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## Support for business R&D in New Zealand, and why it is crucial

### Introduction

Research and Development (R&D) is important for innovation and, hence, for productivity and GDP growth. This paper examines why support for R&D is important and it argues that there is a strong case for strengthening R&D support mechanisms, rather than reducing them or taking them away. It focuses mainly on R&D in the business sector.

### What is R&D?

According to the generally accepted "Frascati" definition<sup>1</sup>, the term R&D covers three activities: basic research, applied research and experimental development.

Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.

Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

Experimental development is systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed. R&D covers both formal R&D in R&D units and informal or occasional R&D in other units.

The definition quoted above is widely used throughout the OECD, and it forms the basis used in New Zealand for assessing the eligibility of R&D activities for tax credits under the Research and Development Tax Incentive (RDTI) scheme.

### What is the relationship between R&D and economic growth?

Research by the Organisation for Economic Co-operation and Development (OECD)<sup>2</sup> has found that, in the context of a broader range of policy settings, innovation-specific policies, such as the RDTI scheme,

<sup>1</sup> [Frascati Definition of Research | Research Operations Office \(cam.ac.uk\)](#).

<sup>2</sup> [R&D, Patenting and Growth : The Role of Public Policy | OECD Economics Department Working Papers | OECD iLibrary \(oecd-ilibrary.org\)](#)

are valuable in encouraging the innovative activities associated with higher productivity growth. This is because the boosted R&D activities lead to increases in the amount of intellectual property (IP) created.

Research for the International Monetary Fund (IMF)<sup>3</sup> has also found that there is a relationship between R&D and economic growth. Similarly, the World Economic Forum (WEF) has found that: "An economy's success depends on promoting R&D&I so that technology can be adopted and diffused at a lower cost for large, medium and small enterprises"<sup>4</sup>.

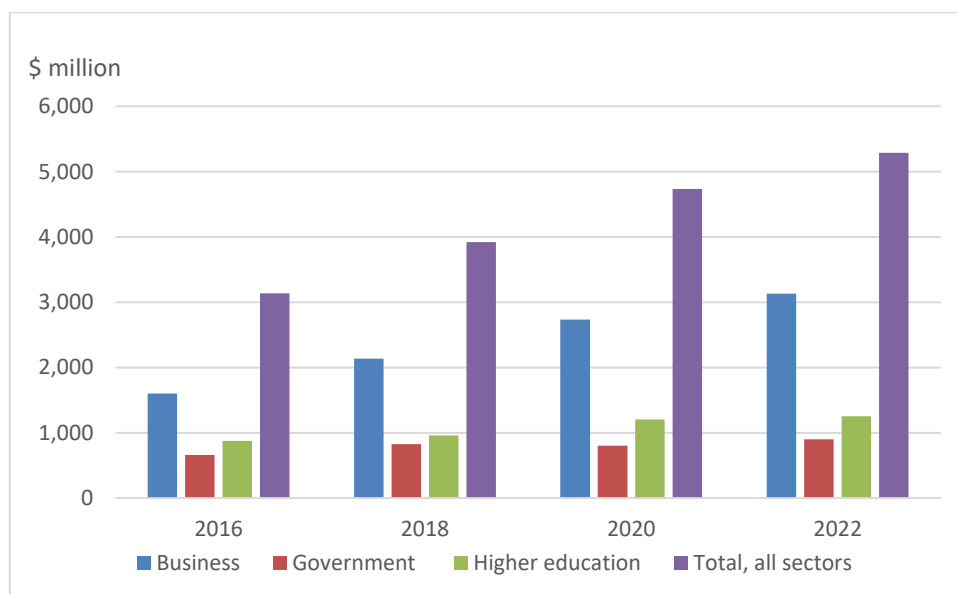
### How much R&D activity is undertaken in New Zealand?

The answer to this question can be found from the results of Statistics New Zealand's R&D surveys. The surveys started in the early 2000s, but the format changed with the effect that the data is only fully comparable from 2016 onwards. The amount of R&D is measured in terms of expenditure on activities that conform to the Frascati definition.

The survey distinguishes between Business Expenditure on R&D (BERD), Government Expenditure on R&D (GERD) and Higher education Expenditure on R&D (HERD). GERD encompasses mainly the CRIs, and HERD mainly encompasses the universities. BERD has been measured annually since 2018, while GERD and HERD continue to be measured biannually.

Figure 1 indicates that total R&D expenditure in NZ has been growing steadily since 2016, but that most of the growth has been in the business sector, while growth in the higher education sector has been only moderate, and growth in the government sector has been slower still. Between 2016 and 2022, BERD increased by 96%, while HERD increased by 43% and GERD increased by 37%. The relatively slow growth in HERD and GERD is probably the result of government budget constraints. Total NZ expenditure on R&D increased by 69%.

Figure 1: Research and Development expenditure in New Zealand



<sup>3</sup> [IMF Working Paper No. 04/185 -- R&D, Innovation, and Economic Growth: An Empirical Analysis , by Hulya Ulku -- September 2004](#)

<sup>4</sup> [WEF Technology and Innovation The Next Economic Growth Engine.pdf \(weforum.org\)](#)

Focusing on the business sector, Figure 2 indicates that BERD as a percentage of GDP increased substantially between 2016 and 2023<sup>5</sup>: from 0.63% to 0.95%. How NZ compares with the OECD average in this respect is shown later in this paper.

Figure 2: Business Expenditure on R&D as a percentage of GDP

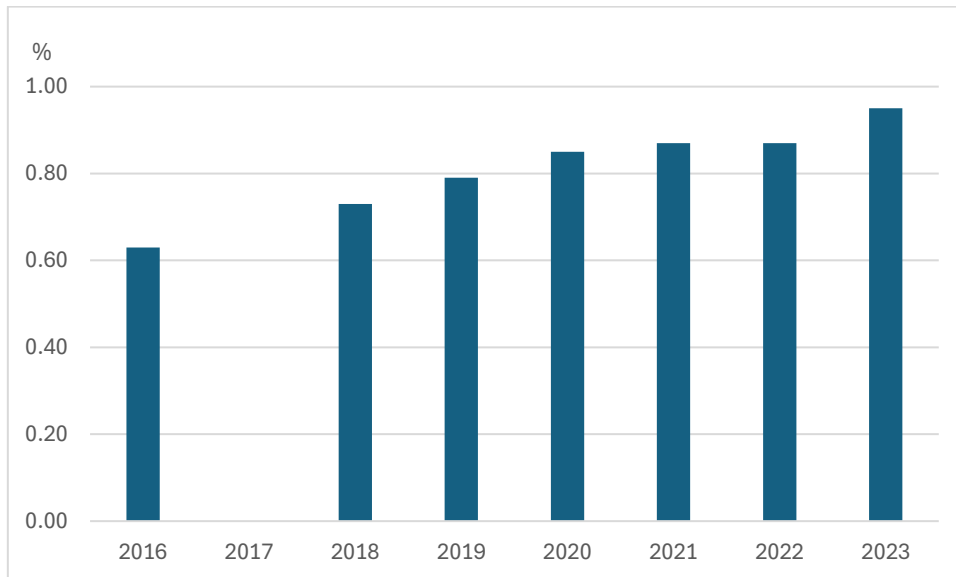
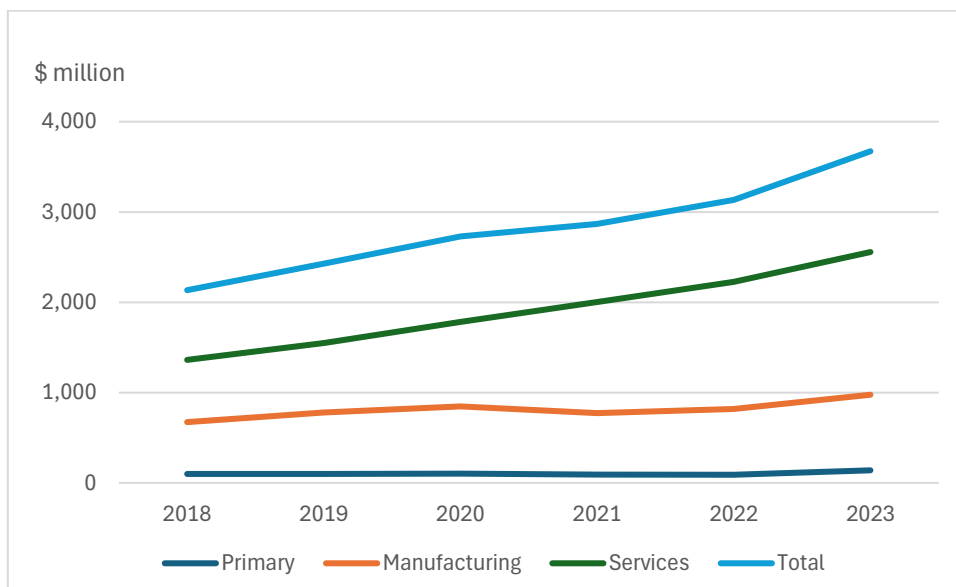


Figure 3 indicates that, between 2018 and 2023<sup>6</sup>, expenditure on R&D in the Services sector increased much more rapidly than in the other broad sectors of the economy. The increase in the Services sector was 88%, compared with 45% in Manufacturing, and 42% in the Primary sector.

Figure 3: BERD, by broad industry group



<sup>5</sup> There was no data for the year 2017

<sup>6</sup> There was no comparable data before 2018.

Figure 4 implies that more than half of business R&D expenditure in 2023 was in just two industries: the Computer services industry group (with 30% of the total) and Miscellaneous other services<sup>7</sup> (with 24%). A further 18% was in Machinery and equipment manufacturing. All other manufacturing industries combined, which include some large industries, accounted for only 9% of business R&D.

Figure 4: Industry shares of BERD in 2023

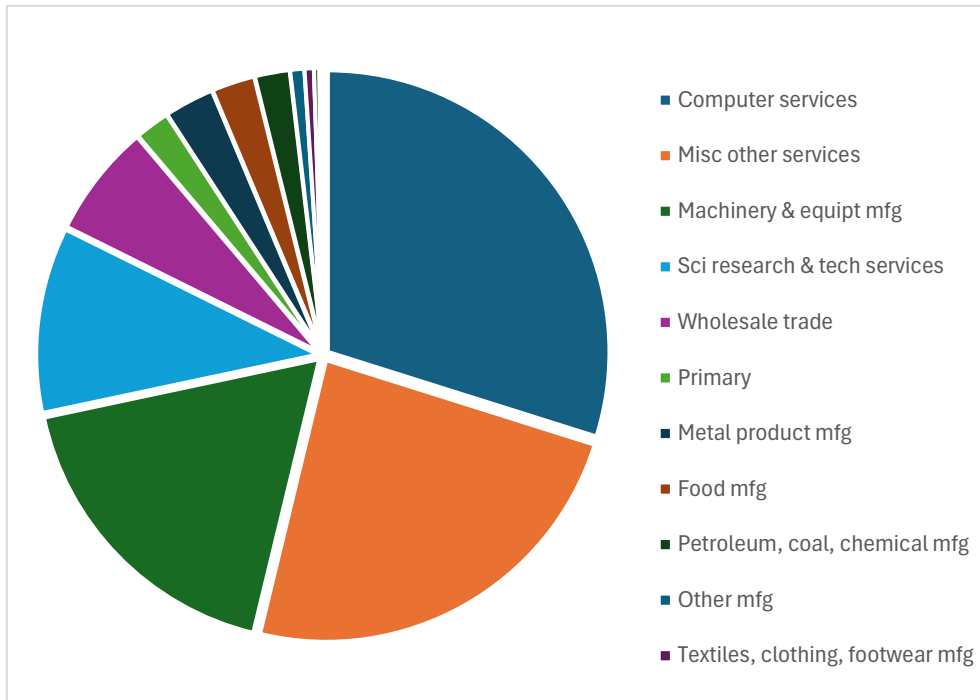
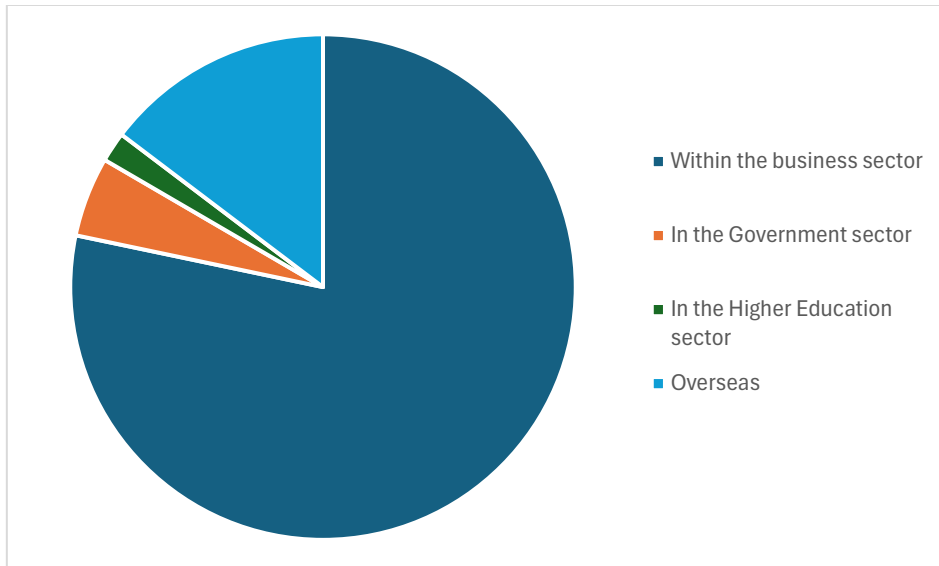


Figure 5 indicates that 78% of BERD in 2022 was within the business sector itself. This included in-house R&D as well as purchases of R&D services from other businesses. A further 15% of business R&D spending was overseas.

More significantly, perhaps, the chart implies that very little business-funded R&D activity happens in the Government sector (i.e. only 5% of total BERD) and even less happens in the Higher education sector (i.e. only 2% of total BERD).

<sup>7</sup> The Miscellaneous other services include Transport, Financial services and Retailing.

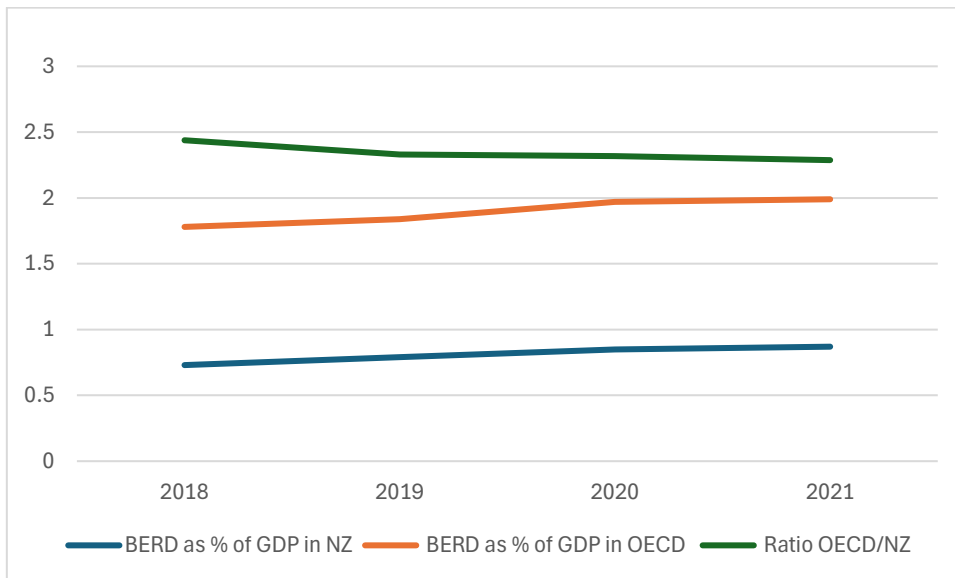
Figure 5: Where businesses spent on R&D in 2022



**How NZ compares with other countries in terms of R&D spending and productivity growth**

Figure 6 shows that BERD as a percentage of GDP is much lower in NZ than in the OECD. It does indicate that the gap between NZ and the OECD has narrowed a little, although it will be noted that the time period covered by the graph is short. However, it would take roughly 75 years for the gap to be eliminated (i.e. for the OECD/NZ ratio to fall to 1.0), if the rate of progress between 2018 and 2021<sup>8</sup> is sustained.

Figure 6: Comparison of BERD in NZ and the OECD



<sup>8</sup> BERD as a % of GDP in NZ in 2023 is known, but the relevant data for the OECD only goes up to 2021.

The former Productivity Commission also reported that New Zealand has lower productivity (GDP per hour worked) than the OECD average<sup>9</sup>. The same source also found that New Zealand's workers have been producing less for every hour worked than those in other OECD countries for half a century, but that the country once had productivity levels above the OECD average.

Given the relationship between R&D activity and productivity growth, commented on earlier in this paper, it is undoubtedly the case that a major factor in New Zealand's poor productivity record is a lack of R&D expenditure. The Productivity Commission also estimated that New Zealand's low R&D intensity, compared to advanced OECD countries can explain up to one-third of the productivity gap.<sup>10</sup>

### **How New Zealand supports R&D**

Under the Research and Development Tax Incentive scheme, businesses in New Zealand can claim a tax rebate equivalent to 15% of their eligible R&D expenditure. The rebate is normally capped at \$120 million on eligible R&D expenditure per year, although this cap can be lifted under exceptional conditions.

In theory, any business that undertakes eligible R&D (i.e. that which satisfies the Frascati definition) can claim RDTI rebates, but most face a *de facto* exclusion because the transaction costs associated with claiming are large. The application process is complex, in terms of setting up the necessary systems for identifying eligible expenditure and making a claim, and this means that businesses would generally need to be spending about \$1 million a year on R&D to make it worthwhile.

SMEs that are undertaking R&D for the first time can get a "New to R&D Grant" from Callaghan Innovation, but the grant is one-off. This means it is difficult for them to obtain support for their R&D activities until such time as they are large enough to apply for RDTI rebates. Businesses of any size can apply for Callaghan Innovation "R&D Career Grants" (which provide 6-month placements for Masters and PhD students) and "R&D Experience Grants" (which fund innovative businesses to employ tertiary-level students (NZQA levels 6-10) as full-time interns over their summer break, and help prepare them for their own innovative careers).

Feedback from our members suggests that the R&D Career and Experience Grants are useful for certain purposes, such as maintaining a supply of potential employees and promoting goodwill. However, the reality for most SMEs is that they face a chasm, in that they have little support between starting out on R&D and growing large enough to enable them to access the RDTI scheme.

### **What businesses say about the importance of support for R&D**

BusinessNZ recently canvassed members of its Chief Technology Officers group about what support for R&D means to their businesses. The members of the group are all from large companies that contribute significantly to the performance of the country's economy. What we were told about RTDIs in particular can be summarised as follows:

- RDTIs have a strong influence the amount of R&D undertaken by businesses.
- RTDIs enable businesses to engage in R&D that has uncertain outcomes, especially in the realm of emerging technologies.

<sup>9</sup> [Productivity by the numbers \(treasury.govt.nz\)](http://treasury.govt.nz)

<sup>10</sup> Productivity Commission (2014) An International Perspective on the New Zealand Productivity Paradox - Working Paper 2014/01

- They also influence whether, and to what extent, R&D happens in New Zealand. This is because multinational companies can move their R&D function to where it is best supported.
- Moreover, where a New Zealand company is part of a multinational group, the amount of R&D support available has the potential to influence where other company functions are located.
- Compared to elsewhere, the rate of RDTIs in NZ is relatively low.
- Businesses have had to invest money and effort in systems to enable them to obtain RDTIs.
- The design and operation of the current scheme should not change, because change affects confidence and is costly.
- Increasing the rate of RDTIs could help to attract Foreign Direct Investment (FDI)
- R&D activities have significant spillover effects into the wider economy.

On the last point above, we were provided with financial data from one major company that clearly implied that the GST it paid on its R&D-related purchases and the income taxes paid by its R&D staff would exceed the value of the RDTIs it received by a large margin. In other words, where a company has a choice about whether to locate its R&D in New Zealand or elsewhere, the RDTIs it receives have a net negative cost to the government.

Information provided by Business Canterbury (part of the BusinessNZ network) suggests that R&D support for SMEs in New Zealand compares unfavourably with the support that is available in Australia. Businesses in Australia with an annual turnover of less than AUD\$20 million can claim a tax rebate at a rate of 43.5%. They might also be able to claim in advance, and there are other Federal and State support schemes for which they might be eligible. Larger businesses can claim at a rate of 38.5%.

Further afield, Singapore now offers a standard 100% tax deduction on in-house R&D undertaken within the country, although with top ups are widely available. Ireland has recently increased its RDTI rate from 25% to 30%.

### **What needs to change**

The Prime Minister has spoken often about the importance of transforming New Zealand's economy so that it compares with countries such as Singapore and Ireland, in terms of innovation and productivity.

This is an ambition that we strongly support, but it is clear to us that achieving it will require a much more supportive policy environment. We believe that the RDTI scheme should be improved, so that it offers tax credits at a more competitive rate. However, this will not be sufficient by itself. We believe that a higher rate of R&D tax credits needs to be introduced in conjunction with other measures. These measures include a more welcoming Foreign Direct Investment (FDI) regime, a reformed resource management framework and a corporate income tax rate that is closer to the OECD average. More support for R&D by SMEs should also be provided.

We acknowledge that changes to the FDI and resource management frameworks have been put in motion, but we would like to see the prompt introduction of proposals for a lower corporate tax rate and improved support for R&D by SMEs.

### **Conclusions**

In an ideal world economy, New Zealand would not need to provide tax relief to businesses to encourage them to undertake R&D. The businesses would rely on their entrepreneurial talents and the skills of their employees. They would invest in R&D, innovate, compete in world markets, and prosper.

Countries throughout the world would compete on the basis of the quality of their natural resources and the excellence of their labour forces.

The bald fact, however, is that NZ businesses do not operate in an ideal world. They need to compete with businesses overseas, where incentives to carry out R&D are often stronger than they are here. In other words, they are not playing on the proverbial level playing field. This financial disadvantage is compounded by weaknesses in the broader business policy environment and New Zealand's relative remoteness from major international markets.

This paper has demonstrated clearly that, although R&D expenditure is growing, it lags some way behind the OECD average, when expressed as a proportion of GDP. Business R&D expenditure has been growing faster than R&D expenditure overall, and it has recently closed the gap a little with the OECD average. But the alarming truth is that, at the current rate of progress, the gap would take most of a century to close.

The paper has also illustrated how important the RDTI scheme is to the country's larger businesses. It has shown that tax rebates for R&D expenditure play an important role in how much companies innovate, where they locate their R&D activities, and even where in the world they locate their broader business operations.

Further, it has shown that SMEs face a chasm they need to cross, from receiving some support at the start of their R&D journeys, until such time as they have grown sufficiently to undertake enough R&D to make it financially worthwhile for them to justify paying the transaction costs associated with applying for RTDI rebates.

In our view, therefore, it would be a grave error for the government to contemplate reducing or removing the support it provides for business R&D. On the contrary, the support should be strengthened, especially the support for R&D by SMEs.

We are in no doubt that public expenditure on establishing and maintaining internationally policy settings framework for supporting business R&D would pay dividends in the medium- to longer-term. These dividends would come in the form of more rapid economic growth and higher tax revenues, net of government expenditure. This would, in turn, enable the government to invest more in other areas - such as infrastructure, health, education - that will improve further the attractiveness of New Zealand as a place to operate businesses.

We look forward to engaging with Ministers on this important issue.

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