

**Review of the New Zealand
Productivity Commission's
Research Function: 2020-22**

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Review of the New Zealand Productivity Commission's Research Function: 2020-22

1. Summary and recommendations

This Review was commissioned to evaluate the Productivity Commission's (PC) economics and research function and its performance in undertaking and publishing research about productivity related matters. The Review is focussed on the work of the Economics and Research Team (ERT), primarily during the period 1st July 2020 to 30th June 2022. It follows five previous Reviews which covered the period from 2011 to June 2020. This sixth Review is required to evaluate the Commission's performance in delivering on its function to undertake and publish research about productivity related matters; the performance of the ERT in implementing recommendations of the 2020 Review; and assess the relevance and quality of ERT research.

As a result of a decade during which the real-value of annual Government funding for the Commission had steadily declined, the funding to support the ERT and research had declined significantly. The financial support for the ERT and its functions has improved following a rise in the nominal value of funding for the PC by about 20 per cent in 2021. The Commission appointed a new and experienced Director in February 2021 who has undertaken a process of rebuilding the ERT.

With the support of the Board and additional financial support, the Director has been able to markedly improve the level of research experience, skill and capacity within ERT. With the appointments that have already been made, ERT is perhaps the strongest it has been for several years. The benefits from rebuilding the ERT with experienced leadership and research capability is already evident in several ways. There has been a stronger alignment of ERT work with the requirements of PC Inquiries and collaboration with Inquiry teams. Feedback from PC staff noted the depth of cooperation and significant research and leadership contributions that ERT staff have made to PC Inquiries in recent years. Comments from people from outside the Commission who were interviewed suggest that the quality and engagement shift from the ERT that taken place inside the Commission is also evident in engagement and collaboration with other stakeholders, including those within Government policy agencies.

Due to staff shortages at the start of the Review period, the number of research papers published since June 2020 is relatively small. However, there is growing research momentum as a result of the new appointments, and collaboration with researchers at Motu and Victoria University of Wellington. The quality of the research published is of a high standard. The ERT has also become a centre of excellence and guidance to other researchers in the use of the Statistics New Zealand (SNZ) Integrated Data Infrastructure (IDI) available through the Data Lab, and there are plans to publish guidelines on how to access and apply data from the IDI.

The current Director and the previous Director have responded to most of the recommendations of the 2018 and 2020 Reviews. There is a systematic work planning process in place which is developed in consultation with the PC Board and other stakeholders. There is now a systematic quality assurance process in place. There seems to be a stronger determination to seek peer review of ERT research through the refereeing of working papers, the presentation of research at academic conferences, and the publication of research beyond the PC website, including in peer reviewed research journals.

Following a short hiatus during 2020 and early 2021 when the ERT was under-resourced, there has been a rejuvenation of engagement and efforts to strengthen collaboration with Government Departments. This is taking the form of re-igniting engagement through the Government Economics Network (GEN), and various forms of collaborative research activities with Government Departments. There has been a broadening of other engagement initiatives that aim to reach diverse audiences and to enhance research collaboration opportunities. These initiatives range from Op-eds in New Zealand newspapers, research conference initiatives, and research collaboration with selected Government Departments.

With the support of the Board, the Director is developing a work programme that recognises the importance of the ERT aligning its research and other intellectual contributions with the requirements of PC Inquiries while also providing scope to enable ERT to spend a significant amount of time working on other important productivity topics. Following improved resourcing and new appointments, the ERT is in a stronger position today than it was two years ago. The Director has presented plans to further build capacity and this also has the support of the Board. Nevertheless, in the current environment and in particular the acute competition for the skills required by the ERT, there will be ongoing challenges to sustain this momentum.

There are several actions the Board and the Director could take to mitigate these risks and maintain appropriate capability and experience within the ERT. These include:

- (i) Continuing to fine-tune the workplan in consultation with stakeholders, so that it makes clearer the themes the ERT will focus on in the medium-term, in addition to the type of research work required to support PC Inquiries;
- (ii) Establishing closer links with more university researchers that have the research skills to complement those of ERT staff and either collaborate with ERT staff, or undertake research consistent with ERT priorities;
- (iii) Continuing to look for suitable students emerging from university PhD programmes in order to maintain a pipe-line of young researchers;
- (iv) Continue exploiting the potential of the Data Lab and skills within ERT to train other public sector researchers and PhD graduates in the use of the IDI;
- (v) Working with the PC Board to ensure resourcing is maintained to enable pursuit of the agreed workplan and to ensure a suitable balance of the use of ERT staff time on important productivity topics beyond the immediate requirements of Commission Inquiries.

2. Evaluation of ERT responses to the recommendations of the 2020 Review

Both the 2018 and 2020 Reviews recommended that the ERT could benefit from several improvements to its processes and management of research. The 2018 recommendations were to (i) establish a medium-term research planning process; (ii) improve research process management, (iii) document the process and outcome of quality assurance of research, (iv) review the nomenclature of Productivity Commission (PC) research papers and link with international research databases, (v) develop more effective engagement with local and international researchers, and (vi) explore ways to enhance the funding of research.

It was observed in the 2020 Review that the “ERT [had] responded appropriately to most of the recommendations of the 2018 Review. There is now (i) a systematic work planning process that is integrated into the PC planning process, (ii) a research management process has been implemented, and (iii) a more formal quality assurance process for research is now in place and documented. The changes have resulted in a clearer workplan which has helped the process of specifying research priorities and identifying the research capability required by ERT and the PC.” The ERT had also responded to the recommendation in the 2018 Review to reform the PC website and nomenclature for Working Papers. The quality of the Working Papers had continued to be of a very good standard and those utilised by the PC Inquiries had been influential. The broader communication activity had also continued to be very good.

The 2020 Review suggested that a key risk at that time was the loss of research capability and the scope to build a medium-term research programme and enhance research capability to support PC Inquiries. It also noted the organisation of the PC resources appeared to be at a turning point and the PC would need to resolve how it can ensure access to critical economic research capability in the future.

2.1 Research capacity and capability

As a result of a decade during which the real-value of annual Government funding for the Commission had steadily declined, the funding to support the ERT and diversion of staff to assist with Inquiries meant that research work declined significantly. The financial support for the ERT and its functions has improved following a rise in the nominal value of funding for the PC by about 20 per cent in 2021. This additional funding and the support of the PC Board has meant that a substantial rebuilding of the research capacity and skill of the ERT has been possible. Following the start of the development of a work plan, there has been active recruitment of research staff.

Following the appointment of a new and experienced Director in February 2021, the team is gradually rebuilding capacity. Some important appointments to boost research skill and experience have already been achieved, and it is perhaps the strongest it has been for several years. By mid-2021, the ERT had increased to three experienced researchers in addition to the Director, and by the end of 2021 a new PhD graduate had also been recruited.

2.II Research collaboration

The Director has presented plans to further build capacity and this has the support of the Board. Nevertheless, in the current environment it will continue to be a challenge for ERT to maintain adequate numbers of researchers with an appropriate mix of research skills. The Director is attempting to build a sustainable research capacity by (a) using the ERT budget to recruit additional full-time researchers, and (b) expanding collaboration with organisations that have researchers with complementary skills and which have common research and policy interests. To date these organisations have included: Motu (collaborative research on immigration and on firm level productivity), NZTE (Firm exporting challenges), Victoria University of Wellington Chair in Public Finance (Income inequality and persistence), Infrastructure Commission (Productivity data for sectors), Te Puni Kokiri (This will involve collaborative research on the Māori Economy which can also feed into the regular *Productivity by the Numbers* publication). ERT is exploring opportunities for collaboration with other organisations such as for example, the Commerce Commission.

Recent engagement with Te Puni Kokiri initiated by the Director provides an illustration of the type of collaboration where mutual benefits can arise. This process is at an early stage but is evidently evolving in a constructive way. ERT have provided quality assessment of consultancy work commissioned by TPK. One consequence is that TPK is now drawing on ERT expertise in the use of the IDI to improve the analysis of Māori businesses. This work includes understanding the characteristics of Māori businesses, how they are contributing to the New Zealand economy, and supporting more robust policy advice to Ministers. In the process, ERT will help train TPK staff on the use of the IDI and the PC will be able to obtain more information about these firms and enrich the quality of work on firm productivity.

There has been some valuable research collaboration with a small number of university researchers. Collaboration with the Chair in Public Finance at Victoria University of Wellington is a stand-out example. It is unfortunate that more collaboration with university researchers has not materialised. This should have the potential to provide a rich source of research skills and ideas that align with the objectives of the ERT. Collaboration with university researchers may be easier to achieve once a coherent workplan with clear priority themes are specified and the skill requirements are clearly recognisable. This would enable the Director to approach individual researchers within universities. This might be a more effective way to attract the interest of academics than via seminars presenting a portfolio of projects as a process of luring academic researchers to engage.

2.III Workplans and research management processes

At the start of this Review period there was significant change in the personnel within the ERT. At that time, ERT was operating a small team comprising the Director and two researchers, all of whom were having to contribute a significant amount of their time working on PC Inquiries. The capacity situation became even more critical when for about 6 months until early 2021 the

ERT comprised just one researcher. One of the Commissioners provided leadership and contributed significantly to sustaining the ERT functions.

The intentions of the new ERT Director ERT have been conveyed in regular reports to the Productivity Commission Board. These reports focus on the contributions the ERT can make to the three core functions of the Productivity Commission: Undertaking inquiries (which reflects a commitment to contribute to the PC Inquiries and collaborate with Inquiry teams), Publishing research, and Promoting understanding. The reports also indicate a commitment to the implementation of the recommendations of the 2018 and 2020 Reviews of the ERT. They include the progressive development of a Medium-Term Workplan in a series of reports to the Board. They indicate how the ERT would fulfil its three core functions and support Commission Inquiries, develop a portfolio of research in other areas relevant to productivity, enhance public understanding via a selection of out-reach publications, and build a portfolio of regular reports documenting and commenting on productivity performance. Progress with the development of a workplan for the ERT is evident in the Update to the Board on 27th June 2022. This includes a list of “Current Work” and a portfolio of ideas for its “Forward Work Programme”.

The Director’s reports to the Board suggest a new conception of the role of ERT guided by prioritisation, stronger alignment of the work of the ERT with the priorities of the Productivity Commission, and a commitment to the continuation of publication and promoting public awareness and debate. They also indicate a commitment to quality assessment (using both internal processes and external peer-reviewing), publication, collaboration with other organisations, and an intention to rejuvenate engagement with the Government Economics Network (GEN).

Although there is a stronger alignment of the work of the ERT with Inquiries, discussion with Commissioners indicated they agree the work of the ERT should not be entirely influenced by the requirements of the Inquiries. They suggested that ERT should also have a portfolio of projects on other critical productivity topics. There is support from the PC Board to rebuild the capability of ERT beyond the requirements of PC Inquiries. The intention is to conceive of the ERT as a unit able to devote attention to productivity issues beyond the immediate requirements of Inquiries and to protect the ERT’s capacity to do that. Tension between the need to support Inquiries while maintaining momentum on broader productivity research is likely to continue to exist but may be easier to manage when the ERT has an approved prioritised set of research themes to guide its medium-term research programme.

The medium-term research plan includes a list of potential research projects which relate to themes including “Firm performance”, “Migration”, “Labour and skills”, “Wellbeing”, “International linkages”, “Entrepreneurship and innovation”, “Promoting understanding”, “Infrastructure” and “Finance”. This is a broad list of themes. It is a good starting point for further discussion with the Board. Feedback from policy agencies indicate that the Director is also consulting stakeholders outside the Commission in the process of preparing the workplan.

The Director has presented the workplan to the new "Research Leaders Group" set up under the Productivity Hub banner (this involves MBIE, Treasury, MFAT, Infracom, RBNZ, SNZ, MoT, and TPK) and the "Connect" research and intelligence group (involving MPI, MFAT, MBIE, NZTE, and the Callaghan Innovation).

This plan will no doubt continue to evolve as priorities within the Commission and as public policy priorities evolve. Nevertheless, in order to identify the research skills required and to ensure the quality of research is maintained at a high standard, it would be advisable that more consideration be given to developing a coherent workplan that, in addition to meeting its role of supporting the requirements of future Inquiries, makes clearer the themes the ERT will focus on in the medium-term. A coherent workplan that makes clear to stakeholders the type of work required to support upcoming PC Inquiries and other ERT priorities will make it easier to establish collaboration on research with other research organisations and individuals such as Motu and university researchers.

2.IV The Data Lab

The 2020 Review suggested that the management of the Data Lab and access to the IDI and LBD presented an opportunity to attract a greater number of researchers to work with the PC and in-turn, to maintain the development of the requisite research capability to utilise this resource. Another suggestion that has come through consultation with public research managers was the role the ERT can play in building capability to utilise the Integrated Data Infrastructure (IDI) and the Longitudinal Business Database (LBD). There seems interest in building this type of capability within some Government Departments. This interest has been generated by earlier initiatives taken by ERT to build capability, through the demonstration of the insights generated by ERT and Motu researchers on topics such as the characteristics of frontier firms, exporting firms, and the utilisation of several datasets used for research on migration and firm performance. The Director has been in discussions with managers from Government Departments to enable this type of arrangement and knowledge transfer to take place.

However, there are increasing compliance costs associated with maintaining the Data Lab. The 2020 Review noted that if the PC was to continue to benefit from the presence of an ERT with scope for medium term research and to build appropriate research capability (such as that required to exploit the available databases to inform future Inquiries and policy advice) and scope to continue to build a research network, there will need to be a rejuvenation of funding to support the Data Lab. This may require a reprioritisation of resourcing within the PC.

The PC has recently invested funds to increase the capacity of the Data Lab to accommodate more researchers. The Lab is available to Government Department researchers and the intention is that this facility will be a hub for sharing knowledge of how to use the Data Lab for research. The Director intends to make available an online tool explaining the potential data available from the Data Lab and how to exploit the potential of the data. The team already

produces an integrated dataset of jobs (derived from the IDI) and firm inputs and outputs (derived from the LBD), which is freely-available from the Data Lab. This initiative substantially reduces the cost to other researchers of understanding and manipulating the raw data. Some who were consulted during this Review suggested that creating capability beyond ERT and Motu may help contribute to building a pipeline of younger researchers with requisite skills.

2.V Contributing to PC Inquiries

Feedback from PC staff managing Inquiries commented that the ERT has developed into a very supportive team that has a strong awareness of the requirements of Inquiries and the type of support required by Inquiry teams. It was remarked that the ERT is willingly providing significant intellectual leadership and research ideas and output for Inquiries; able to contribute to the early development of Inquiries; and able to develop research that aligns with the Inquiries.

It was noted that this awareness and willingness to engage with Inquiry teams and provide intellectual leadership has benefitted the Inquiries on Immigration and on Frontier Firms. For example, feedback indicated that the ERT added significant leadership in framing and preparing the Inquiry into Immigration, and undertook high quality research utilising the Statistics New Zealand databases coupled with other databases, to understand the characteristics of immigrants, and their contribution to firm performance. The ERT is also helping to frame a new Inquiry on economic resilience to shocks to the NZ economy. The nature of the support for Inquiry teams is a marked improvement on the situation noted in the 2018 Review. Improved cooperation and support toward Inquiry teams was evident at the time of the 2020 Review and it has continued to deepen as capacity and experience within ERT has strengthened.

2.VI Engagement

The 2020 Review also noted that the nature of ERT engagement with local and international researchers had changed. The Director had been active in this regard and the diversity of engagement with other New Zealand and international researchers and organisations had expanded and was more diverse. The main focus of the new Director since early 2021 has been on engagement with other government departments (via the Productivity Hub Research Leaders Group and Connect), Victoria University of Wellington, Motu, and the OECD Global Forum on Productivity. There is an intention to broaden the engagement to other New Zealand universities.

At the time of the 2020 Review, the nature of engagement with the NZ public sector had changed. Previously, the Government Economics Network's (GEN) Productivity Hub was a key instrument for engagement by ERT with public sector agencies. This had ceased because of the increasing burden placed on the ERT Director to sustain the Hub, changes in ERT resourcing and priorities, and declining financial support and diminished research capability

within the public sector agencies. Feedback from public sector representatives received during the preparation of the 2020 Review, expressed regret that the GEN Productivity Hub was no longer functioning, and they felt that it should be re-activated. They also commented that it would be important that the PC, through the ERT, was actively involved in a rejuvenated Productivity Hub. But for this to be feasible, there would need to be greater support (financially and administratively) from the policy agencies and reprioritisation of resourcing within the PC to enable the ERT Director to fulfil the benefits that could accrue to the PC and policy agencies, including benefits from restoring the research prioritization process (FLARE), capability development, and knowledge sharing.

The new ERT Director has taken several initiatives to successfully resuscitate engagement with GEN and related research and policy groups within the public sector. This was initiated by organising meetings of Managers of research teams within Government Departments, and has also involved re-activating research seminars focussing on productivity topics and related work. Amongst those interviewed, there was strong support for these initiatives and encouragement to re-establish seminar and research discussion sessions at the PC that were so successful in earlier periods. The Productivity Hub has been re-activated and information about its activities is now available on line and open to Government and non-Govt researchers.¹

It was also noted in the 2020 Review that several of the Working Papers warrant converting into a form suitable for submission to peer reviewed research journals. This would enable the research to reach a global audience and would enhance the reputation of the PC. There appears to be a commitment to do this for suitable working papers. It was also recommended that the PC working papers be registered on international research repositories, such as Research Papers in Economics (RePEc). The ERT has prepared the material to enable listing of working papers on RePEc, and are awaiting IT support to complete the process.

It was suggested in the 2020 Review that the *Productivity by the Numbers* publication was an opportunity for the PC to launch it as a marquee event, and to use it to also present other productivity research and policy insights drawn from the ERT research and PC Inquiries. The 2021 publication has adopted a different style as discussed in Section 3 of the Review. It includes insights from PC Inquiries and ERT research as well as from the international literature and provides more of a bridge between research and policy. Moreover, there was a public launch of the 2021 publication which was well attended. The event was used to present *Productivity by the Numbers* as one of the Commission's flagship publications, and the event included a panel discussion on productivity matters.

Some people interviewed suggested that more could be done by ERT or the communications staff at the PC to design documents that complement the more technical research papers, and to draw out the policy insights. The second *Productivity by the Numbers* publication released in 2021 and the new *Immigration by the Numbers* published in 2022 seem to be endeavouring

¹ The Productivity Hub: <https://nzproductivity.atlassian.net/wiki/spaces/PH/overview?homepageId=294914>

to do this. They present chapters on the history of immigration and productivity performance in New Zealand, discussion in a non-technical way the way immigration and productivity contribute to firm performance, labour markets, economic performance and wellbeing. The 2021 version of *Productivity by the Numbers* also has a chapter discussing what Governments can do to improve productivity.

There have been other initiatives undertaken to disseminate articles on productivity related topics to reach a broad audience. The new Director has initiated a series of Op-eds published by the New Zealand Herald and Stuff. These articles focus on issues pertinent to the role of the PC and signal the type of work undertaken by the PC. To date this series has included articles on the benefits of innovation, competition and innovation, and education. The articles are written in a style that introduces readers to the role and work of the PC. They have a potentially important role in communicating to a broad audience why productivity matters for welfare and what can contribute to higher productivity. This seems an excellent initiative and an opportunity to extend the reach of engagement beyond the research and policy community.

The ERT sponsors two Motu public policy seminars each year.² These lectures are intended to inform and encourage debate about research and ideas relevant to contemporary public policy issues. This sponsorship has enabled the ERT to promote public policy lectures within this well-established lecture series, on topics aligned with the ERT and PC mandates. Examples of lectures on topics related to PC Inquiries and ERT research during the last two years are:

- (i) June 2022: “How can Aotearoa New Zealand best approach immigration policy to boost productivity and wellbeing?” Presented by Dr Ganesh Nana and Dr Philip Stevens.³
- (ii) June 2021: “Exploring immigration settings, effects and outcomes.” Presented by Professor David Card, UC Berkeley and NBER.⁴
- (iii) September 2020: “Global productivity trends, drivers and policies.” Presented by Dr Alistair Dieppe, The World Bank.⁵

Despite capacity pressures, the PC and ERT staff have been active in presenting research papers at local research conferences. This has had the strong support of the PC Commissioners and involvement by one of the Commissioners, Professor Gail Pacheco. The topics of several of these research papers had a clear connection to the work on Inquiries at the time.

At the New Zealand Association of Economists 2021 Annual Conference the PC prepared a special session on “Productivity Matters”. Three research papers were presented: (i) “Income protection in the New Zealand tax-transfer system” (Penny Mok); (ii) “Benchmarking New Zealand’s frontier firms” (Gail Pacheco, with Guanyu Zheng and Hoang Minh Duy, National University of Singapore); and (iii) “New Zealand firms: Reaching for the frontier” (Geoff

² Events | Motu

³ How can Aotearoa New Zealand best approach immigration policy to boost productivity and wellbeing? | Motu

⁴ Exploring immigration settings, effects and outcomes | Motu

⁵ Global Productivity: Trends, Drivers and Policies | Motu

Lewis). Also presented at this conference was a paper titled “How can Central Banks promote Well-being in Nations?” (Hamed Shafiee).

This initiative was repeated at the New Zealand Association of Economists 2022 Annual Conference. The session was “Migration, Productivity and Income Dynamics”, which was chaired by Professor Gail Pacheco. The papers presented were: (i) “A descriptive analysis of income dynamics in New Zealand 2007” (Quy Ta); (ii) “Migrant selection and outcomes” (Hilary Devine); “Migration and Productivity” (Philip Stevens, with Richard Fabling and Dave Maré); “Missing migrants: Border closures as a labor supply shock” (Lynda Sanderson, with Melanie Morton and Dave Maré).

Appreciation was expressed by some interviewed of the staff blogs that were produced during the initial years of the Covid-19 pandemic, and some suggested producing podcasts on key productivity topics. The 2021 *Productivity by the Numbers* launch was accompanied by a short video summary for the general viewer.⁶ Although these processes and communication methods can reach a broad audience, they also involve considerable staff time. They would therefore need to be considered with careful consideration of the resources costs and risks involved.

3. The relevance and quality of research published since June 2020

3.1 Research output since June 2020

The PC publishes research papers on a dedicated research site.⁷ In the two-year period since June 2020 the Commission has published 26 papers on this site, a similar number as for the previous two-year period. They include papers by researchers from other institutions that were commissioned by the PC and papers by PC staff, some of which were undertaken in collaboration with external researchers. The practice of collaboration with external researchers enables the Commission to access a wider range of research expertise and skills and promotes a richer fertilization of ideas and insights.

Five of the research papers were undertaken by the ERT as part of their research contributions to Inquiries and their work measuring and monitoring New Zealand’s productivity performance. Another paper (iv) was commissioned by ERT as a contribution to the work on frontier firms. The papers are:

- (i) Benchmarking New Zealand’s frontier firms
- (ii) Exporting challenges and responses of New Zealand firms
- (iii) Migration and firm-level productivity
- (iv) Living on the edge: An anatomy of New Zealand’s most productive firms.
- (v) Productivity by the Numbers
- (vi) Immigration by the Numbers

⁶ <https://www.youtube.com/watch?v=IGSZWFjuokc>

⁷ Productivity Commission | Research

The small number of research papers produced by ERT during the last two years reflects the loss of staff that occurred during late 2020, the pressures during 2020 and 2021 to assist with Inquiries, and the time it took to rebuild PC and ERT capacity. Nevertheless, some of the papers produced are of a very high standard, particularly the working papers on frontier firms and on immigration and productivity, and the *Productivity by the Numbers* and *Immigration by the Numbers* papers are very good quality for that type of publication. There are some papers still in the process of being published as PC working papers as a result of research done during the period. It is evident there is a growing research and publication momentum taking place, and a firmer determination to publish research in other peer reviewed series.

Papers currently being prepared for release as PC Working Papers include:

- (vii) Migrant selection and outcomes, by Hilary Devine
- (viii) Migrant spells and transitions, by Hilary Devine
- (ix) Missing migrants: Border closures as a labor supply shock, by Lynda Sanderson
- (x) Digital adoption and exporting, by Lynda Sanderson

Papers currently at various stages of preparation include:

- (xi) Multidimensional disadvantage, by Quy Ta
- (xii) Low-income persistence, by Quy Ta
- (xiii) Migration job sorting, by Richard Fabling
- (xiv) Where does growth come from? by Philip Stevens
- (xv) The scarring effects of recessions, by Lynda Sanderson

Papers published in other peer reviewed publications include:

- (i) Benchmarking New Zealand's frontier firms, by Guanyu Zheng, Hoang Minh Duy, and Gail Pacheco. Published in IWH-CompNet Discussion Papers 1/2021, Halle Institute for Economic Research (IWH), 2021.
- (ii) *Income protection in the New Zealand tax-transfer system*, by Penny Mok and Gail Pacheco. Published in *New Zealand Economic Papers*, 2022.
- (iii) *Income Mobility in New Zealand 2007–2020: Combining Household Survey and Census Data*, by John Creedy and Quy Ta. Published in Chair of Public Finance Working Papers in Public Finance, Victoria University of Wellington, 2022.
- (iv) *Migration and firm-level productivity*, by Philip Stevens, Richard Fabling and Dave Maré). This paper is being submitted to IZA – Institute of Labor Economics Working Paper Series and it is being prepared for submission to *Journal of Population Economics*.

3.II Review of selected papers

Four papers were selected for review to assess the quality of the ERT research outputs.

Export challenges and responses of New Zealand firms.

Authors: Brian Bull, Penny Mok and Stella Sim.⁸

The aims of this paper are to identify (i) the challenges experienced by exporting firms doing business in overseas markets, (ii) understand how these challenges differ between types of firms and markets, and (iii) to identify how firms respond to these challenges. The research was undertaken to contribute toward the PC's broader work on the performance, characteristics and economic contributions of New Zealand's most productive firms, and the Inquiry "New Zealand Firms: Reaching for the frontier".⁹ The work was undertaken in partnership with New Zealand Trade and Enterprise (NZTE) and was a collaborative effort by researchers from ERT, NZTE, and Text Ferret Ltd.

An interesting feature of the research approach used is the use of text mining methods applied to written communications between NZTE and 700 knowledge-intensive firms with whom NZTE have engaged with and allocated most effort and resources to assist in supporting their international market growth aspirations. The text mining was able to access up to five years of NZTE correspondence with these firms pertaining to challenges and opportunities for growth. The procedure also accessed information concerning plans to allocate resources to support them, usually at an early stage of their international development. The final research paper explains the text mining process, the broad characteristics of the firms involved, and it identifies, explains and characterises the challenges identified. It then analyses the results by providing frequency distributions of the types of challenges by industry, size of firms, and destination markets. The text mining also identifies the strategies firms adopted to overcome the challenges and provides frequency distributions of these strategies, also characterised by industry, size of firms, and destination markets.

The authors of the Report acknowledge the problem of sample selection bias inherent in the data and approach. Because the data are taken from firms recorded in the NZTE correspondence, it omits firms that have not been selected by NZTE, those that may have attempted to compete internationally and subsequently withdrawn from international markets for various reasons, and those that have not entered markets because of perceived difficulties. Presumably also, the sample would only include firms that have approached NZTE for support and may be succeeding internationally, or may not be but have approached NZTE. Although the Report warns that "It is important to bear this selection bias in mind when interpreting results", it could have devoted more attention to explaining the nature of this selection bias, particularly if the results are going to be used by NZTE staff and firms to prioritise firm internationalisation strategies. The Report could have also discussed the type of research

⁸ Productivity Commission | Exporting challenges and responses of New Zealand firms

⁹ New Zealand firms: reaching for the frontier (productivity.govt.nz)

strategy (sample selection approach), that would help evaluate the extent of the sample selection bias and what would be needed to overcome that bias. One of the purposes of these papers is to bring research to a wider audience including the policy community. It is important therefore that they understand the robustness of the work and in this case the nature of and implications of sample selection bias.

There are several other aspects of this study that could have received greater attention. Further statistical work could have been undertaken to analyse in a more robust way and present in a more helpful way, the distributions of the types of challenges and the strategies adopted to overcome these challenges, by industry, size of firms, and by destination markets. Although the study attempts to assess whether there is alignment of the insights of the text mining process with insights from NZTE's international offices, it could have also tried to link the information gleaned from the study with insights from the international research literature. It would also seem crucial to understand how successful were the strategies adopted by firms to try to overcome challenges. Firms, and presumably NZTE, would want to understand the size of the potential benefits of adopting different strategies and compare them to the costs before making an investment in those strategies and before NZTE committed to its support strategy.

Living on the edge: An anatomy of New Zealand's most productive firms.

Authors: Richard Fabling.¹⁰

This paper was commissioned to investigate and document characteristics of the most productive New Zealand firms ("frontier firms") and how they differ from less productive firms. The insights from this research contributed to the Inquiry "New Zealand Firms: Reaching for the frontier." The project was motivated by observations from international research suggesting that while both national and overseas firms that are operating at the highest levels of productivity can exert a positive influence on the productivity improvement of lower performing national firms, national frontier firms tend to exert a stronger influence than the overseas firms that are operating at the frontier. The explanation discussed in the paper is that because national frontier firms tend to have for example higher skilled managerial and technical staff, invest more on research and development, and tend to engage more with international technology developments, they are likely to be more capable of absorbing knowledge from overseas frontier firms. For these reasons they are likely to be an important means of diffusing knowledge to lower productivity local firms. The aim of the paper is not to evaluate this possible causal relationship. The aim is to update and extend the set of information about the characteristics of higher productivity firms and those of lower productivity firms in New Zealand.

The study utilises the labour and productivity datasets contained in the Longitudinal Database (LBD), augmented by data from other datasets including the Business Register and the Business Operations Survey. The preferred measure of firm productivity is multi-factor productivity (MFP) derived from an estimated production function. The author argues that the

¹⁰ Productivity Commission | Living on the edge: an anatomy of New Zealand's frontier firms.

classification of firms within the top decile of productivity as a frontier firms can be sensitive to the assumed production function and industry comparator group. Therefore, a composite measure is used derived using Cobb-Douglas and Translog production function estimates. Firms are required to be in the top decile of at least three of the four measures to qualify as a frontier firm. The rationale and process of estimation of MFP and the process of population restrictions (to remove firm-year observations that may be more likely to have measurement error and result in incorrect classification) are very carefully explained and meticulously analysed.

The result of this careful data preparation, estimation of multi-factor productivity measures, and categorisation of firms into composite productivity deciles for the years 2005 to 2018, is a rich set of data. From these data, the author generates an analysis of the persistence of firms at various productivity deciles, transition dynamics from one decile to another, the relative contribution of each decile to aggregate number of firms, output, production inputs and value-added, and the characteristics of frontier firms and regression-based estimates of differences between frontier and non-frontier firms.

This work is of a very high quality. As some policy agency staff have remarked, this is a highly valuable “state of the art” source of information about the productivity of New Zealand firms. The data preparation, analysis and derivation of characteristics are meticulously documented and undertaken with rigour. The research in this paper complements earlier research on the potential factors and processes that contribute to the higher productivity performance of frontier New Zealand firms which is usefully summarised in the paper. The work reported in this paper invites consideration of follow-up work that might provide further important insights. For example, the analysis of the transition of firms from one productivity decile to another prompts consideration of the factors that contribute to these transitions. This may require analysis based on levels of productivity rather than deciles, and it may provide a basis for comparing rates of transition in other countries if that research is available, and why such rates vary.

Productivity by the numbers.

Authors: New Zealand Productivity Commission.¹¹

This publication is the second of what was originally intended to be an annual publication reporting on and benchmarking of New Zealand’s productivity performance, as requested by the Minister of Finance.¹² These reports are intended to provide explanations of productivity,

¹¹ Productivity Commission | Productivity by the numbers

¹² The Chair of the Productivity Commission remarked in the 2018-19 Annual Report that “Benchmarking New Zealand’s productivity performance against other OECD countries is critical to help our understanding. To this end, the Commission started an annual series of reporting Productivity by the numbers, where we analyse the productivity performance of the total economy, sectors and individual industries in New Zealand compared with OECD countries.” <https://www.productivity.govt.nz/assets/Documents/4371904067/2018-19-Annual-Report-v2.pdf>

a summary of the most recent available data on the performance of New Zealand productivity and its components, and contain some discussion on particular aspects of productivity. Given the gradual movement in much of the data and the resources required to produce these special, it seems sensible that the ambition has shifted to producing these reports every two years rather than annually.

These reports are valuable from several perspectives. They serve an educational role; they are a handy source document for monitoring New Zealand's productivity performance and serve as an accessible resource for policy makers and observers of the New Zealand economy. They can also serve as another means of disseminating new insights from research on aspects of New Zealand's productivity performance that is produced at the Commission and elsewhere. Feedback from people interviewed indicated strong support for the continuation of these reports and appreciation of the information they provide. There were particularly appreciative comments on the style and quality of the 2021 publication and that it was a valuable source document on New Zealand productivity matters.

The first of these reports published in 2019 provided detail on aggregate, sectoral, industry, and regional productivity. It included growth accounting explanations of the contributions of labour utilisation and labour productivity to trends in aggregate New Zealand productivity, and a special topic on business productivity dynamics. It also historical comparisons with average OECD data and data for a selection of OECD countries. As special topics, the report discussed some basic business dynamics data such as firm birth rates and employment growth by firm size, and presented discussion of and trends in labour productivity of a selection of public sector services.

While also presenting updated data on the growth accounting components of productivity and their contributions to GDP growth at the aggregate and industry sector levels, there is a refreshing focus on different topics in the 2021 report. There is a chapter on how productivity contributes to the broader notion of welfare or "wellbeing", some of the measurement limitations, and it touches on how productivity gains are distributed. There is a useful chapter on longer run trends in New Zealand productivity and its components, and with comparisons with long-run trends in several other developed economies. These two chapters present valuable material and discussion. It has missed an opportunity though, to discuss the implications for productivity performance assessment of terms of trade growth. In recent decades, faster growth of New Zealand's (international) terms of trade has resulted in national income growing faster than GDP. As others have emphasised, productivity analyses typically measure technical efficiency, but national income is also a function of allocative efficiency.¹³ Since the mid-1990s, the difference between GDP and Gross National Income has increased

¹³ Grimes, A. & Wu, S. (2021) *Reinterpreting productivity: New Zealand's surprising performance or The shortcomings of an engineering approach to productivity measurement*, paper presented to the New Zealand Association of Economists Annual Conference, Wellington, June.

persistently as a result of rising export prices and a decline in import prices due in part to a change in the composition of imports as well as declines in import prices since the GFC.¹⁴

The 2020 Review of ERT suggested that this publication could be exploited more, and its release could be used as one of the PC's marquee events. This could be used as an opportunity to also present (either as part of the publication or an accompanying paper) special topics on productivity and policy insights drawn from the ERT research and PC Inquiries. As the previous Review remarked, this document has the potential to serve as a useful bridge between productivity performance and the identification of policy priorities that could guide the selection of Productivity Commission Inquiries. A new feature of the 2021 report is that it contains a chapter that discusses how to improve productivity in New Zealand. This chapter draws on the insights from PC Inquiries and ERT research as well as the international literature, to illustrate how the work of the PC can be used by policy agencies and firms and it signals directions and questions for future research. This change in style and content was commended by policy agency staff who were interviewed. One interviewee commented that the purpose and style of the *Productivity by the Numbers* publication has started to converge closer to the style and quality of the regular 5-yearly review published by the Australian Productivity Commission.¹⁵

Migration and firm-level productivity.

Authors: Richard Fabling, David C. Maré and Philip Stevens.¹⁶

This paper investigates the link between migrants and firm productivity. The authors discuss the numerous ways that migrants can potentially influence productivity in the destination country. The paper contains a very useful summary gleaned from international research, of the links between migration and productivity. The research focus of the paper is on the relationship between employment, productivity and wages in New Zealand firms, and the contribution that migrants can make to the productivity of New Zealand firms. The empirical work is based on a production function for firm output which allows differentiation of labour type. Skill and effort are expected to vary across workers and hence weights should vary in the production function. Specifically, labour in the production function is treated as a weighted combination of New Zealand-born and migrant workers. Weights on each labour type are estimated simultaneously with other production function parameters. They also estimate a firm-level wage bill to enable comparison of the weights on each labour type in the production function and the wage bill (because worker hours and ability cannot be observed).

A significant and impressive component of the research is the meticulous use of administrative data to identify characteristics of firms and workers matched with firms. Workers are

¹⁴ Mellor, P. (2015) Decomposing New Zealand's Terms of Trade, New Zealand Treasury Working Papers, WP 15/16, Wellington. <https://www.treasury.govt.nz/publications/wp/decomposing-new-zealands-terms-trade-wp-15-16#formats>

¹⁵ Australian Productivity Commission (2022), Interim report 1 - 5-year Productivity Inquiry: Key to Prosperity (pc.gov.au)

¹⁶ <https://www.productivity.govt.nz/research/migration-and-firm-level-productivity/>

categorised as either NZ-born (allocated into one of three skill levels), or migrant (allocated into Australian and other, where other are categorised as either a long-term migrant or recent migrant which in turn are categorised as skilled resident, non-skilled resident, other resident and other non-resident). The data used to estimate the production and wage functions are obtained from the Integrated Data Infrastructure (IDI) and the Longitudinal Business Database LBD. Census data and MBIE visa decisions and border movements data are used to allocate workers to one of the worker categories.

The data are then used to display migrant-category employment patterns, including pooled and time series analyses for the 2004 to 2019 period for which the data are available, summary firm employment characteristics for the productivity estimation period 2005 to 2019 and time series of proportions of firms with migrant types, and some distribution analysis of labour productivity and average wage for firms by migrant share. The authors note in their review of relevant international literature, that there can be strong tendencies for migrant sorting based on the productivity of firms. Simple comparisons of the productivity and wages of migrants compared to non-migrant workers can hide considerable heterogeneity between migrants. By using administrative data to categorise migrants and match them with firms, the authors are able to uncover whether there are significant differences in productivity by migrant type and compare with NZ-born workers, evaluate variation over time, and by industry.

This is an excellent and substantial body of research. It illustrates the comparative advantage of the researchers who undertook this work and what can be achieved by linking micro data from various sources to advance understanding of factors that influence firm productivity and the importance of understanding the features and measurement issues pertaining to the data. Perhaps more than many other research of this type, by categorising and matching migrants with firm data, this paper demonstrates insights that can guide policy advisors in the relevant policy agencies. It is perhaps not surprising that this paper was mentioned by some from Government policy departments as an example of the value the ERT can provide to agencies that do not have the resources to undertake data intensive research that could add rigor to policy advice to Ministers. The insights from this research contributed to and enhanced the rigour of the PC Inquiry “Immigration – Fit for the future”.¹⁷

4. Conclusion

During the last few years, ERT Directors have made significant progress in responding to the recommendations of the 2018 and 2020 Reviews. Furthermore, there has been an injection of funding following an increase in the PC budget in 2021. This additional funding has supported the appointment of a new and experienced Director who has rebuilt the research capacity and experience of the team, has strengthened the involvement of ERT with PC Inquiries and rejuvenated engagement with public sector agencies and other selected groups and researchers. The ERT is clearly in a stronger position today than it has been for several years, and is

¹⁷ <https://www.productivity.govt.nz/assets/Inquiries/immigration-settings/Immigration-Fit-for-the-future.pdf>

continuing to build research capacity. There are several steps the Director and the PC can take to ensure this momentum continues, and recommendations are provided in Section 1 of this Review.

This rebuilding of ERT and PC productivity research leadership and capability is taking place at a time when productivity issues seem to be regaining attention. There appears to be renewed emphasis in public policy agencies on productivity research and an encouragement for research on productivity topics that can help inform the policy agencies. Recently, the Secretary to the Treasury commented: “our economic performance both now and in the longer term depends critically on tackling supply constraints and enabling innovation and dynamism. Although monetary and fiscal policy are adjusting and playing their part in reducing demand towards supply, reforms that drive productivity and expand the productive capacity of the economy are as important as they have ever been.” (McLeish, 2022)¹⁸

Discussions with those interviewed during this review emphasised the value of the research emerging from ERT and the insights the research provided for policy agencies. There were varying opinions on the extent to which the ERT should push its research into insights for policy. The research papers provide for example, valuable insights into the characteristics of productive firms, some of the challenges facing firms endeavouring to access overseas markets, the contributions of migrants to firm productivity performance, and in previous years there were other valuable insights from the research of ERT. The step from this type of research to insights to appropriate policy settings are not necessarily straight-forward.

Some people interviewed thought the ERT could build on the excellent research and, as additional projects, identify how the insights could guide policy settings. Others argued that the ERT should concentrate on fundamental research on key issues associated with productivity and that it should be the responsibility of PC Inquiries and relevant policy agencies to convert this research into appropriate guidance for public policy and management practice of firms.

There are few opportunities within the public sector or elsewhere in New Zealand to be able to build a team of researchers to concentrate on a policy relevant field of research. Understanding the factors that influence the productivity of New Zealand firms and aggregate productivity remain important for policy agencies. It is therefore appropriate to ensure ERT has the capacity and scope to do fundamental research on productivity topics outside the immediate requirements of the PC Inquiries. This portfolio can be developed with an eye on the key emerging policy issues, consultation, and by drawing on the expertise of researchers within ERT to scan the international literature on productivity issues and keep abreast of international research techniques.

¹⁸ See for example McLeish, C. (2022), *Economic policy for the challenges ahead*. Keynote address to the New Zealand Association of Economists (NZAE) 2022 Annual Conference, Wellington, 29 June 2022. Speech - Economic policy for the challenges ahead - New Zealand Association of Economists (NZAE) 2022 Annual Conference - 29 June 2022 (treasury.govt.nz). This speech provides views, from the Treasury’s perspective, on where the research priorities could be usefully directed.

Annex A: Terms of reference

Purpose

Undertake an independent expert evaluation of the Commission's economics and research function. This includes evaluating a 'package' of research work undertaken by the Commission during the period 1 July 2020 to 30 June 2022. Where appropriate and useful the evaluation will also cover 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.

This period covers a time when the work of the Commission was impacted by the novel coronavirus pandemic. The size of the Economics and Research team also fell to one person at the early part of the period covered. The Commission has since employed a new Director and team members.

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 performance of the E&R team in implementing the recommendations of Professor Buckle's earlier reviews. It will also include an assessment of the relevance and materiality of selected Commission research outputs published since the earlier reviews.

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 (including the efforts to implement the recommendations of the 2020 review) based on a review of key supporting documentation and the 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.

We anticipate the exercise taking between 5-10 working days.

Annex B: People Interviewed

Outside the New Zealand Productivity Commission:

Dr John Janssen, Principal Advisor, Economic Strategy Directorate, Te Tai Ōhanga – The Treasury.

Judy Kavanagh, Director, Inquiries, New Zealand Infrastructure Commission, Te Waihanga.

Vij Kooyela, Manager, Evaluation, Research & Engagement, Te Puni Kokiri.

Dr John McDermott, Director, Motu.

Phil Mellor, Lead Economist, Economic Division, Ministry of Foreign Affairs & Trade – Manatū Aorere.

Dr Patrick Nolan, Manager, Analytics and Insights, Te Tai Ōhanga – The Treasury.

Peter Nunns, Director, Economics, New Zealand Infrastructure Commission, Te Waihanga.

David Paterson, Manager, Migration, Evidence & Insights, Ministry of Business, Innovation & Employment.

New Zealand Productivity Commission Commissioners:

Dr Ganesh Ahiro, Chair, NZ Productivity Commission.

Professor Gail Pacheco, NZ Productivity Commission, Auckland University of Technology.

New Zealand Productivity Commission staff:

Dr Philip Stevens, Director, Economics and Research, NZ Productivity Commission.

Julian Wood, Inquiry Director, NZ Productivity Commission.

Secretarial support:

Fei Han, NZ Productivity Commission.