8. Training-Workforce Mismatch for New Zealand Doctorates

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This is a fact sheet reporting bullet pointed findings that extend a working paper by Stewart and Baisden (2022).[1] Additional tables from the StatsNZ R&D Survey were obtained from StatsNZ Infoshare to produce these results.

- ➔ The trajectory of Business Research and Development (R&D) Growth has been roughly on target for total R&D expenditure to reach 2% of GDP, but faces concerning headwinds that Te Ara Paerangi Future Pathways can help correct.
  - ◆ Expenditure on R&D and research employment are stagnant relative to the overall economy in sectoral data representing universities and CRIs, yet growing strongly for Business R&D (increasing from 0.56 to 0.84% of GDP from 2008 to 2012, or 127% in dollar terms).
  - ◆ Current and future gains from increased Business R&D may be limited by a large and growing gap between employment of PhD-qualified researchers in Business R&D. Positions for 4300 PhD-qualified researchers would be needed to bring the Business R&D sector to one PhD FTE per $0.5 m R&D expenditure. At this ratio, 8600 new FTE will be required for R&D to reach 2% of GDP.

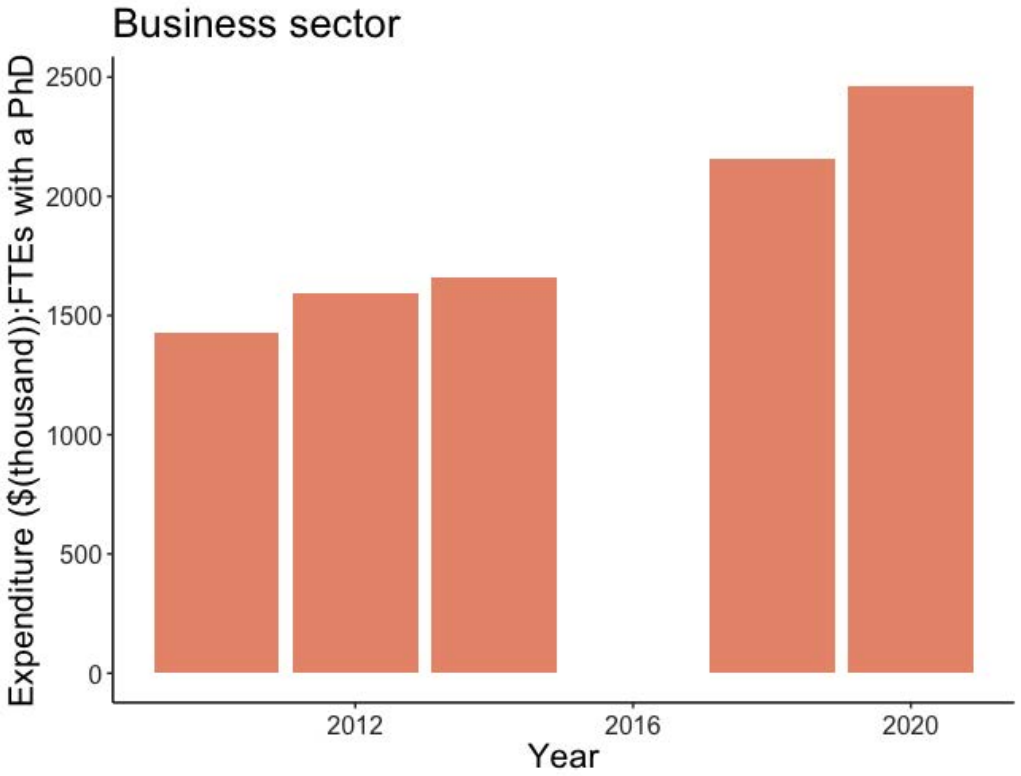

Figure 1: The R&D workforce survey reports PhD-trained members of the workforce, suggesting the rapid growth of Business R&D expenditure has not been accompanied by employing PhD-qualified researchers. The ratio for government and higher education sector R&D is just over $500k per PhD-qualified FTE, which represents a reasonable target.

- Gaps exist in the pipeline between enrollment in PhDs, completion of PhDs, and employment. Diversity is also being lost. Dependence on overseas recruitment and further pandemic impacts have been overlaid on existing hypercompetition and an apparent training-workforce mismatch.
- There was also a decline in connectivity between research institutions and business resulting from settings imposed in 2013, with little recovery, suggesting an embedded lack of career transition pathways or labour-force mobility. (MBIE 2021 Release, Chapter 4, Figure 35)
- There is strong evidence for problems of hypercompetition[2], including low funding rates for contestable proposals, difficult working conditions, poor diversity outcomes, and precarious employment.
- Precarity and career tracks have reached levels of concern that damage the ability to attract and retain talent, from within New Zealand or Overseas.
- The gap in PhD-qualified researcher employment may be a result of the increasing focus of universities on basic science, and decreasing focus on applied science and experimental development, and associated connectivity.

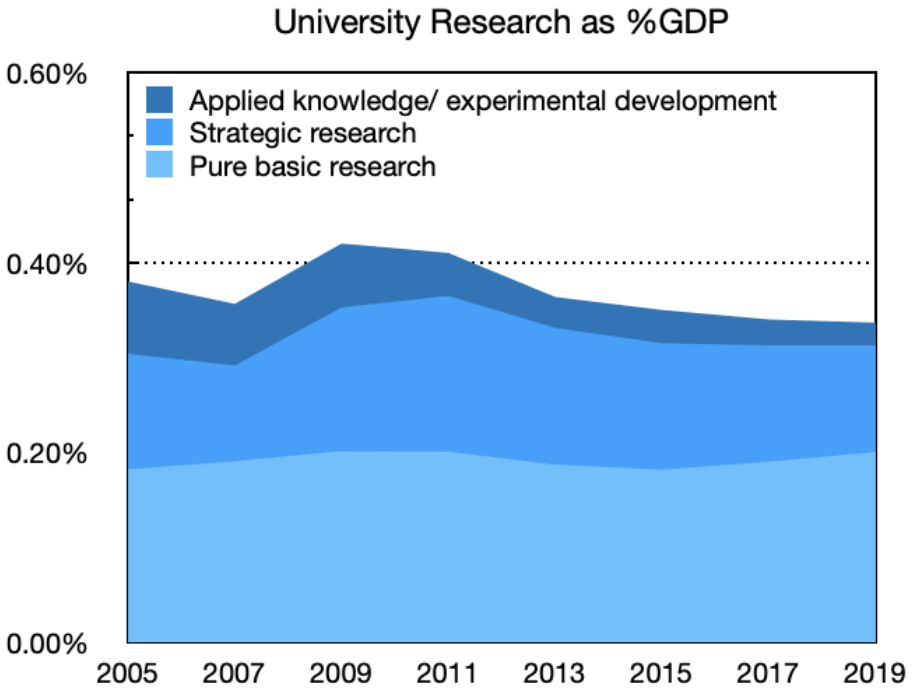

Figure 2: Research expenditure class as %GDP, using data from research financing data EducationCounts.

➔ Overall, there is evidence for a training-workforce mismatch in applied science training and applicability to business that needs consideration from an anticipatory governance perspective. Potential solutions include matching training to future employment needs and enabling researcher mobility throughout careers.

References

1. Stewart LC, Baisden WT. Postgraduate Students and the Aotearoa New Zealand Research Workforce. Published online March 2022. doi:10.5281/zenodo.6342486
2. Patel S, Baisden WT, Stewart LC, Yee G. 5. Hypercompetition: Observations and Remedies. http://doi.org/10.5281/zenodo.6354888