Precarity in academia is tied to the contestable funding model.

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Funding and precarity have a tight interface. The elements of the precarity and funding interface described below apply to research staff (early career researchers (ECRs) and technical staff) supported entirely from contestable research funding. There is likely to be much in common with other precarious roles within academia and elsewhere in the research science and innovation (RSI) sector.

It is important to understand that the current model assumes several things about research which are inherently divergent from reality.

1) That full-time research staff only carry out work they are specifically contracted to perform under a rewarded research grant.

This assumption fails to acknowledge that the conduct of contracted research requires significant non-research support work, usually done by research staff [1]. This includes administration/managerial tasks required to run a lab, which often fall to technicians and postdoctoral scientists and include ordering, compliance, record keeping and lab management. In addition, postdoctoral research staff also need to prepare funding applications to cover their own salaries and their research going forward. As grant award success rates are currently around or under 10% for most major grants in New Zealand, this involves many applications over several rounds (years) to have any chance of securing ongoing funding. Furthermore, researchers that want to continue in the RSI sector, particularly in academic research, need to build teaching experience and a portfolio of service roles (institutional, local and international committees, journal editorial boards, peer-reviewing etc) to be competitive for appointment in academic institutions. These additional tasks are not specifically included in their research contracts. This is well illustrated in a survey of Dutch academic researchers revealing that postdoctoral researchers were only spending approximately 55% of their time on research activities [2]. Early career representatives are often required for committees and organisations (including Te Ara Paerangi). This is additional labour full-time research staff are not funded to participate in, but expected (as a group) to contribute to.

2) When the money/time comes to an end the project is over.

This assumption fails to acknowledge that most research is iterative and gradual. In some cases, a stand-alone body of work can be carried out in a short time frame of 6 months to 3 years. However, 3 years is a minimal time frame for many areas of research. More often, a body of research furthers our understanding by an increment and informs the next portion of research that needs to be done. In addition, the expertise built over time is often a prerequisite for the next stage of the research. This is something that is not well recognised by the current system. Indeed, 'continuation' type project proposals are often dismissed by funders who want to fund new ideas instead of funding the 'next steps' of already successful research. Researchers have to re-package their ideas to 'sell' them as a new idea or a new approach, or pivot to new areas of research with little justification. Whilst it is good to incentivise evolution of the RSI system, ploughing the fields before some of the crops are harvested will drive losses.

Furthermore, pressures from the scientific publishing system often lead to researchers needing to perform additional experiments and analysis to be able to publish their research in a 'good' journal (which will improve their chances of further funding and career opportunities) [3,4]. There are very few funding sources that can supply 'top-ups' for this kind of work and almost none that cover salary, so often the work will be done using the time and funds afforded by another grant, therefore making already stretched resources thinner; further blurring the lines between one project/grant ending and another starting.

3) Research staff are expendable.

Employment decisions of research staff are usually left to PIs who face difficult dilemmas when preparing the next grant application. Should they support their existing research staff or alternatively seek funding for newer, less experienced and cheaper researchers? Often the second option is the only way they can afford to carry out a competitively fundable programme of research. This means that research staff careers are at the mercy of PIs and their ability to secure funds. There is no oversight of this process at a managerial/HR level and no institutional oversight that might allow staff to be redeployed where their skills could be useful. Instead, the relative cost difference between hiring a postdoctoral researcher versus funding a PhD stipend makes the latter more attractive, leading to further accumulation of precarious researchers at the early-career stage.

A key feature of the contestable system allows HR policies that effectively make research into a 'gig economy'. Job descriptions for individual contracts are written to be specific to a grant or project, with a timeline matching that grant. This means that when a researcher has secured further funding to support their salary, the job description for their next contract will in fact be different (even if it is for the same type of research or the same research area). Repeated fixed term employment contracts are only legal where employers have a 'genuine reason'[1] for keeping the employee fixed term. This practice - job descriptions tied directly to individual projects - gives universities that reason, turning highly-skilled research work into precarious employment even when research staff are employed at the same institution continuously for many years.

<u>Potential solutions that remove some of the levers that drive precarity:</u>

The Te Ara Paerangi Green Paper released in 2021 suggests the creation of 'base funding' to institutions that may in part or in whole replace overheads on research grants. If managed well, this system could work to both improve job security for researchers but also to enable retention of skills, experience and better deploy expertise across research, research infrastructure and research community support. Consultation sessions and workshops have revealed ECRs feel base grant funds must come with a stipulation that a significant proportion will directly support research staff FTE, to ensure it isn't just used to bloat the existing administrative research support. This could be through permanent staff scientist positions that could be used to ensure research staff time is used effectively within an institution. Importantly, it should also be considered that this base funding would include remuneration for and therefore recognise the additional research-related tasks outlined under (1) above, similar to the 20% FTE currently afforded to academic staff for 'service' in the 20:40:40 model. Further details of such a proposal, with base grant contributing between 30-50% of salary scaled to career-stage, has been published by the NZAS [5]. This would therefore put properly funded time into the enhancement of research support systems, cement the role of researchers within that infrastructure and free up research FTE for actual research tasks. If base funding for an institution was tied to researcher FTE, it may provide an incentive for the institution to create rewarding workplaces

[1] https://www.business.govt.nz/hiring-and-managing/hiring-people/hiring-fixed-term-and-casual-employees/

and career-paths in order to retain research staff. The figure below visualises how this might work and how an individual staff member FTE may be allocated between base grant funding and from contestable grant funding.

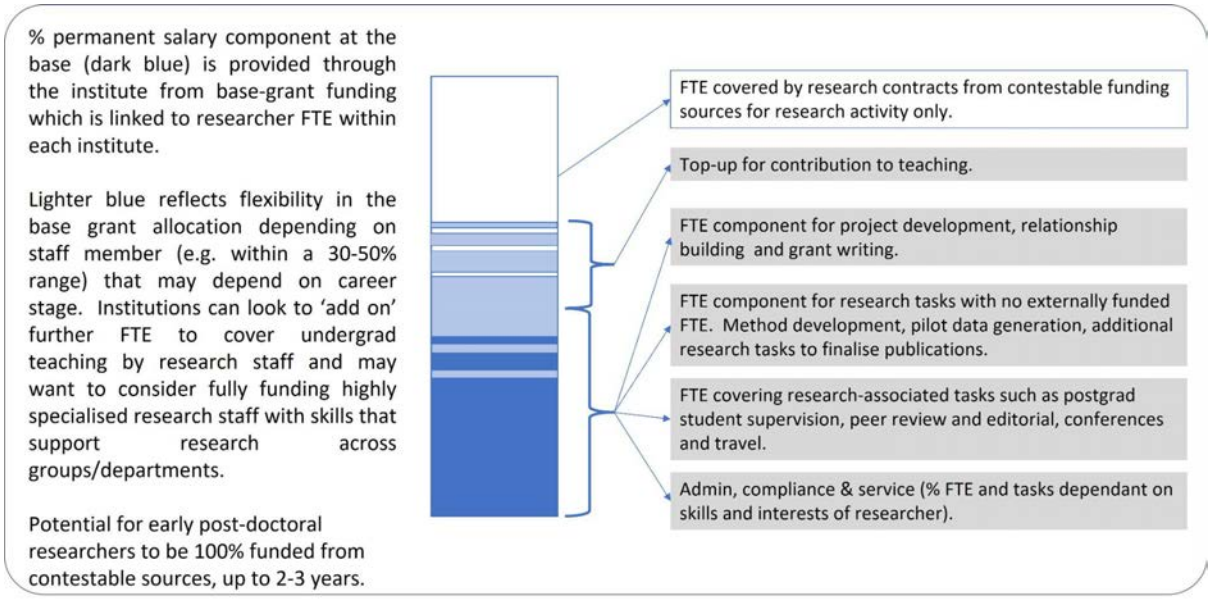

Figure showing a possible researcher-focused funding system that combines base and contestable grants.

Precarity of the workforce and funding is also key when considering the career pipeline for researchers from postgrad research students and up. An unintended consequence of the current funding model is that there are significantly more research students graduating than needed by the RSI sector in NZ [6]. MBIE and MOE might want to reconsider how research and research institutions are funded to enable academic institutions to improve the quality of training. These steps might include limits on the FTE of postgrad students per lab/PI in relation to the FTE of post-PhD research staff. This will have two benefits: (1) improving the quality of support and learning for research students, and (2) bringing an incentive to employ experienced staff over students. The quality of postgraduate training could be further improved by incorporating internships in industry or government/policy departments or through allowing students to take conjoint courses such as business, management or law courses. As proposed by Olivia Truax, such 'internships' could also be applied at a postdoctoral level through being incorporated into early career fellowships [7].

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