

**Review of the New Zealand
Productivity Commission's
Research Function: 2016-18**

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Review of the New Zealand Productivity Commission's Research Function: 2016-18

1. Summary and recommendations

This Review was commissioned to evaluate the Productivity Commission's (PC) performance in delivering on its function to undertake and publish research about productivity related matters. The Review is limited to the work of the Economics and Research Team (ERT) and primarily during the period July 2016 to June 2018. It follows three previous Reviews covering the period from 2011 to June 2016. This fourth Review was required to evaluate the relevance and materiality of the ERT research, process management, quality of the research, effectiveness of the ERT engagement and collaboration with public sector agencies working on productivity issues and contributions to improving coordination amongst these agencies, and to evaluate the wider impact of the ERT work.

The ERT was formed to promote and support research to improve knowledge about New Zealand's productivity performance and to provide economic analysis to support PC Inquiries. In the period covered by this Review, the ERT has continued to generate research on innovation, technology diffusion, and investment in knowledge-based capital by New Zealand firms, and research on the influence of spatial or geographical factors, foreign ownership, firm size and industry type on firm productivity. The ERT has also supported a research project evaluating the impact of a policy initiative on firm performance and a significant research project on the measurement of productivity in the New Zealand tertiary education sector, which is part of the non-market sector.

The assessment of the quality of the research was limited to what is considered core productivity research, that is, the research papers on firm productivity dynamics, policy evaluation and productivity measurement in the non-market sector. This work is considered to be of a very good standard, and the work on measurement of productivity in the tertiary education sector is assessed to be at the international frontier.

This body of research is highly relevant and material and is strongly supported by stakeholders and is proving valuable to Government policy agencies. ERT staff played a crucial leadership role establishing the Productivity Hub (which is probably the most successful part of the Government Economics Network). They initiated the generation of an agreed work programme for the Hub and have been active managing the events of the Productivity Hub. This is complemented by more direct engagement with public sector staff working on productivity. However, the ERT has started to face more challenges in promoting research collaboration with the core Government agencies. The reasons seem to be that some agencies previously active on productivity work have scaled back their involvement and there seems to be reduced funding and a lack of sufficient research capacity within some agencies.

ERT staff have been actively engaged communicating its research insights to the policy community, political groups, professional bodies and the New Zealand media. This engagement appears to be changing in emphasis and reaching out to the wider public and business management communities. This is occurring for example, through contributions to professional magazines and increased frequency of public commentary through alternative public media such as radio, television and internet news sites.

Within the Productivity Commission, the Inquiry teams have appreciated the opportunity to draw on the economics and research skills of ERT staff. There are clearly opportunities for fruitful collaboration between ERT and Inquiry staff. ERT staff have made a considerable effort to engage with the wider-research community in New Zealand, including academic researchers interested in productivity, economic growth and related topics. However, apart from a few notable exceptions, the effort to engage academic researchers has not been successful. The ERT should reassess how it engages with the academic research community and explore different ways of collaborating with high calibre researchers in New Zealand and overseas.

The ERT could benefit from several improvements to its processes and management of research. Areas for potential improvement are in: regular medium-term research planning as a basis for identifying research capability requirements, resourcing and research collaboration; the processes and documentation of quality assurance for research projects; stronger expectation of submission of selected completed research projects to top quality peer-reviewed research and policy journals; and improvements to the PC Research web-site and nomenclature for papers published on the web-site. There is also scope to enhance the rate of research production of the ERT by maintaining focus on an agreed core productivity research programme, specifying time-lines for research and effective monitoring of research progress.

To date the ERT research priorities appear to have been guided predominantly by the work agenda developed for the Productivity Hub and requests for support on PC Inquiries. The ERT is now at a stage where it will need to refresh its research programme. It is one of the few public-sector units that can develop a sustained research programme to underpin decisions about appropriate policy initiatives. The ERT operates under a programme-based funding approach and accordingly it could be expected to have a clearly articulated set of research projects that focus on core productivity questions and challenges.

A well-crafted process for preparing its medium-term research programme and prioritising work from year to year would help underpin the realisation of the resourcing needs of the ERT and would make more transparent the consequences of reduced funding, as has occurred in the last two years. Consultation with PC Inquiry staff and Productivity Hub members should be part of this process, but broader consultation, including with academics and other researchers involved in related research, could fruitfully inform the specification of its future

research programme. This process would seem critical, especially in an environment of reduced funding. It would assist in identifying the future research skills required by the ERT and in promoting successful collaboration with outside researchers. There is scope for a variety of topics relevant to its core role, including providing underpinning research for PC Inquiries. But it should avoid being diverted into projects that are tangential to its core role.

There is still much to learn about the processes of technology diffusion and factors influencing firm investment and management practices that may be hindering innovation and productivity performance in New Zealand. There is considerable scope to research how public policies and business practices might be improved to enhance firm performance. There is also much to learn from international policy experience about what has worked and what has not. Sustaining the shift toward policy evaluation and developing techniques for measurement of productivity in the non-market sectors was also encouraged by stakeholders interviewed as part of this Review. The ERT could consider its role as promoting foundational research in some of these important areas and working with relevant agencies to develop their capability to take up the ongoing commitments to this type of work.

Furthermore, the ERT research and research by others on New Zealand productivity characteristics is sufficiently rich to inform Government as to where PC Inquiries might focus in future to help guide the development of policies that are clearly directed at improving New Zealand productivity performance. The predominant focus of Government directed PC Inquiries has to date been on institutional and policy design in areas such as for example, New Zealand's regulatory institutions and practice, urban planning, and new models of tertiary education and one of the current enquiries is on state sector productivity. The ERT work has strengthened the knowledge base of the Productivity Commission to warrant promoting support for Inquiries that focus more directly on business performance and how policy can improve New Zealand's firm-level productivity and its contribution to aggregate productivity performance.

Arising from this Review are several suggestions or recommendations which are offered in the spirit of continuous improvement. They include the following:

- a. Establish a regular medium-term research planning process. This plan should be guided by the agreed core areas of work and form the basis for determining the annual research plan, staff capability planning, and the annual financial budget for the ERT. (Section 4a).
- b. Development of the agreed core areas of future ERT productivity research would benefit from continued consultation with the Productivity Hub members, but the scope of consultation should be broadened to include other researchers and institutions involved in the field. (Section 4a).
- c. Explore opportunities to support the core research programme through access to other funding and increased collaboration with external researchers to enhance the allocation

- of external contestable funding sources to research on New Zealand productivity. (Section 4b).
- d. Examine the time taken to complete research projects and identify ways to lift the rate of research output on core productivity topics per unit of resource available to the ERT. (Section 4c).
 - e. Document the quality assurance process required for each type of research project and publication. (Section 4d).
 - f. Review the PC “Research” web site, including the nomenclature for research papers, and the scope to link with related international databases and research sites. (Section 4e).
 - g. Explore more effective ways to engage local and international academic researchers in working on the research priorities of the ERT. (Section 6);
 - h. If the recommendations on process improvements are adopted, it would be appropriate to consider reducing the frequency of formal external Reviews of the ERT.

2. Terms of reference and context

This Review was commissioned by the Productivity Commission for the purpose of undertaking an independent expert evaluation of the Commission’s function to undertake and publish research about productivity related matters or, more specifically, the work of the Economic and Research Team (ERT). The Review follows three previous Reviews and concentrates primarily on the work undertaken by the ERT during the period July 2016 to end-June 2018. It involves assessing the relevance of the research, the quality of a selection of research papers, the ERT engagement with wider policy community and effectiveness with which research is used to influence policymaking, and engagement and impact more broadly.

The Commission selected the following five areas for particular focus:

- (i) The relevance and materiality of selected Commission Working Papers/Research Notes in advancing understanding of New Zealand’s productivity issues;
- (ii) Process management;
- (iii) The quality of the economics and analysis in the selected package of research papers;
- (iv) The effectiveness of the Commission’s engagement with the productivity research community and its effectiveness in improving the coordination and collaboration among public sector agencies working on productivity; and
- (v) The wider impact of the Commission’s research work.

Within these parameters there is scope to shape the particular emphasis of this Review. At the time of this Review, a larger body of research and experience has been accumulated by the ERT than at the time of the other Reviews and hence there are some differences in the issues considered. Sufficient time has passed since the ERT was established to be able to

enquire as part of ToR (i) how the ERT is utilising past research and learnings to guide the specification of its current and future research priorities, and the process in place to do that. In respect of ToR (ii), in addition to assessing current processes and identifying opportunities for further improvement, it is reasonable to enquire how the ERT has responded to the key points or recommendations concerning management processes raised in previous Reviews. As part of the assessment required under ToR (iii), this Review also scrutinises the processes applied to ensure the research is rigorous and suitably peer reviewed and considers how the quality assurance process could be improved. In responding to ToR (iv), particular attention is paid to the contribution and effectiveness the ERT has had developing the research agenda and output of the Productivity Hub, fostering research collaboration with the wider research community, and generating insights that can guide public policy and business practice. The attention given to ToR (v) includes assessing the extent of media coverage of the ERT work and efforts made by the ERT to reach out to the wider public and relevant professions. Attention is given throughout the process of this Review to identify opportunities for the ERT to continuously improve its performance and processes. The Report provides recommendations to this effect.

3. The relevance and materiality of selected Commission research papers in advancing understanding of New Zealand’s productivity issues

The PC web-site states that one of the PC’s core roles as “to undertake research on productivity-related matters. We also work with other government agencies through the Productivity Hub, which we convene and chair¹. The Hub plays a coordination role which helps inform the research choices of each participating agency, and advance collaborative research projects.” Therefore, there is considerable scope for the type of research the ERT should undertake to meet this part of the Productivity Commission’s mission.

To help inform the assessment of the “relevance and materiality” of the research of the ERT, as part of this Review the research papers published by ERT and listed on the PC Research web-site have been assigned to research categories². This assessment was also informed by discussions with a selection of PC staff, representatives from the public sector, universities and other research organisations. Table 1 summarises the research papers commissioned and published by the ERT. They are assigned to one of the following categories: (i) Characteristics of New Zealand’s productivity performance; (ii) Productivity measurement; (iii) Evaluating the impact of government or business policy initiatives on productivity; (iv) Characteristics of the New Zealand economy, and (v) Other topics. Table 1 categories all papers supported by the

¹The Productivity Hub is a partnership of agencies which aims to improve how policy can contribute to the productivity performance of the New Zealand economy. This is achieved by developing a joint research work programme, helping build capability, and translating research into policy. The Hub agencies are the Productivity Commission, the Ministry of Business, Innovation and Employment (MBIE), Statistics New Zealand (SNZ), and the Treasury. Several other agencies and nongovernment groups are active in the partnership.

² Available from the following site: <https://www.productivity.govt.nz/research-papers-list>.

ERT and published since the inception of the PC in 2011 and they are grouped into two periods: April 2011 to September 2016 (the period covered by the previous three Reviews), and the period since September 2016 (the period of this Review).

In the earlier period the majority of research papers were in categories (i) Characteristics of NZ productivity performance, and (iv) Characteristics of the New Zealand economy. The previous Reviews judged this emphasis to be broadly appropriate. For example, the conclusion of the 2014 Review was as follows: The set of Working Papers and Research Notes were deemed to be clearly relevant and material to advancing understanding of New Zealand's productivity issues; that since the establishment of the of the PC, there had developed a clearer focus for its research work and that there had been an appropriate shift toward synthesising a range of research; and feedback was very supportive of the priority being given to undertaking a stocktake of previous relevant productivity research. Sentiments expressed in the 2015 and 2016 Reviews did not vary significantly from the 2014 assessment.

In the period since the 2016 Review there has been a slight change in research emphasis. The ratio of the productivity papers (categories (i), (ii) and (iii)) to other papers (categories (iv) and (v)) has increased, and there has been a change in research emphasis within the productivity categories (i, ii, iii). Although fewer in number, papers examining the characteristics of New Zealand productivity performance have continued to be supported. But there has been a bit more emphasis on productivity measurement and evaluating the impact of policy on productivity performance. A primary reason for research on productivity is to generate insights into how business and public policy can be altered to improve productivity performance. Hence, although there may be important features of New Zealand productivity performance yet to be revealed (in for example, the non-market sector), investing more resources into understanding how insights from prior research can be used to illuminate which areas to focus on to inform policy priorities for productivity. The shift in emphasis during the last two years therefore seems entirely appropriate.

Research Paper 2016/1 "Achieving New Zealand's productivity potential" endeavours to deduce policy insights from the earlier work on characteristics of New Zealand aggregate and firm productivity characteristics. It provides a stocktake of the characteristics of New Zealand firms and it explores what this might imply for policy or where policy attention should be focussed if productivity improvement is to be a priority. This work has been appreciated by policy agencies, such as MBIE and Treasury. The Productivity Symposium is a compilation of presentations and research papers, many of which fall into categories (i) and (iii), and a purpose of the Symposium was to strengthen the connection between productivity research and public policy (category iii).

Table 1: Categories of ERT commissioned Working Papers and Research Notes

Research category	Paper Type	Date
Published since September 2016 (13 papers):		
<i>(i) Characteristics of NZ productivity performance (3)</i>		
Absorptive Capacity in NZ Firms: measurement and importance	Motu Working Paper 18/01	2018 (Feb)
Innovation and the performance of New Zealand firms	Staff Working Paper 2017/2	2017 (Nov)
Geographic proximity and productivity convergence across NZ firms	Working paper 2016/04	2016 (Dec)
<i>(ii) Productivity measurement (3)</i>		
Estimating Quality-Adjusted Productivity in Tertiary Education: Methods and Evidence for New Zealand	VUW Working Papers in Public Finance 17/2017	2017 (Nov)
Social sector productivity: a task perspective	Research Note 2017/01	2017 (May)
Public sector productivity Quality adjusting sector-level data on New Zealand schools	Working Paper 2017/2	2017 (May)
<i>(iii) Productivity and policy (3)</i>		
The impact of R&D grants on the performance of New Zealand firms	Research Note 2017/5	2017 (Oct)
Achieving New Zealand's productivity potential	Research Paper 2016/1	2016 (Nov)
Productivity Symposium transcript		2015 (Dec)
<i>(iv) Characteristics of the NZ economy (4)</i>		
Effective Marginal Tax Rates: The New Zealand case	Crawford School WP 7/2018	2018 (May)
The Labour Income Share in New Zealand: An Update	Research Note 2018/1	2018 (March)
Residential construction and population growth in NZ: 1996-2016	RBNZ DP 2018/02	2018 (Jan)
The "servicification" of trade	Research Note 2016/4	2016 (Dec)
<i>(v) Other papers (0)</i>		
Published between April 2011 and September 2016 (17 papers):		
<i>(i) Characteristics of NZ productivity performance (8)</i>		
Do NZ firms catch up to the domestic productivity frontier?	NZPC Working Paper 2015/3	2015 (June)
Measuring the innovative activity of New Zealand firms	Working Paper 2015/2	2015 (June)
New Zealand's productivity growth: Component and industry decompositions	Research Note 2015/2	2015 (May)
Structural change and New Zealand's productivity performance	Working Paper 2014/4	2014 (June)
Trade over distance for NZ firms: measurement and implications	NZPC Working Paper 2014/5	2014 (June)
An International Perspective on the NZ Productivity Paradox	NZPC Working Paper 2014/01	2014 (April)
Investigating New Zealand-Australia productivity differences: New comparisons at industry level	NZPC Working Paper 2013/02	2013 (Dec)
Productivity by the numbers: The New Zealand experience	NZPC Research Paper 2013/01	2013 (Sept)
<i>(ii) Productivity measurement (0)</i>		
<i>(iii) Productivity and policy (0)</i>		
<i>(iv) Characteristics of the NZ economy (8)</i>		
Subjective wellbeing in New Zealand: Some recent evidence	Research Note 2016/3	2016 (May)
Who benefits from productivity growth? – The labour income share in New Zealand New Zealand Productivity Commission	Working Paper 2015/1	2015 (Feb)
New Zealand's international trade in services: A background note	Research Note 2014/1	2014 (June)
Explaining International Differences in the Prices of Tradables and Non-Tradables (with a New Zealand Perspective)	VUW Working Papers in Public Finance 17/2017	2014 (May)
The Prices of Goods and Services in New Zealand: An International Comparison	VUW Working Papers in Public Finance 17/2017	2014 (March)
Housing Affordability in New Zealand: Evidence from Household Surveys	NZ Treasury Working Paper 13/14	2013 (July)
The effect of Auckland's Metropolitan Urban Limit on land prices	Research Note March 2013	2013 (March)
How integrated are the Australian and New Zealand economies?	Staff Working Paper 2013/1	2013 (March)
<i>(v) Other papers (1)</i>		
Reform of the UK's decumulation market	Research Note 2014/2	2014 (Dec)

Notes: The papers in this table were taken from the PC web-site <https://www.productivity.govt.nz/research-papers-list>. The list excludes papers that appear on this site that were commissioned and funded by PC Inquiries. These include: Explaining ethnic disparities in bachelor's qualifications: participation, retention and completion in NZ, Working Paper 2017/01, February 2017; History of tertiary education reforms in New Zealand, Research Note 2016/1, January 2016; Examining the UK Climate Change Act 2008, Research Note September 2017, September 2017; What can complexity theory tell us about urban planning? Research Note 2016/2, April 2016.

The paper evaluating the impact of research and development (R&D) grants evaluates the impact of a policy initiative introduced on try to nudge firm innovation. This research was motivated by prior insights from OECD work suggesting there has been a relatively low level of investment on innovation by New Zealand firms. This type of work is consistent with the rationale applied to establish Superu, an autonomous Crown entity located within the Ministry of Social Development (MSD) for the purpose of undertaking research and evaluation of social services³. It is also consistent with the recommendations of the PC Inquiry “More effective social services” which emphasised the importance of policy evaluation and benchmarking of social services⁴. The importance of policy evaluation extends well beyond simply the type of social services administered by MSD and on which Superu is concentrating its work, and MBIE has staff working on policy evaluation. But there is a dearth of capacity within other Government agencies to undertake this work. The ERT could make an important contribution through foundational work and support on policy evaluation methods.

The ERT has also placed more emphasis on measuring productivity in the non-market sectors of the economy sectors, that is, sectors for which market prices do not exist (notably the public sector). The decision to support work measuring productivity in the education sector stemmed from the need to support the PC Inquiry on “New models of tertiary education” and the techniques applied could feed into the current Inquiry on “State Sector Productivity”. This type of work is essential to enable more progress in understanding New Zealand’s productivity performance. Progress in advancing techniques to measure productivity in the public sector will provide a more robust basis to understand whether there are significant performance concerns in the public sector, and where policy initiatives should focus to improve performance in these sectors.

The importance of developing techniques for measuring productivity in the non-market sectors of the economy has been emphasised by Government agencies. Statistics New Zealand (SNZ) commissioned a feasibility study into how change in the productivity of government services in New Zealand might be measured⁵. The SNZ study concentrated on the measurement of productivity in government health care and education because they are two of the largest areas of employment and expenditure in the public sector. The main conclusion from that study is that it will be possible to estimate change in the productivity of government health care and education services in New Zealand according to current best international practice. And if the recommendations of the PC Inquiry on “More effective social services” that more monitoring, researching and evaluation of social-service programmes for

³ The Superu web-site is located here: <http://www.superu.govt.nz/>

⁴ The PC Inquiry report “More effective social services” is available from this site:

<https://www.productivity.govt.nz/sites/default/files/social-services-final-report-main.pdf>

⁵ Statistics New Zealand (2010), *Measuring government sector productivity in New Zealand: a feasibility study*, Wellington: Statistics New Zealand.

http://archive.stats.govt.nz/browse_for_stats/economic_indicators/productivity/measuring-govt-productivity.aspx

their effectiveness and value for money is to be operationalised, the availability of techniques to enable the measurement of performance will be crucial⁶.

This shift toward more policy focussed work and productivity measurement was universally supported by representatives of stakeholders who were interviewed. Some expressed the view that if the work of the ERT is to have impact and influence public policy and business practice, it is imperative that this type of work be included in its core work programme. It was also suggested that the ERT explore international research techniques suitable for robust testing of the impact of public policy initiatives and business practices on firm productivity and public-sector performance, including research being undertaken in New Zealand universities tackling the challenges of evaluating the impact of public policies. Others commented that the work on productivity measurement in the education sector will help demonstrate the feasibility of measurement being applied to other Government services and provide a more robust foundation to evaluate public sector performance and ideas to improve performance.

Category (iv) in Table 1 includes projects that seem to have only a tangential connection with what might be expected to be included in the core research agenda of the ERT and others that may intersect with productivity but do not necessarily shed obvious light on the characteristics or measurement of productivity or the impact of policy on productivity. For example, the paper on “Effective Marginal Tax Rates: The New Zealand case” seems motivated more by social policy issues rather than understanding how the New Zealand tax system impinges on innovation, entrepreneurship and productivity, of which there is a rich international literature which has inform the 2009-2010 review of New Zealand’s taxation system⁷. While the other papers in this category may be helpful in exposing features of the New Zealand economy that may ultimately prove helpful in understanding aspects of New Zealand’s productivity performance, without the benefit of a well-articulated research plan it is difficult to judge the merits of ERT supporting some of the projects within category (iv).

4. Process management

(a) Prioritisation of research

The Commission has discretion to determine its programme of research. Hence a process for selecting research projects and for changing research priorities over time is important to ensure the resources of the small ERT unit are used appropriately. The ERT initially worked with members of the Government Economics Network’s (GEN) ‘Productivity Hub’ to develop

⁶ New Zealand Productivity Commission (2015), *More effective social services*, Wellington, New Zealand Productivity Commission. <https://www.productivity.govt.nz/sites/default/files/social-services-final-report-main.pdf>

⁷ See Victoria University of Wellington Tax Working Group (2010), *A tax system for New Zealand’s future*, Victoria University of Wellington, Wellington, and the background papers supporting that review.

a “Forward looking agenda of research” (FLARE). The initial selection of ERT’s research projects was based on that agenda and on its comparative advantage as determined by capability within the ERT and the capability available through its research partnership with Motu. This process of prioritisation had the advantage of involving Hub members, which includes key government policy agencies such as MBIE, Treasury and SNZ. The first round of this process resulted in a set of agreed research priorities and shared funding of several foundation papers on research techniques applied to longitudinal business data. It generated good momentum and valuable research output on New Zealand firm productivity characteristics.

From the perspective of the representatives of the key Government agencies involved with the Hub, the involvement of the ERT and leadership provided by ERT staff has been a very important reason for the success of the Productivity Hub to date. Some commented that the Productivity Hub was the standout success of the Government Economics Network’s efforts to establish active Hubs coordinating the work of Government agencies in a range of areas. The view was also expressed that the involvement of the ERT remains critical to the future effectiveness of the Productivity Hub as a forum for promoting and supporting collaboration and maintaining momentum on productivity research.

However, while the Productivity Hub has continued to be active arranging seminars and workshops and continues to arrange an annual productivity conference, it was also clear from discussions that there are challenges involved in sustaining the research work of the Productivity Hub. Most of the initial tranche of research has been concluded, although there is a project currently in process on competition in New Zealand and another project updating the LBD. Evidently it is increasingly difficult to maintain active involvement by Government agencies and much of the work is falling on ERT and MBIE staff. One of the challenges has been to obtain contributions to the research programme from Government agencies because of a lack of sufficient appropriate research capability within these agencies. Furthermore, Government agencies funding support has evidently tapered off in the last few years.

A new set of priorities within FLARE will need to be developed and funded. But unless collaborative research funding from the Government agencies is forthcoming the Productivity Hub research programme will falter. It also seems that, together with MBIE, the ERT would need to continue to provide the leadership in developing FLARE priorities if the Hub research momentum is to be restored.

The creation of the Productivity Commission’s ERT dedicated to research on productivity somewhat independent of Government Departments always carried the risk that Government Departments with stewardship of policies relevant to productivity would feel justified in reducing their expenditure on research. For whatever reason, the ERT is experiencing increased pressure to maintain leadership in the pursuit of the original goals of the Productivity Hub. This has become more of a challenge since the conclusion of the very

successful research partnership with Motu, the reduction in ERT funding and staff research capacity, and increased ERT resources allocated to PC Inquiry work since the last Review.

The increased responsibility placed on ERT staff to drive the work of the Productivity Hub and determine its future research priorities makes it even more imperative that the PC and the ERT have a sound planning process for identifying the ERT's current and medium-term research priorities and the time-scheduling of those priorities.

The research prioritisation process should involve the following components:

- (i) The preparation of a medium-term (3 to 5 years) productivity research plan;
- (ii) An annual evaluation of progress and agreements to modify the medium-term plan in light of progress and new information that informs medium-term priorities;
- (iii) Annual specification of priority work for ERT (and collaborators);
- (iv) The medium-term and annual plans should specify the capability requirements and the implications for recruitment into ERT or collaboration arrangements with appropriate external researchers and organisations;
- (v) An annual budget for expenditure and funding sources consistent with the agreed annual research plan and associated activities.

This process suggests a shift in the way priorities for the ERT are determined. Nevertheless, consultation with the broader set of stakeholders should be part of this process. Productivity Hub members and other representatives of the relevant Government policy agencies and the wider productivity research community, should be consulted in the process of developing the medium-term research plan, and annual plans as appropriate. This should enhance the prospect of coordination and collaboration among organisations and individuals working on productivity, including academic researchers. It may be worth considering establishing a research advisory group chaired by someone external to the PC, to help facilitate this consultation process. The arrangements established to support the Professorial Chairs established in partnership with external funders and stakeholders by the Victoria Business School is an example of how this type of support could operate⁸.

This type of research planning process should have several advantages. The required research skills are likely to vary over time. This process will facilitate identification of the type of research skills required in the future to supplement the skills of the core of the ERT staff. Typically, academic researchers and potential international research collaborators will require a substantial lead time before they can commit to a significant research project. This process should make it easier for the ERT to involve academic and international researchers in its research programme. Furthermore, a planning process linked to the PC's budget process should ameliorate the ERT's financial risks by making more transparent the funding required

⁸ Information about the Victoria Business School "Funded Research Chairs" and governance arrangements is available from this site: <https://www.victoria.ac.nz/vbs/centresandinstitutes/chairs>

to support a research programme endorsed by the PC itself and by external stakeholders, and by making more transparent the trade-offs involved in changing the funding available to the ERT.

A sound basis for developing a research plan and prioritising future research already exists. There has been a considerable advance during the last 15 years in the creation of knowledge of New Zealand productivity performance. This advance has come about through several initiatives, including the growth and productivity research programmes fostered by the Treasury during the early 2000s, the measurement and publication of the components of aggregate productivity by Statistics New Zealand since the late 2000s, the creation of the LBD and IDI databases as a result of initiatives and collaboration by SNZ and IRD, foundation work on these databases at various times by researchers in Motu, Treasury and MBIE, and the initiatives promoted by the Productivity Hub. The work of the ERT in collaboration with Motu, MBIE and academic researchers during the last six years has materially advanced knowledge of New Zealand's firm-level and production-sector level productivity performances and various associated dynamics, including how they compare internationally. There has also been valuable foundational work in advancing the feasibility of the measurement of productivity performance in the non-market sectors. A valuable summary and interpretation of some of this work is provided in the PC Research Paper 2016/1 and in the companion paper to be published in *International Productivity Monitor*⁹.

It is not the purpose of this Review to identify these future priorities, but from reading these papers and from interviews it is evident there are still significant gaps in knowledge about the process of innovation and technology diffusion that might help guide public policy, why the level of investment in innovation and other forms of capital by New Zealand firms are relatively low, significant gaps exist in knowledge about the most effective ways to improve firm and macroeconomic productivity performance. There are gaps in knowledge of how public policies and business management practices can be changed to enhance firm performance, and there remain significant gaps in the measurement of productivity in non-market sectors of the economy.

Longer-term responsibilities of the ERT will need to continue to be carefully worked through with other public-sector agencies. In some aspects of research on productivity it might need to have an ongoing stewardship role. In others, its responsibility might be to promote foundation work, but then pass on the ongoing upkeep of this work to a relevant agency. There is a precedent for this approach. The original development of the methodology for measuring New Zealand aggregate labour productivity and its components for the market-sectors (or 'measured' sectors) that is now regularly published by Statistics New Zealand was originally prompted by work in the Treasury as part of Treasury's Growth Programme of the

⁹ Conway, P. (2018), "Can the Kiwi fly? Achieving productivity lift-off in New Zealand", *International Productivity Monitor* (forthcoming).

early to mid-2000s. Treasury staff initially collaborated with SNZ staff to help develop the methodology that formed the basis of regular publication of New Zealand productivity by SNZ.

(b) Resourcing

The budgeted funds available for the ERT work programme was originally determined as a fixed proportion (ranging between 12 and 10 per cent) of the total Budget PC budget. Hence, the ERT is financed in effect on the basis of a programme-based funding model and is not dependent on competing for contestable external funds. Nevertheless, without a formally agreed medium-term programme of research, ERT is at risk of being treated as a residual component of the overall PC budget. This may explain why actual ERT expenditure has varied substantially since the inception of the PC, and during the last two years there has been a significant decline in the PC's funding allocation to the ERT in order to supplement support for Government directed PC Inquiries.

The implementation of a medium-term research plan for ERT with annual monitoring and re-calibration may, as suggested in the previous section, help reduce these financial risks. This approach would make more transparent the reasons for variations in funding and the consequential trade-offs.

To supplement its annual PC funding allocation, the ERT should explore opportunities to support productivity research priorities in other ways. In particular, there may be scope to support academic and other external researchers to compete for contestable funding from for example the Marsden Fund (particularly now that Marsden Fund supported research is required to demonstrate relevance to New Zealand) or the MBIE Endeavour Fund. Finding ways like this to facilitate support to academics and to engage them on research on ERT priorities may be one way to broaden the pool of talent the ERT can involve in its research programme.

(c) Assessment of ERT's research productivity

The research productivity of the ERT was assessed by deriving the research output per effective full-time researcher (eftr) available for the ERT research work programme. Over the period 2010/11 to 2017/18 the net eftr per year has varied considerably. The eftr per year available for the ERT research programme has varied between 4.7 and 2.2 and has averaged about 3.3 eftr per year. The research output taken for this period is that shown in Table 1. The output per eftr can be benchmarked against the research output per eftr in a research active department for a related discipline in a top New Zealand university (as indicated by recent Performance-based Research Fund, PBRF, assessments of university research performance).

This assessment is inevitably only an approximation, but there would seem to be scope for improving the rate of research productivity of the ERT. Using as the resources available to fund both the number of ERT researchers and the work on ERT projects undertaken by external researchers provides a similar conclusion. This conclusion would be strengthened if

the teaching commitments of university academic researchers is taken into consideration, and if it is recognised that the ERT research output is predominantly in the form of research papers rather than publications in peer-reviewed research journals or published books which tend to have a longer gestation period.

As emphasised previously, the ERT research output has materially advanced understanding of New Zealand's productivity performance. Nevertheless, a number of factors may be impeding the rate of research output. As discussed in Sections 6 and 7 below, a significant amount of ERT staff time is devoted to coordinating with other Government agencies interested in productivity. Another factor that is likely to impinge on research output is potential disruption caused by the changes in staff research capacity within ERT. Although changes in staff availability are taken into account in trying to measure eftr, the variation in ERT staff may have been disruptive to the progress of the research programme. The actual research staff within the ERT available to focus on ERT research projects in any year has varied considerably. Some of this variation is due to resources transferred to support PC Inquiries. Other factors that might warrant closer scrutiny are the process of research supervision, the time taken to provide feedback on draft research papers, and the balance of time allocated to media and public-sector engagement compared to research.

(d) Quality assurance

The ERT process of quality assurance of research evidently goes through the following stages: (i) At an early stage the research method to be applied and subsequent initial findings are discussed at a workshop that will typically involve internal staff and external stakeholders and researchers; (ii) further along the process, an early draft of the research report is assessed internally by the ERT Director and discussed with the PC Commissioners; (iii) when a draft research report is at a later stage of development, it is also discussed with external stakeholders; and finally (iv) all Research papers are refereed internally and externally before being approved for publication on the PC website.

An observation made in previous Reviews was that the quality assurance processes were not documented nor made sufficiently aware externally. These Reviews observed that, although there is a commitment to public release of the ERT research papers they were not able to sight documented standards for these publications nor sight documentation for the peer review of Research papers. The quality assurance processes for each type of Research paper have still not been documented. Most of the published papers include "Acknowledgements" which provide some indication of the degree of consultation undertaken prior to completion of papers. But that is not sufficient to explain the quality assurance process that is applied.

In light of this previous criticism and for the benefit of enhancing confidence in the quality assurance process, it would be prudent if, in addition to defining what a Working Paper represents and what a Research Note represents, the PC explained the quality assurance process typically applied to each category of Research paper. This is standard practice for research journals and it would be helpful for the PC research paper series.

This Review recommends that the ERT document the quality assurance process required for all papers under consideration for publication on the PC Research Papers site. The quality assurance process should involve the following elements:

- (i) The approval process applied to decide on funding or allocation of ERT researchers to support the research;
- (ii) Expectations with respect to workshop and/or conference presentations of draft papers;
- (iii) The refereeing process: Each paper under consideration for publication on the PC web-site should be subject to refereeing, and the selection of referees should include at least one external referee;
- (iv) Internal documentation of the date of commissioning, date of completion for each Research paper, and date of publication on the web-site;
- (v) Documentation of the techniques and data used, and where feasible, storage of the data applied so there are opportunities for future researchers to replicate and build on that particular research.
- (vi) Indicate on the Research Papers web-site the links to the journal site of any PC research papers that subsequently appear in peer-reviewed journals.

This type of documentation process should not be onerous since it is not unusual for experienced researchers to maintain these types of records for each project. With respect to the documentation of data sources, since this research work is funded by and 'owned' by the PC, the institution should itself maintain and hold this documentation and any databases where feasible. The monitoring and documentation of the stages through which each paper passes and the documentation of data sources and techniques applied could be the responsibility of administrative staff.

(e) Research web-site, nomenclature for papers and international research paper databases

The PC web page provides a list of and links to pdf versions of research papers of different standing under the heading "Research Papers". Apart from the statement appearing on this site stating that "Research papers set out an official Commission viewpoint. Working papers contain the views of the individual author/s", there is nothing to guide readers as to what differentiates these papers.

There is a variety of unexplained categories of papers on this site which include "Research Papers", "Working Papers", "Staff Working Papers", and "Research Notes". There are also some papers shown with the same number. Some of these papers are reproductions of working papers listed on the sites of other institutions (for example Motu and the Crawford School of Public Policy). The practice of listing a research or working papers on more than one site is not unusual, but those listed on the PC site do not seem to have a separate PC working paper or research paper number. Furthermore, the practice of including an abstract and listing JEL classifications on papers varies across the papers and appears to be *ad hoc*.

The PC “Research” site could benefit from more systematic editing, categorising and numbering of publications prior to posting them on this web-site. It would be helpful also for readers and other researchers wanting to understand the quality assurance process and to be able to accurately cite these papers if the web site included an explanation of the criteria used to assign papers to the different categories. The PC should also review the merits of trying to differentiate between “Research papers”, “Working papers” and “Staff Working Papers”, and perhaps limit the categories to “Research Papers” and “Research Notes”. The way papers produced by ERT staff or supported by ERT that also appear in another institution’s working paper series may also need reviewing.

Other useful information could be considered for listing on the PC Research web-site. For example, the PC could consider creating a separate page listing and providing links to articles prepared by PC staff that appear in peer-reviewed journals on productivity. It may also be of value to the wider research and policy community to provide a page with links to journals and relevant pages of institutions (such as the OECD and IMF) which are providing research and policy material relevant to productivity.

Listing research papers on international databases is a common method used by institutions to increase global awareness and impact of their research. As far as I can deduce, the PC research papers are not listed on any international research database. Probably the most relevant database on which to include ERT research papers is “Research Papers in Economics” or RePEc¹⁰. Listed on this site are 38 New Zealand working paper series, including the Treasury Working Paper Series, Motu Working Papers, NZIER Working Papers and most of the New Zealand university-based economics departments’ working paper series¹¹. RePEc generates information about frequency of access to and citation of working papers listed on its site. Citations are not necessarily the most accurate way to assess the impact of published research, and particularly research that is aimed at influencing public policy. But sites such as RePEc do generate impact factors and other metrics the ERT may find helpful to gauge the extent of the impact of its work on the international research community.

(f) Progressing research papers to peer-reviewed journal publication

As observed by previous Reviews, progressing research to submission and publication in peer-reviewed research journals is likely to be encouraged by the ERT Director. But, as also observed previously, there does not seem to be any recognition that this step could be

¹⁰ The RePEc site is available from this link: <http://repec.org/>. The site explains that RePEc (Research Papers in Economics) is a collaborative effort of hundreds of volunteers in 99 countries to enhance the dissemination of research in Economics and related sciences. The heart of the project is a decentralized bibliographic database of working papers, journal articles, books, books chapters and software components, all maintained by volunteers. The collected data are then used in various services that serve the collected metadata to users or enhance it. So far, over 2,000 archives from 99 countries have contributed about 2.6 million research pieces from 3,000 journals and 4,600 working paper series. Over 50,000 authors have registered and 75,000 email subscriptions are served every week. See below on how you can be part of this initiative.

¹¹ See the link: <https://ideas.repec.org/i/p.html>

additionally valuable. While it is appreciated that taking research papers through this extra step will involve more work, there can be significant advantages in exposing research papers to international calibre review.

The advantages can include exposure to more rigorous reviewing, constructive feedback on research methods and ideas, and greater local and international exposure of the research. Typically, the refereeing process for peer-reviewed journals involves blind assessment, and the chances of striking an independent expert is probably enhanced. Hence, the process could enhance the standing of the research published by ERT if successfully published. Furthermore, if the ultimate aim of the ERT research is to influence and guide public policy, there is much at stake and this type of scrutiny of the quality of the research would seem to be a responsible step to take.

There are several other benefits. Submitting research to peer-reviewed journals can be a valuable part of the process of developing research skills for the staff involved. In addition, publication in well regarded peer-reviewed journals can generate an important signal to external researchers and prospective new staff and thereby help attract a wider range of researchers to the idea of research collaboration with the ERT. Moreover, the process is a valuable check on the robustness of an institution's own internal quality assurance process. If an institution is never trying to publish its research in high quality independent peer-reviewed publications, it can never be fully assured of the adequacy of its own quality assessment process.

Some ERT staff and researchers working on PC Inquiries have taken this extra step which is commendable. For example, ERT staff and researchers working on aspects of the PC Inquiry on "New models of tertiary education" were encouraged to do this and have successfully published some of their work in a respected peer-reviewed research journal¹². There would seem to be considerable potential for other work to be taken a step further and prepared for peer-reviewed research journal publication. Discussions during this Review revealed that the research results from some recent ERT research projects are being prepared for submission to peer-reviewed research journals and policy journals.

5. The quality of the economics and analysis in a selection of research papers

The selection of papers assessed for the quality of the economics was restricted to a sample of papers from categories (i), (ii), and (iii) in Table 1 and those published since the third Review in September 2016. The approach applied here is similar to that adopted in the second Review which was to quality benchmark the selected papers against the standards that would be expected by similar types of working paper series and by specialist and regional peer-reviewed economics journals. But the detail of each review is not at a level that would be expected for a peer-reviewed economics journal.

¹² Lisa Meehan, Gail Pacheco, and Zoe Puchon (2018), Explaining ethnic disparities in bachelor's degree participation: evidence from NZ, *Studies in Higher Education*, DOI: [10.1080/03075079.2017.1419340](https://doi.org/10.1080/03075079.2017.1419340).

In general, the previous Reviews were complimentary in their judgements of the standards achieved. The 2014 Review concluded that the ERT had developed into a strong and credible unit as evidenced by the number and quality of Working Papers produced in 2013/14. The 2015 Review concluded that the designated package of applied research as a whole is clearly at the domestic frontier, and that each of the firm-level research papers within the Productivity Hub's FLARE "Innovation and Reallocation" themes would fit somewhere within the top half of the global frontier spectrum. The 2016 Review remarked that the body of research produced was technically sound.

The conclusion of this Review is that for the sample of more recent strictly research papers assessed, the quality achieved previously has been sustained. In particular, the papers on "The impact of R&D grants...", "Innovation and performance of New Zealand firms...", and "Estimating Quality-Adjusted Productivity in Tertiary Education..." would be worthy of submission to appropriate high-quality journals. The paper "Achieving New Zealand's productivity potential" is of a different genre but is also of a very good standard for this type of paper. Brief comments follow on the sample of four ERT papers assessed follows.

1. The impact of R&D grants on the performance of New Zealand firms: Research Note 2017/5

This paper was also motivated by prior work on New Zealand firm R&D investment, and by OECD research which suggested that a significant proportion of New Zealand's 'productivity gap' relative to the OECD average could be due to a relatively low level of R&D investment by New Zealand firms. The research reported in this paper uses the Statistics New Zealand's Longitudinal Business Database (LBD) to evaluate the impact of Government funded R&D grants on a range of performance indicators of New Zealand firms. The procedure used is informed by prior international and New Zealand research evaluating the impact of research grants on firm innovation and productivity.

The main challenge with this type of policy evaluation research is to identify a suitable 'control group' of firms that did not receive research grants, in order to statistically test whether there are significant differences between performances of the two groups of firms that can be attributed to, in this case, a research and development grant scheme. To address this issue, this paper uses a propensity-score matching method to select a set of non-recipient firms that are not systematically different from grant recipients and compares the performance outcomes of the two groups. This is a method applied in studies published in internationally peer-reviewed journals, which are referenced and explained. The paper also builds on two earlier evaluations of the New Zealand Government's R&D assistance programme to inform the statistical model to select non-recipient firms, and other New Zealand research that has utilised the LBD to measure firm performance indicators, such as firm-level multi-factor productivity.

The author is suitably cautious interpreting the results from the statistical comparison of recipient and non-recipient firms and demonstrates a good understanding of the limitations of the data and techniques applied. The calibre of research is of a high standard and would

be of a level suitable for the paper to be considered for publication by an international quality peer-reviewed journal in either the field of productivity or public policy evaluation. Academic researchers interviewed and familiar with this paper concurred with this assessment and considered there should be more emphasis on this type of work.

The paper is a valuable contribution to understanding the potential and also the limitations of using the LBD for evaluating the impact of policy initiatives on firm-level productivity performance. The paper is also a valuable contribution toward understanding the types of data that need to be collected for this type of policy evaluation. It is an excellent demonstration of the type of research techniques that can be applied to the analysis of the impact of policy initiatives aimed at improving New Zealand's productivity performance.

2. Innovation and the performance of New Zealand firms, Staff Working Paper 2017/2, November 2017

The main objective of this paper is to try to explain the level of R&D investment in New Zealand firms and whether the apparently relatively low rate of investment can be explained by relatively low returns to innovation. International research discussed in the paper finds that multi-factor productivity growth for product innovators in Western Europe and Australia tends to be higher for non-innovating firms. This paper was also motivated by OECD research suggesting that a significant proportion of New Zealand's 'productivity gap' relative to the OECD average could be due to a relatively low level of R&D investment by New Zealand firms.

The data used are drawn from the LBD compiled by Statistics New Zealand as part of the Integrated Data Infrastructure (IDI). The LBD combines financial data for New Zealand firms collected by Statistics New Zealand and the Inland Revenue Department (IRD). It also includes self-reported measures of R&D expenditure and innovation collected by Statistics New Zealand in the Business Operations Survey (BOS), and data on patent & trademark applications filed with the Intellectual Property Office of New Zealand.

This study addresses an important issue and attempts to test one possible explanation for New Zealand's firm productivity performance. It attempts to test whether there is a significant difference in business performance between firms that innovate and those that do not, and if there are differences whether these can be attributed to the returns to investment in innovation. As the paper carefully explains, there are significant statistical challenges in undertaking this type of assessment using the LBD and self-reported measures of innovation. These challenges include the possibility that innovation is endogenous and is influenced by the performance of the firm. The paper discusses techniques applied in the international literature to deal with this endogeneity issue and explains why the study uses a differences-in-differences approach, how this procedure controls for fixed firm characteristics and how the LBD is used to control for differences in firm characteristics, and how they derive a measure of (unobservable) multi-factor productivity (the study applies a technique for estimating MFP previously applied to the LBD and published by Motu).

The paper presents a rich array of empirical results showing, after controlling for various factors that could influence firm performance, how investment in innovation tends to vary in its impact on a range of business performance measures (employment, value-added, labour productivity, MFP and survival), how these tend to vary by firm type, such as size and age, and by type of innovation. The paper applies several important robustness tests, including for example testing for the implications of the likelihood that different innovation measures all suffer from measurement error which could bias the estimation of the returns to different types of innovation.

The results presented in this paper are an important contribution to knowledge of New Zealand productivity performance. The results contrast with similar type international studies and suggest that the returns to innovation for New Zealand firms are relatively low, and provide a potential explanation for why New Zealand firms invest relatively little in R&D. The authors are nevertheless cautious in drawing this conclusion and note in particular that the results in this paper are not generated using the same statistical approach as the international studies they are compared with. The research in this paper is of a high standard and would be of a level suitable for consideration for submission to an international quality peer reviewed journal in either the field of productivity or a general-purpose economics journal. Academic researchers interviewed and familiar with this paper concurred with this assessment.

3. Estimating Quality-Adjusted Productivity in Tertiary Education: Methods and Evidence for New Zealand, VUW Working Papers in Public Finance 17/2017

Although there has been some progress in recent years towards developing techniques for measuring public sector productivity, there remain significant challenges and a lack of international consensus on key questions such as appropriate ways to adjust for quality and the selection of appropriate price deflators. Hence, large parts of the non-market sector do not have adequate measures of performance. The objectives of this research paper are to examine the sensitivity of tertiary sector productivity measurement to the inclusion of a quality dimension, and to identify the implications of applying different quality adjustments for estimates of productivity trends in the tertiary sector.

The paper points out that where methods to include quality dimensions have been applied to the estimation of productivity in the public sector, these have mostly been for health and parts of the education sector. But although quality adjustment has been shown to play an important role in the education sector, tertiary education has received much less attention in part because of the difficulties accommodating the more multi-faceted nature of tertiary output. This paper is therefore tackling a complex but important aspect of the measurement of productivity in one part of the non-market sector, but which is crucial if progress is to be made in producing appropriate measures of productivity in the tertiary sector. This type of work is crucial in order to provide a more robust basis to understand where there may be potential for improving performance in this sector.

The authors stress that their objective is not to identify final estimates of quality or productivity in tertiary education. The aim is to examine the sensitivity of tertiary sector productivity to the inclusion of a quality dimension, and to identify how far different quality adjustments yield similar or diverse productivity trends. This is an ambitious and important paper that breaks new ground for New Zealand and is likely to be viewed as an important contribution to the international literature on productivity measurement for public sector services and other non-market sectors.

The paper reveals how quality adjusted productivity indices for the tertiary education sector may be constructed, the importance of the method of price deflation applied to financial variables to obtain real variables, and it proposes a number of methods for making quality adjustments to 'basic' measures of the growth rates of labour and multifactor productivity. The results reveal that measures unadjusted for quality are unlikely to provide sufficiently robust signals about changes in productivity performance in the tertiary sector on which policy advice could be built. For example, the paper reveals how quality adjustments lead to estimates of faster productivity growth in New Zealand tertiary education than simple unadjusted measures would suggest.

The quality of the research is of a high standard probably at the international frontier in this field. The work would most likely be publishable in a leading international field journal specialising in productivity or the economics of education. Experienced researchers interviewed during this Review concurred with this view and endorsed the ERT support for this type of research. The research produced is an excellent illustration of what can be achieved by the ERT when it concentrates on supporting research on core productivity issues and collaborates with highly experienced external researchers. This work helps underscore the case for further investment in attempting to measure productivity in public services in order to provide a more robust basis for evaluating improvements in public service delivery and impact.

4. Achieving New Zealand's productivity potential, Research Paper 2016/1, November 2016

It is important that the ERT take stock of its research and identify how this work can help guide and inform public policy and strengthen the bridge between the PC and core public policy institutions. This paper was prepared to serve this role. It has two main purposes. One purpose is to provide a stocktake of the insights from research of the proximate reasons for New Zealand's productivity performance at the aggregate and firm levels and benchmarked against the performances in other OECD economies. A second purpose is somewhat more exploratory and discusses some reasons why those features exist and where public policy attention should focus to improve New Zealand's productivity growth. This is not generating original research but it is a valuable synthesis in the same genre as OECD and IMF country studies. It serves a similar purpose as the synthesis of research and allusion to policy priorities undertaken some fifteen years earlier by the Treasury, although the ERT paper is able to draw

on a richer base of research on New Zealand firm performance characteristics using the LBD than was available at the time of the earlier Treasury synthesis¹³.

The synthesis of the insights from the body of research undertaken by the ERT and other researchers includes insights from research on the rate of technology diffusion in New Zealand and uptake by New Zealand firms compared to international firms, market selection effects amongst New Zealand firms and the suggestion this is impeding improvements in resource allocation, the rate of firm investment in knowledge capital, the participation of New Zealand firms in global supply chains, and the distribution of employment across firms differentiated by productivity. The paper also includes a commentary on the more familiar New Zealand macro-economic statistics considered to be associated with productivity, such as trade intensity and the rate of capital-deepening. Other economic features discussed but which have more tentative connections with productivity are New Zealand's net migration flows and real interest rates compared to other developed countries.

The paper also suggests areas for policy attention. Some of this material usefully draws on material from PC Inquiries into New Zealand's regulatory system, education system and the services sector. Some of the material is also picking up on earlier debates about policy priorities, including macroeconomic policy settings, that may be areas that warrant further enquiry. The discussion on policy issues tends to be on the market sectors of the economy where productivity measurement is more developed, and not on the non-market sectors (such as the public sector) where productivity measurement is more challenging. Nevertheless, this work is to be encouraged and can be viewed as a useful basis for debate about where future research and future policy might be focussed. It forms a very good basis for engagement with policy institutions, particularly those with stewardship responsibilities over fiscal, monetary, competition and regulatory, labour and industry policy. It is commendable that a second shorter paper which updates some of the discussion in this Research paper was also produced. This shorter paper has been accepted for publication by the *International Productivity Monitor*¹⁴.

Both the Research Paper 2016/1 and the shorter paper provide a good basis for guiding the prioritising of future research by the ERT and the preparation of a medium-term research programme and sequential annual plans. This work should also be valuable in informing Government agencies of their own work priorities in this area and informing their discussions with Ministers, as discussed in Section 6. Furthermore, the ERT research and other research on New Zealand productivity characteristics is now sufficiently rich to inform Government as to where PC Inquiries might focus in future to help guide the development of policies that are clearly directed at improving New Zealand business productivity performance.

¹³ The Treasury, (2004), *New Zealand economic growth: An analysis of performance and policy*, Wellington. Available from this site: <https://treasury.govt.nz/sites/default/files/2007-11/economicgrowth.pdf>

¹⁴ Paul Conway (2018), Can the Kiwi fly? Achieving productivity lift-off in New Zealand, *International Productivity Monitor* (forthcoming).

6. The effectiveness of the Commission’s engagement with the productivity research community and improving the coordination and collaboration among public sector agencies working on productivity

As already mentioned, the ERT has played a significant role in the creation and functioning of the GEN Productivity Hub and in generating an agreed work programme for the Hub. Representatives of public-sector agencies interviewed commented on the valuable role of the Hub in bringing agencies together, generating a shared understanding of productivity research priorities, funding research and deepening understanding of New Zealand’s productivity performance and characteristics. This process resulted in foundational work on research techniques to be applied to longitudinal firm data, and on utilising the LBD to understand the importance of factors such as spacial and geographical issues, the propensity for investment in knowledge-based capital investment, and competition, on firm performance. The Hub members collaborated on creating funding of several foundational research papers on these issues and the ERT, along with Motu, was an important contributor to that research.

The work of the ERT and the Hub has meant that some core public-sector agencies previously involved in productivity research felt they could downscale their own capability in the area of economic growth and productivity. As a consequence, they have become more reliant on the ERT (and PC Inquiries) to guide policy priorities. Several remarked that Research paper 2016/1 “Achieving New Zealand’s productivity potential” is appreciated by Government agencies as a valuable input to the determination of their own work priorities. This and other contributions by ERT staff have been helpful for the preparation of the Productivity Hub’s own review of insights from research using firm-level data, gaps in knowledge and the Hub’s future priorities¹⁵.

Within the Productivity Commission itself, the Inquiry teams have appreciated the opportunity to draw on the economics and research skills of ERT staff. Their familiarity with various New Zealand datasets, technical skills in managing and interpreting data and applying suitable statistical techniques to utilise data contained in for example the LBD, IDI and Sofie databases and other sources have proved to be valuable to Government directed PC Inquiries. Examples cited during discussions with PC Inquiry staff included contributions to work on “Housing affordability”, “New models of tertiary education”, and the current inquiry on “State sector productivity”.

The opportunities for ERT staff to work on Inquiries brings together staff with institutional and policy knowledge with those with technical data analysis and economic research skills. This can be a highly productive combination and can generate unexpected and valuable contributions to Inquiries. It can also uncover valuable productivity related research topics. It

¹⁵ Corey Allan (2018), “Getting under the hood: Insights from Recent Firm-level Productivity Research in New Zealand”, Ministry of Business, Innovation and Employment, June. PP 28.

appears that these opportunities have in the past tended to arise serendipitously. This is to be expected where staff with different skills work in close proximity, but exploitation of the potential of this type of collaboration also depends on the goodwill of the respective managers to agree to commit staff resources to these opportunities. Although a proportion of ERT staff time has at various times been assigned to Inquiries, it may be prudent to also allow for unexpected opportunities for fruitful collaboration between ERT and Inquiry staff in future ERT budgeting. If, as discussed earlier, there is a tendency in the future for the ERT staff to shift their research work more toward work on policy related research, marrying the skills of Inquiry and ERT staff and fostering collaboration may become more important.

ERT staff have made a considerable effort to engage with the wider-research community in New Zealand, including academic researchers interested in productivity, economic growth and related topics. This outreach has included participation in local and overseas research conferences, and visits to economics departments in New Zealand universities to discuss the work of the ERT and to make presentations to students. But with very few exceptions, such as the fruitful collaboration with the Chair in Public Finance at Victoria University of Wellington, the efforts to engage academic researchers has not been particularly successful.

There may be several factors contributing to this. Discussions with a selection of senior academics working in fields relevant to the work of the ERT suggest that awareness of the work of the ERT generated through these outreach initiatives varies across universities. Some suggested that an annual distribution to individual academic researchers of a report that comprised a description of research completed and published, key insights, and a list of the ERT's forthcoming research priorities would help raise awareness.

Further, since academic staff have significant time committed to teaching and research supervision and also typically schedule their research to enable them to effectively utilise the breaks from teaching, it is important that ERT engagement recognise this and be able to signal what their medium-term research plans are, how individual academics could potentially be involved, and work out feasible times for involvement. Forming close and ongoing relationships with selected academic researchers, whether local or overseas, with interests in the field is probably the most effective way to achieve more collaboration. Funding would of course be an important lubricant to this process. As discussed earlier, developing an ongoing relationship with key academic researchers may generate opportunities to support academics to compete for funding from contestable funding sources. Similarly, demonstrating a commitment to robust quality assurance processes, promoting publication of research results in peer reviewed journals, and listing the PC research papers on RePEc could help attract academic researchers.

7. The wider impact of the Commission's research work

The ultimate aim of the ERT's productivity research should be to inform, influence and improve business practice and public policy, either directly or by informing PC Inquiries, with

the ultimate goal of improving New Zealand's productivity performance. While the art of assessing the impact of public policies or business initiatives is reasonably well developed, identifying what influenced those decisions is more of a challenge and is beyond the scope of this Review. The focus of this Review is therefore on the initiatives taken by the ERT to communicate the insights from its research programme to stakeholders including for example, the wider research community, PC Inquiries, Government policy agencies, political parties, and the public more generally.

The 2014 Review observed that the ERT had made significant contributions to the PC Inquiries by contributing chapters to Inquiry reports. It also observed that the publications of its Working Papers, Research Notes and 'Cut to the Chase' summaries were contributing to debates and wider understanding of the influences on NZ productivity. Three other initiatives were commended: (i) the relationships established with the Productivity Hub and Motu; (ii) The contribution to the Productivity Hub's establishment of a "Forward looking agenda of research" (FLARE); and (iii) A Productivity Symposium held in conjunction with the NZAE which brought together NZ and overseas researchers and public servants.

The 2015 Review concluded that the ERT had put considerable time into its engagement and collaboration roles, including a significant role in developing the Productivity Hub and an "impressive" range of communication activities, although it questioned whether the level of commitment on communication relative to the time required for research and publication would be warranted in the future.

The judgement of this Review is that, as observed in the previous Reviews, ERT staff have continued to be very active in communicating the insights from the research programme to stakeholders and engaging with the wider research community, but the engagement and communication approach has changed somewhat.

The ERT staff, along with PC Inquiry staff, contribute short commentaries on the productivity related matters on the PC 'Productivity Blog' site¹⁶. These blogs provide a brief commentary on insights from ERT research, from seminars and conferences, or from work undertaken for PC Inquiries. They broaden the public reach of the PC and the ERT. However, the use of the 'blog' medium appears to be tapering off and the frequency of contributions to the 'Productivity Blog' has declined during the last two years. There have been 23 blogs contributed to this site since March 2013, but only two during the past two years and the last was in July 2017. Similarly, the use of 'Cut to the chase' summaries of the insights from Research papers (which haven't appeared with more recent Research papers), has also declined.

Recently there has been more emphasis on taking up opportunities to contribute articles to professional magazines. An article appeared recently in an issue of *Management Magazine*; another in *Policy Quarterly* in August last year, and another is being prepared drawing on

¹⁶ Available from this site: <https://www.productivity.govt.nz/news-and-events/prod-blog>

recent measurement of productivity in the tertiary education for a special issue of *Policy Quarterly* on productivity. The article forthcoming in *International Productivity Monitor* mentioned in section 5 is another example of contributions of this type. It is unclear whether this represented a shift in communication strategy or is more opportunistic. Nevertheless, articles in professional magazines of the type referred to may be more effective at reaching private sector and public-sector management professionals and if so, these initiatives are commendable.

The ERT staff have been very effective at attracting commentary in the wider public media. During the three years between June 2015 and June 2018, about 90 items have appeared in New Zealand newspapers, internet news sites (such as Stuff.co.nz), radio, television, professional magazines and blogs (excluding PC sites). The frequency of media attention has increased during the last 12 months. Although only a partial indication, these data suggest the work of the ERT is starting to gain wider public attention and impact. The 'stocktake' paper is evidently attracting interest from representatives of political parties. It may be useful if the ERT was to maintain an ongoing record of its full range of outreach initiatives through its media engagement, workshops and seminars and engagements with policy community.

Annex A

Terms of reference

Purpose

Undertake an independent expert evaluation of the Commission's function to undertake and publish research about productivity related matters. This includes evaluating a 'package' of research work undertaken by the Commission during the period July 2016 to end-June 2018. Where appropriate and useful the evaluation will also cover the Commission's work with the Productivity Hub and the effectiveness with which research is used to influence policymaking and enhance the Commission's reputation.

Context

An independent expert evaluation of the Commission's research work programme performance is a key component of the Commission's overall performance measurement and a further way of identifying how the Commission can improve its performance.

Scope

Undertake an evaluation of the Commission's performance in delivering on its function to undertake and publish research about productivity related matters. This evaluation will focus on:

The relevance and materiality of selected Commission Working Papers/Research Notes in advancing understanding of New Zealand's productivity issues:

- ⇒ This scope area would evaluate and comment on the extent to which the selected package of research work sourced all relevant research and information, engaged with the right people, framed research questions, focused on the issues most significant to the topic (or topic area across papers if relevant), and went into sufficient depth on the issues covered.

Good process management:

- ⇒ This scope area would evaluate and comment on the extent to which the papers in the selected package of research work were delivered to schedule or within assumed planning considerations.

The quality of the economics and analysis in the selected package of research papers:

- ⇒ This scope area would evaluate and comment on the quality of the information analysis and findings of the selected package of research work and how quality is being assured. The scope area recognizes that research can be undertaken for different purposes and therefore may have different quality expectations associated with those different purposes. The evaluation could comment on the consistency of approach and

presentation across different papers, whether conclusions follow from analysis and findings, whether the research recognizes larger bodies of work or wider debates and their relevance, the clarity & robustness of analytical and methodological frameworks, as well as the use of quality review processes (peer or independent).

The effectiveness of the Commission's engagement with the productivity research community and its effectiveness in improving the coordination and collaboration among public sector agencies working on productivity:

- ⇒ This scope area would evaluate and comment on the ways in which the selected package of research work sheds light on the quality of engagement by the Commission with the productivity research community and if it is making a positive contribution toward improved levels of coordination and collaboration in productivity research.

The effectiveness of the Commission's presentation of research findings and recommendations.

- ⇒ This scope area would evaluate and comment on whether the findings and recommendations in the selected package of research work were clear, if the style of writing and language used was clear, and if the papers provided clarity about the steps leading on from the research (how future questions might be defined as an example).

Commenting on the wider impact of the Commission's research work:

- ⇒ There is also scope for the evaluation to provide broader commentary on the impact of the Commission's research work to inform both Commission reports and the Commission's contribution to the wider debate and promotion of understanding around the drivers of productivity in New Zealand to derive greater productivity performance. In this regard the evaluation could consider the extent to which the research work evaluated:
- helped to lift the standard in New Zealand for high-quality analysis and advice on productivity issues;
 - contributes to future work on the topic areas in the selected package of research work being better focused and to use resources more effectively;
 - contributes to increased understanding of the topic areas in the selected package of research work; and,
 - increases understanding of the importance of productivity more generally.

Deliverable

A report summarising the independent expert evaluation, in the key areas of scope above, which the Commission can publish or quote in reporting its performance (such as in any inquiry assessment the Board may publish, or in the Annual Report), and use to improve its performance.

Approach

Evaluate the Commission's performance based on a review of the relevant research papers, key supporting documentation and communications material. Where necessary, discussion with key staff and Commissioners may also be used in the evaluation. There will also likely be a need to consult with key external stakeholders.

The independent expert reviewer is not required or expected to be an expert on the subject matter of the package of research work, but rather to use their experience and judgment of developing and presenting advice to Government and external audiences.

Key References

The key reference documents for completing the evaluation include:

- Selected research reports/paper published by the Commission and other key documentation (including any relevant communications material published by the Commission in conjunction with its research work). The selected package of research outputs is listed below Attachments
- As background and context for the independent evaluation - the Commission's performance framework and research output performance measures.

Annex B

People Interviewed

Outside the New Zealand Productivity Commission:

Professor Norman Gemmell, Chair in Public Finance, Victoria University of Wellington

Professor Paul Hansen, University of Otago

Dr Adam Jaffe, Former Director, Motu

Dr John Janssen New Zealand Treasury

Professor Girol Karacaoglu, Head, School of Government, Victoria University of Wellington

Dr John McDermott, Assistant Governor and Head of Economics,
Reserve Bank of New Zealand

Professor Tim Maloney, Auckland University of Technology, Chief Economist at Ministry of
Social Development and Co-Director of the Centre for Social Data Analytics.

Professor Dorian Owen, University of Otago

Professor Les Oxley, University of Waikato

Donna Purdue, Chief Economist, Ministry of Business, Innovation and Employment

Dr Grant Scobie, Economist, Wellington

New Zealand Productivity Commission Commissioners:

Murray Sherwin, Chair, New Zealand Productivity Commission

Dr Graham Scott, New Zealand Productivity Commission

New Zealand Productivity Commission staff:

Paul Conway, New Zealand Productivity Commission

Judy Kavanagh, New Zealand Productivity Commission

Geoff Lewis, New Zealand Productivity Commission

Patrick Nolan, New Zealand Productivity Commission

Daiman Smith, New Zealand Productivity Commission

Secretarial support:

Robyn Sadlier, New Zealand Productivity Commission

Annex C

Summary of observations and recommendations from previous reviews

This is the fourth review of the Productivity Commission's (PC) research function. Previous reviews were undertaken in September 2014 covering the development of the PC's research function from 2011 to 2014; in September 2015 covering the 2014/15 year; and in September 2016 covering the 2015/16 year. The key observations and recommendations made in those reviews were as follows.

The first Review was undertaken three years after the establishment of the PC in April 2011. The main focus was on the development of the Research Unit, the relationships it had built up with the research and policy community, initiatives taken to widen engagement and to communicate and promote research results and key messages about New Zealand's productivity performance. The overall assessment was that the Economic Research Team (ERT) had developed into a strong and credible unit as evidenced by: (i) the number and quality of Working Papers produced in 2013/14; (ii) the strong and productive relationships developed with outside researchers and policy-makers; (iii) the leadership and commitment that was evidenced by the development of the Productivity Hub.

The main recommendations for the future development of the research function of the PC were that the ERT should: (i) be clear about the long-term research capabilities needed; and (ii) those skills should include the ability to credibly bridge the research and policy worlds; (iii) and the capability to distil and synthesise relevant insights from a wide range of research in order to be able to increase the PC's impact, and there were suggestions about how the ERT could do this and go about building strong intellectual communities; (iv) That the ERT should build knowledge around some key themes such as those established by the Productivity Hub; and (v) establish explicit research standards and procedures for assuring quality.

The second Review undertaken in 2015 focussed more on the quality and relevance of the research output of the Research Unit. The 'package' of research assessed included three PC Working Papers, a Motu Working Paper commissioned by the PC, and three PC Research Notes. The conclusions from the assessment of those papers was that (i) in different ways, each paper provided valuable evidence-based research findings capable of underpinning recommendations and policies designed to improve New Zealand's productivity performance and future economic wellbeing; (ii) that while six is a relatively small number of research publications, the emphasis on producing a small number of high quality, substantially non-overlapping papers that are focussed within the Productivity Hub's "Forward looking agenda of research"(FLARE) framework was judged to be appropriate; (iii) that the emphasis of the Commission's a research and the priorities of the Hub's FLARE on specific micro-level research topics such as those using Statistics New Zealand's LBD and building on the earlier initiatives

in this dimension by staff at Treasury and Motu during the 2000s was appropriate and important; (vi) and that contributing to better definition and understanding of productivity performance in the so-called 'hard-to-measure' sectors of the economy, and in particular the public sector, is appropriate and important. The Review expressed a view about the balance of the ERT staff time on research versus policy-making activity, suggesting that (vii) the role of the ERT should primarily be to undertake and publish the research-based evidence necessary for credible policy making and the team itself should not be expected to make policy recommendations, as that responsibility should lie with Commission Inquiries and the policy advisors within relevant Government Ministries.

With respect to other aspects of the Review it was noted that (i) while the PC research process has a sequence of quality assurance procedures which are well understood internally, they were still not documented nor made sufficiently aware externally; and that (ii) while progressing research to submission and publication in high-quality peer-reviewed journals is likely to be encouraged by the ERT Director, there did not seem to be any formal recognition that this step could be additionally valuable. The Review also concluded that the ERT had put considerable time into its engagement and collaboration roles, including the valued production of "Cut to the chase" releases, a significant role in developing the Productivity Hub and an "impressive" range of communication activities. Nevertheless, the question was raised whether the level of commitment on communication relative to the time required for research and publication would be warranted in the future and that this will need careful assessment.

The third Review undertaken in 2016 also focussed more on the quality and relevance of the research output of the Research Unit. The 'package' of research assessed included one completed PC Working Papers, two PC Research Notes, one conference paper, and two PC Working Papers in progress. The Review concluded that all the papers were valuable in advancing a broad understanding of the mechanisms that influence productivity in New Zealand. And that while many of them suggested elements that might contribute to an understand of the factors that may impinge on productivity in New Zealand, none were able to provide a "sweeping new approach that explained the local problem". While the specific contributions of this body of research were more difficult to distil from this Review, it did note in particular the important contribution of the Working Paper on measuring productivity of the New Zealand education sector and the value of the methodology used to guide similar research on measuring productivity of other Government services. The potential value and importance of completing the so-called "narrative" paper on "Lifting productivity in New Zealand" which it was observed had been in process "for a long time".

As with the second Review, this Review assessed whether a coherent or unifying thread was evident from the set of research papers undertaken in the period. It was observed that a common thread, linked to the Productivity Hub's FLARE priorities, was evident in the form of

a focus on firm (and sectoral) level analysis including productivity dynamics and diffusion (including within this framework, the influence of supply chains, foreign direct investment and the influence of knowledge-based capital). The Review also concluded that this group of papers suggested there were “signs of moving ahead with a wider understanding of the picture of productivity in New Zealand”. This Review also observed concluded that a greater effort was required by the PC to enhance the wider impact of its work and to do this the PC was encouraged to endeavour to promote greater involvement by the academic research community in this work.