by the Institution of Professional Engineers New Zealand to close down all the variants. A national governance body (the New Zealand Board for Engineering Diplomas) was formed to design and implement the New Zealand Diplomas of Engineering, and Engineering Practice, supported by the ITP and ITO sectors, and industry[1].

   As this activity was winding up, the 2008 Targeted Review of Qualifications (TRoQ) was initiated by the New Zealand Qualifications Authority. The New Zealand Institute of IT Professionals undertook a similar task to that in engineering to reduce about 250 IT qualifications listed on the New Zealand Qualifications Framework to about 15[2].

   The Society currently has an expert panel[3] examining the future of the science technician workforce which used to be provided by New Zealand Certificate of Science holders.

   In all three cases employers have welcomed the initiatives as they had lost confidence in what they perceived as a splintered system of qualification design and provision. That these actions were necessary indicates a significant systems failure. The corrective TRoQ process has proven to be very expensive.

2. Many ITPs now offer increasing numbers of degree level qualifications[4] (in contrast to Australia where degrees are relatively uncommon in the TAFEs, technical and further education institutions). This in turn means that ITPs should have academic staff sufficiently active in research, yet two decades after the first ITP degrees were awarded the research in many ITPs is still not well developed.

   In the Tertiary Education Commission's Performance Based Research Fund (PBRF) evaluation for 2012[5], New Zealand universities had 6000 equivalent fulltime staff graded at C or better. In that year, according to the Education counts website, they enrolled approximately 128,500 equivalent fulltime students (EFTS) - a student to research-active staff ratio of 21:1. The universities had 3300 equivalent fulltime staff graded B or better in the PBRF and 29,500 EFTS at postgraduate level – a ratio of about 9:1 between postgraduate students and more research-proficient academic staff. In contrast, the ITPs had 320 equivalent fulltime staff graded at C or better in the PBRF and 24,000 EFTS at degree level (a student to research-active staff ratio of

[1] www.ipenz.org.nz/ipenz/forms/pdfs/NEEP_Project_Report.pdf?37832
[2] www.nzqa.govt.nz/qualifications-standards/qualifications/information-and-communication-technology-qualifications/review-of-ict-qualifications/
[3] www.royalsociety.org.nz/science-technician-workforce-panel
[4] www.weltec.ac.nz/SUBJECTAREAS/EngineeringTechnology/BachelorofEngineeringTechnology/tabid/695/Default.aspx
[5] www.tec.govt.nz/Documents/Reports and other documents/PBRF QE 2012 Final Report.pdf

75:1). The ITPs had about 54 fulltime equivalent staff graded B or A in the PBRF, yet about 1250 EFTS at postgraduate level were enrolled – a ratio of 23:1.

This poses the question of whether it is possible, let alone in New Zealand's interests, to reach sufficient critical mass and quality of research in all 28 public tertiary institutions in New Zealand.

These examples suggest there may well be benefits from having a clear distinction of roles between the different types of institutions, and that competition through overlapping provision does not necessarily benefit a small nation.

In particular, the examples suggest that New Zealand universities need to be better tasked in the normal international manner. They are the entities in which academic staff are expected to be active in research, and aspire to be world class in that element of their work but also "profess" their discipline through their commitment to teaching. In the ideal model, University academic staff would interact with students at both postgraduate and undergraduate level in a manner that fosters high-level thinking and analytical skills to enable graduates to access and assimilate knowledge at, or close to, the frontier of the discipline. It is worth noting that generic skills, such as critical thinking and problem solving skills are developed throughout the education system, but at each educational level the complexity of the issue to which those generic skills can be successfully applied rises.

Universities serve the nation by producing graduates who are thought leaders, by providing those graduates with the competence to use advanced bodies of knowledge, and by undertaking research to both support the development of superior graduates, and for the direct value of the research itself. Universities are not graduate production factories of bricks and mortar, but should be places where minds meet and both debate and advance knowledge. Their competitive advantage lies in their intellectual strength – the incentives placed on them by the tertiary education system design should direct the use of their capital and revenue to this strength. Incentives that lead to over-investment in physical assets and overly diversified offerings are not necessarily in the interests of a small country.

A strong and diverse academic community is nevertheless a vital piece of national infrastructure. It adds to the resilience of a nation – when threats occur the nation can look to the academic community for the expertise it can bring to bear. It acts as the critic and conscience of society. In such ways, universities make their greatest contribution to the nation. The Society sees the concept of a teaching-only university as antithetical.

An increasingly important role of universities is to create entrepreneurial attitudes in their graduates. This is a key role of engineering and applied science education, yet the New Zealand system produces low numbers of engineers, agricultural and horticultural graduates by OECD norms[6].

The stair-casing opportunities that ITPs provide for students and the type of student support they give is a point of distinction from universities. There may well be a difference in the types of learner between universities and ITPs and as a consequence the pastoral support needs to be different. The ITPs support students to achieve who might well fail in a university. One benefit of ITPs is local access by all, irrespective of socio-economic

[6] www.oecd-ilibrary.org/education/data/education-at-a-glance/graduates-and-entrants-by-field_0d5ea7b3-en?isPartOf=/content/datacollection/eag-data-en

circumstances – students can study locally and not incur the costs of moving to a university city.

One possible way towards achieving role clarity between universities and ITPs is return to the model of distinguishing between "professional" and "paraprofessional" qualifications. In the former, students are equipped to work at the frontiers of knowledge, in the latter they are given professional attitudes but learn a more contemporary practice-oriented body of knowledge. Research in the former requires advancing the international body of knowledge. Research associated with the latter is more commonly focussed on evolving practice (often nationally rather than internationally) as a consequence of changes made elsewhere to the body of knowledge.

In this model the universities have a clear role in professional programmes; the ITPs in the paraprofessional programmes. Paraprofessional programmes can also be conceptualised as being the highest level of "vocational" education/training which is a distinct role for ITPs. Some role distinction consistent with this model still occurs, for example in engineering, and to an extent in both the ICT and health sectors. The polytechnic system in Germany[7] may be an excellent model for vocational education.

The example given earlier (1) with regards to the role of ITOs and ITPs may also be instructive. Separation of the roles of the qualification setter from the deliverer did not work in practice[8] in sub-degree engineering as the ITP staff concerned were hesitant to deliver a qualification they were not involved in developing. Given the potentially high overhead costs of duplication and over-diversification in a small educational system like New Zealand, it is important that the system design considers the incentives and disincentives for cooperation and collaboration.

To the extent that there might be a case for overlap lies with wānanga and their special role across and within the system. The wānanga educate large numbers of students at a variety of levels. Ensuring that they retain their distinct identity while acting cooperatively with ITOs, ITPs and universities to complement rather than duplicate offerings, is an important ongoing issue.

Discrepancy between attainment and productivity dividend
Commentary in relation to Question 29

The discussion paper by the Productivity Commission talks about grade inflation, but is relatively silent on qualification inflation which may be at least as great a problem. It may well be that three years of tertiary education is needed for a student to sufficiently develop working knowledge of the present practice in a field of vocational endeavour, but that does not mean that it should be packaged as a degree unless students are required to develop and demonstrate the higher level skills referred to above. Longer duration vocational qualifications may well be needed, but they should be distinguished from degrees.

The Society's Expert Panel on Science Technician Workforce has seen evidence of qualification inflation. Whereas the technician role used to be filled by holders of the 2.5 year (FTE) New Zealand Certificate of Science, the majority of such roles these days are won by holders of undergraduate degrees or higher. Yet, the anecdotal evidence from employers of technicians is that they often cannot meet the aspirations of degree holders for advanced

[7] https://www.bmbf.de/pub/fachhochschulen_in_germany.pdf
[8] www.ipenz.org.nz/ipenz/forms/pdfs/NEEP_Project_Report.pdf?37832

types of work. The graduates need considerable practical training on the job in order to be brought up to speed with hands-on skills.

One answer might be greater use of Level 7 diploma qualifications (e.g. advanced or higher diplomas) for vocational roles where three or more years of knowledge is required but not the advanced generic skills of a graduate taught by a researcher active in advancing the international body of knowledge.

Information for informed student choices
Commentary related to Question 2

The long-standing notion of setting a University Entrance standard may not be assisting student choice. The entry requirement for a student to have a "reasonable chance of success" is not uniform across all university degrees[9]. Furthermore, to have a reasonable chance of success in many Level 7 ITP qualifications[10], the student at entry should have reached the University Entrance standard. It may be that the concept of a standardised University Entrance is now outdated. Moreover, gaining it may be interpreted as a signal that the student should enrol in university, even when their academic record suggests that they would have a higher likelihood of success enrolling in a vocational qualification at an ITP. The Society has no hard data on this matter but suggests it warrants examination.

Conclusion

The Society is of the view that New Zealand, as a relatively small nation, has a need for a clear distinction of roles of tertiary education providers, and good appreciation and acceptance of the wide and diverse roles of research in universities. Detailing of the system design without first establishing clear delineation of roles may well lead to sub-optimal results.

The Society would welcome the opportunity for direct discussion with the Commission.

Yours sincerely

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Chief Executive

[9] For example: www.auckland.ac.nz/en/about/admission-and-enrolment/ae-undergraduate-students/ae-entry-requirements/ae-domestic-students/ae-national-certificate-of-educational-achievement.html#dd728f533fd2792f45c15438de57c215
[10] For example: www.weltec.ac.nz/SUBJECTAREAS/EngineeringTechnology/BachelorofEngineeringTechnology/tabid/695/Default.aspx