

Estimating Ako Aotearoa's economic impact

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MAKING SENSE OF
THE NUMBERS

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Making sense of the numbers

The 2014–2019 Tertiary Education Strategy and the most recent Plan Guidance from the TEC have shifted the focus from measuring the performance of tertiary education organisations mainly on the basis of their educational output indicators, towards measuring their performance on the basis of economic outcomes. Improving productivity in the economy is an important goal and it is appropriate, therefore, that Ako Aotearoa should wish to know how its activities are contributing towards this goal.

This report presents a logic model that focusses on the role of Ako Aotearoa's National Project Fund (NPF) and Regional Hub Project Funds (RHPF) in improving educational outputs – in particular, qualification completions – that can be linked to improved labour market outcomes. The model also relates labour market outcomes to productivity and GDP.

BERL found evidence to populate most of the model with data. However, there was insufficient evidence from Ako Aotearoa's Impact Evaluation Framework (IEF) to indicate how the NPF and RHPF projects have affected qualification completions.

Nonetheless, it was possible to provide an indicative account of Ako Aotearoa's economic contribution. By assuming that Ako Aotearoa's projects affect only the employability of learners and, hence the productive capacity of the workforce, it is shown that, by increasing qualification completion rates by one percentage point, Ako Aotearoa will have caused GDP to increase by two-and-a-half times the cost of its NPF and RHPF projects. Alternatively, in order for GDP to have increased by the same amount as the project costs, Ako Aotearoa will have had to increase qualification completion rates by 0.4 of a percentage point.

These estimates overstate Ako Aotearoa's benefit: cost ratio to the extent that there is no allocation of overhead costs to the NPF and RHPF projects. On the other hand, they understate the benefit: cost ratio because they assume that the projects have had no effect on individual productivity and because they ignore the welfare cost savings associated with increased employability.

The report recommends that Ako Aotearoa should explore how it can improve its IEF, so that it records more and better information on how NPF and RHPF projects affect qualification completions. However, it also acknowledges that a more complete understanding of how Ako Aotearoa contributes to economic outcomes will also depend on better external evidence on how more effective teaching and learning practices contribute to increased individual productivity, once learners join the workforce. The contribution to reduced welfare payments also needs to be better understood.

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1 Introduction

1.1 About Ako Aotearoa

Ako Aotearoa is the National Centre for Tertiary Teaching Excellence. Its mission is:

“Through a focus on enhancing the effectiveness of tertiary teaching and learning practices, Ako Aotearoa will assist educators and organisations to enable the best possible educational outcomes for all learners.”

Based on this mission, Ako Aotearoa leads the drive to establish what counts as good and effective tertiary teaching in Aotearoa New Zealand and to make it happen, so that teaching is better, is better valued and produces better outcomes for learners and the nation.

Ako Aotearoa was established to support New Zealand's tertiary education organisations and educators to meet these wide-ranging challenges. A key starting point is that because of these complexities, there is no single solution for the enhancement of tertiary teaching and learning. Good practice and excellence in education comes in many forms.

With this in mind, Ako Aotearoa's aims are three-fold:

- to ensure that all tertiary learners enjoy good and worthwhile experiences when they embark on tertiary study,
- to ensure that every learner has the maximum opportunity to complete their studies successfully, and
- to nurture and sustain both teaching excellence and excellent teachers.

The majority of the funding Ako Aotearoa receives is from the Tertiary Education Commission. The majority of funding Ako Aotearoa disburses is through its National Project Fund (NPF).

The NPF is a strategic change fund – a fund that supports evidence-based change in teaching and learning practice for the benefit of learners. The Fund was established with four primary goals, to:

- Enhance educational outcomes for learners
- Contribute to the development of a more coherent knowledge base of effective tertiary teaching and learning in Aotearoa New Zealand
- Promote collaboration across and within different parts of the tertiary education system
- Build research capability and capacity.

1.2 Aims and objectives of this report

At the end of 2015, Ako Aotearoa commissioned BERL to estimate its economic impact. This was opportune because both the Tertiary Education Strategy and the Plan Guidance being issued to tertiary education organisations by the Tertiary Education Commission have signalled the need to shift the focus in performance measurement beyond educational outputs (e.g. course and qualification completion rates) towards economic outcomes, especially increased productivity.

Accordingly, the objective of BERL's work was to generate estimates of the productivity and GDP gains that can be attributed to Ako Aotearoa's activities. Given data on the number of learners reached by Ako Aotearoa's various activities and evaluation evidence on the effect Ako Aotearoa has had on completions, it would then be possible to generate grossed-up estimates of Ako Aotearoa's economic impacts.



The underlying proposition is that Ako Aotearoa's activities enhance the quality and effectiveness of teaching practices. This improves learner completion rates, which in turn lead to improved productivity and individual earnings. Earnings are generally a function of productivity, and there tends to be a relationship between productivity and GDP.

1.3 Approach and methodology

The basis of our approach was to create a logic model showing all the links in a chain of causation between the problem definition (underperformance of the New Zealand economy) and intervention outcomes (increased productivity and GDP as the result of a better qualified workforce). We then attempted to populate the model with data in order to derive performance measures to assess Ako Aotearoa's contribution.

The principle data sources we used to undertake this research were Ako Aotearoa administrative data and evidence from its Impact Evaluation Framework. We focused on National Project Fund (NPF) projects funded between 2008 and November 2013. We also referred to Census data from Statistics New Zealand and research reports from MBIE and the Treasury.

The report is structured as follows:

- Section 2 describes the Ako Aotearoa projects for which we obtained data and evaluation evidence. The robustness of Ako Aotearoa's impact evaluation framework is also commented on.
- Section 3 shows how we constructed our logic model.
- Section 4 reviews some evidence on how qualifications affect individuals' income and earnings; and, by implication, how qualifications contribute to economic performance.
- Section 5 presents our logic model populated with data.
- Section 6 draws conclusions about Ako Aotearoa's economic contribution and makes some recommendations for improving Ako Aotearoa's approach to project evaluation.

2 Ako Aotearoa programmes and how they are evaluated

Ako Aotearoa project funding focuses on enhancing educational outcomes, and a key question in determining if a project should be funded, and in turn as part of evaluating the impact of the project, is to what extent has the project resulted in change that benefits learners? To answer this question, Ako Aotearoa uses an Impact Evaluation Framework (IEF).

The funding streams that are offered include large grants of up to \$150,000 from the National Project Fund (NPF), and small project funds (normally \$10,000) through the Regional Hub Project Funding scheme (RHPPF). Since the fund's establishment in 2008, until the end of November 2013, 35 NPF projects have been completed, of which 27 have been involved in the IEF. This represents an Ako Aotearoa investment of \$2.1 million in the evaluated projects. There have also been 75 smaller projects funded by the RHPPF, representing an investment of around \$800,000.

2.1 Impact Evaluation Framework

The Impact Evaluation Framework was developed in 2010 and trialled in 2011. It was then implemented across all Ako Aotearoa project funding streams from 2012.

The Impact Evaluation Framework examines a project's impact across four key dimensions:

- Reach (generation and dissemination of project outputs)
- Impact on teaching practice
- Impact on learners
- Impact on the project teams themselves.

Ako Aotearoa staff visit the project teams and conduct evaluative interviews at six, 12 and 24 months after a project has been completed. These interviews are conducted in the context of the original project goals and developed into a project 'story' by the Ako Aotearoa staff.

The stories are updated at each interview point and summarise the key achievements of the project to date, and the future focus of activities.

The purpose of the stories is to act as a comprehensive account of the impact of an individual project over the two years after the work has been completed.

The interview stories are taken by other Ako Aotearoa staff and "coded" against the IEF. This means the themes that are explored in the interview are allocated to an impact. The IEF measures the collective impact across four dimensions (reach, practice, learners, and the project team) and a coding scheme was developed to collate this. By collating these themes the broad nature of the impact is identified.

Coding themes for impact on learners are:

- **Academic** – the project has contributed to improved academic outcomes for learners or has contributed to learners' academic development in their specific field of study, e.g. achievement rates have increased etc.
- **The learning environment and/or resources** – the project has contributed to an enhanced learning environment or improved learning resources
- **Relationships** – the project has contributed to improved relationships within a learning environment, e.g. with peers or between teaching/support staff and learners

- **Personal development** – the project has contributed to learners personal development, e.g. increased confidence
- **Pathways or progression** – the project has contributed to enhancing employment pathways or has acted as a stepping-stone to other learning opportunities

During coding, a distinction is made between the presence of evidence of change (e.g. student results or survey data described by project teams) and observed change (e.g. change attributed by teachers in the absence of systematic evidence).

Table 2-1 summarises the NPF and RHPF projects about which Ako Aotearoa provided BERL with data. It indicates that the large majority of projects funded were at NQF Level 4 and above. It also indicates that, at the time they were proposed, two-thirds of projects were expected to have some effect on learning outcomes, while project evaluations found evidence of an effect on outcome in four-in-ten cases. In reading the table, it should be noted that some projects focused on both foundation level and higher level learners. The table includes some half numbers because, in some cases, the project records did not make clear what level of study the projects were focused on. Similarly, some of the evaluations did not make clear whether an effect on outcomes was expected at proposal stage, or whether an effect on outcomes was actually achieved. In cases where there was doubt, project were recorded as 0.5 (might have / might have had an effect), instead of as 1 (expected to have / actually had an effect) or zero (was not expected to have / did not actually have an effect).

Table 2-1 Summary of NPF and RHPF projects recorded in the Impact Evaluation Framework

		National Office	Northern Hub	Central Office	Southern Hub	All
Number of projects funded		27	31	18	26	102
Projects focusing on Foundation Learners	Number	9.5	5	7	7	28.5
	Percentage	35%	16%	39%	27%	28%
Projects focusing on Level 4 and above	Number	20	23	16	24	83
	Percentage	74%	74%	89%	92%	81%
Projects where a potential effect on completions was indicated at proposal stage	Number	10	27.5	15	14	66.5
	Percentage	37%	89%	83%	54%	65%
Projects where there were indications of an effect on completions at IE story stage	Number	4.5	16.5	7.5	12	40.5
	Percentage	17	53	42	46	40

Source: Ako Aotearoa

2.2 Limitations of the IEF

There are, however, limitations associated with this framework. These include: difficulties around causality; the evaluation is interview-based; the evaluation presents evidence that is a snapshot in time – six, 12 and 24 months; those projects that may have the most impact are not always ‘tagged’ within the framework particularly those that result in the delivery of professional development workshops; it is difficult to separate the impact of the project intervention from other more broader policy interventions.

There are enduring difficulties in attributing causality, and concerns around the timeframe in which the impact on learners should be measured.

It is important to recognise the different types of projects that are funded, and the wide range of teaching environments that encompass tertiary education: “...some projects are interventions in specific learning environments, which, if successful, should provide short-term returns, but might be expected to have an impact

on limited numbers of learners. Others are much more strategic and endeavouring to achieve longer-term sustainable change, which in some cases, has much wider impact.”¹

In its current design, the IEF records the most recent conversation data only. This means that it provides a snapshot and doesn't easily allow for tracing change that is achieved over time for each project.

2.3 Previous evaluation

In 2014, Dr Kirsty Weir collated IEF conversations about NPF projects. This research considered the outcomes of the evaluative conversations and the key impact dimensions of these 27 NPF projects. Dr Weir identified:

- 20 project teams described benefits for learners.
- Roughly half of the NPF project teams were able to estimate impact on learners within their organisations; however, only three were able to estimate the “breadth of impact externally to their organisation.”
- “The most common forms of benefits to learners identified were improvements to the learning environment and resources, and academic enhancement.”
- “It is estimated that, to date, over 62,000 learners are likely to have benefited from this collective body of project work: over 30 learners for every \$1,000 invested.”

2.4 Our observations

Our observations of the interviews are:

- Many of the interviews undertaken at six months do not discuss the impact of the project on the learner. This is because it may be too early to tell what the potential impact on learners is or will be.
- There is a lot of focus on measurable transactions, such as website downloads, conference presentations, users accessing the research reports, but little to no focus on how a change in practice benefited learners. This discussion is often an afterthought rather than a key point at the beginning.
- Interest in the project, the impact on the career of the project leader or project participants, and the interest that is generated within a department, school or institution is noted.
- The process that the project will go through, the inputs and outputs of the project, and the problem that the project is seeking to address are discussed in detail. The outcomes of the project are not. Outcomes are not a key part of the evaluations.

Many of the interviews did not have information on benefits to learners at the six or 24-month interview. One project, for example, had no information on their impact on learners at any of the interview points, but then claimed that 180 learners within the organisation and 300 learners outside of their organisation were impacted. However, there was no evidence of this impact presented in the interview discussion. Further, the content of the interview contradicts these numbers by stating that “not enough has been done with the revised framework to illustrate benefit to learners.”

More generally, it was often difficult to follow the arithmetic used in project evaluations, even when the evaluators felt sufficiently confident to enumerate the impacts.

¹ Weir, K. (2014). Enhancing tertiary teaching and learning through Ako Aotearoa Aotearoa-funded project work. Ako Aotearoa: Wellington.

3 Creating an intervention logic model

“Tertiary education helps people improve their lives, and the lives of those around them. It is a passport to success for individuals in our society, and supports wider economic growth and prosperity. Skilled people are essential to the success of businesses and other organisations.”

...

“The “Building Skilled and Safe Workplaces” programme of the Government’s Business Growth Agenda aims to materially lift New Zealand’s long-run productivity growth rate while maintaining our high rate of labour force participation. This requires tertiary education to better equip individuals with the skills and qualifications needed to participate effectively in the labour market and in an innovative and successful New Zealand.”

Minister for Tertiary Education, Skills and Employment’s Foreword to the Tertiary Education Strategy 2014-2019

In summary, the reasoning behind these statements from the Tertiary Education Strategy is that:

- Productivity in New Zealand is lower than it could be because the workforce is insufficiently skilled
- As a result, the country is not as prosperous as it could be
- Tertiary education has key role to play in rectifying this situation by improving the skills and qualification of the population.

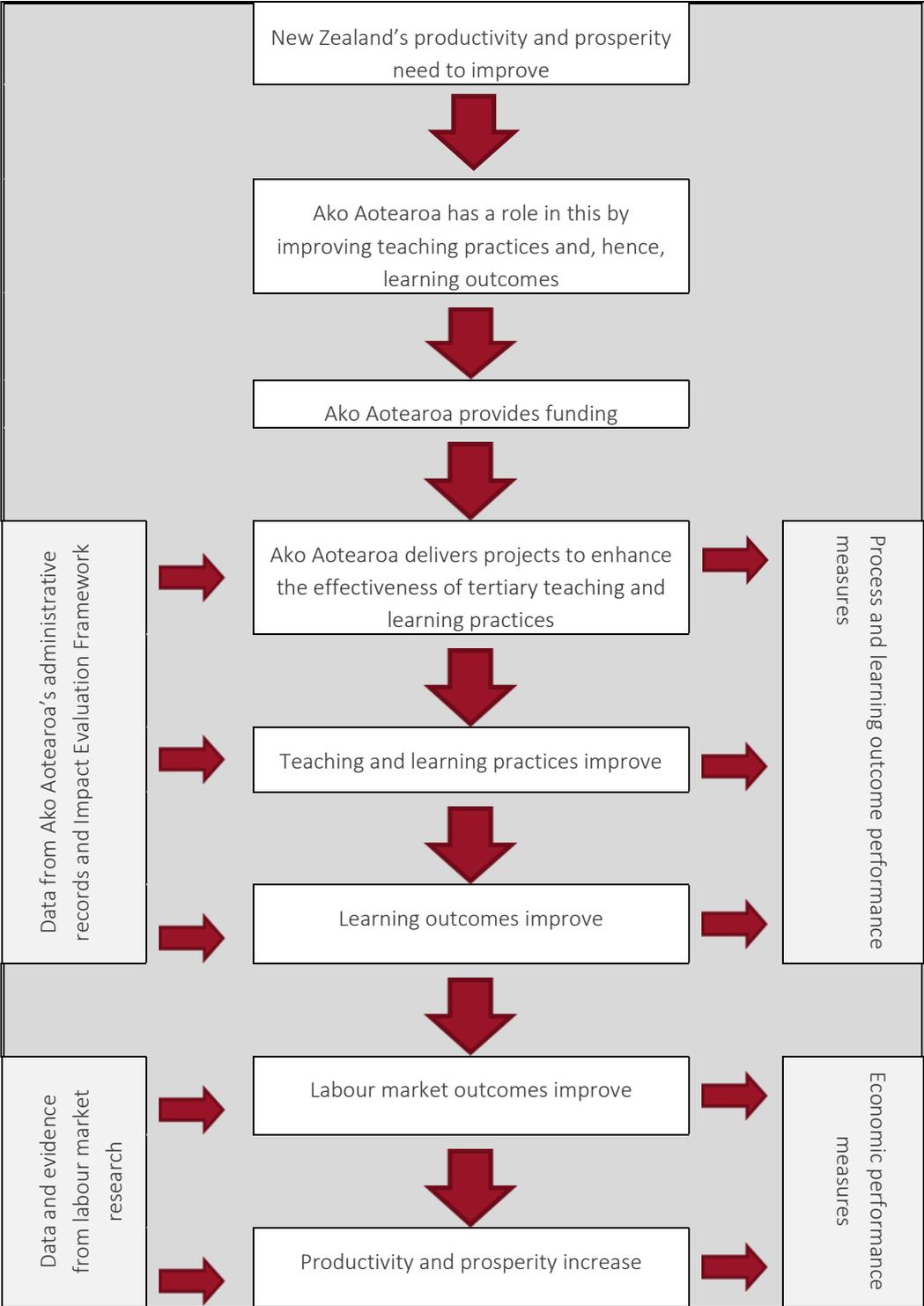
Building on this reasoning, we developed an intervention logic model, which embodies a chain of causation that links the policy problem, to a funding response, to activities designed to enhance teaching practices and learning outcomes; and so on, to economic outcomes. The model is illustrated in Figure 3-1.

The model posits that each link in the chain is directly caused by the previous link and directly causes the succeeding link. Thus, the initial recognition of the problem ultimately causes the amelioration of the problem. Good quality data that plausibly connects one link to the next is required to establish a convincing relationship between the initial problem and the eventual effect.

The illustration of the model in Figure 3-1 also indicates the points in the chain at which it is necessary to insert data, and the general source of the data. In addition, it shows the points at which performance measures can be generated.

In section 5 we show the extent to which it was possible to populate the model with data.

Figure 3-1 Logic model for estimating Ako Aotearoa's economic impact



4 Some evidence on the importance of qualifications

It is almost axiomatic that a better qualified workforce is a more productive workforce. But, before we proceed to populate the logic model with data, it is worthwhile pausing to consider what the evidence actually shows.

4.1 Census data

Census data enable the variation in individuals' income levels to be related to their qualification levels.

Table 4-1 is based on Census 2013 data, and it shows the average incomes of 18-44 year olds, broken down by broad qualification level, sex and ethnicity. Table 4-2 presents the same data expressed in ratio form, rather than absolute dollars. In the tables, foundation qualifications are post-school qualifications at levels 1-3, while higher qualifications are at levels 4 or above.

In broad terms, the two tables suggest the following:

- Possession of a school qualification boosts incomes when compared with the absence of a qualification.
- Possession of a foundation level qualification also boosts incomes, but by no more than a school qualification does.
- Possession of a higher qualification boost incomes significantly.
- These findings are generally true for both males and females, but the income boosting effect of qualifications is slightly stronger among females.
- These findings are also generally true for all ethnicities, although having a school qualification, rather than a foundation qualification, has a particularly strong effect on the incomes of Māori.

Table 4-1: Average incomes of 18-44 year olds in 2013

		Average incomes			
		No Qualification	School Qualification	Foundation Qualification	Higher Tertiary Qualification
Male	European	\$34,421	\$38,401	\$39,330	\$56,603
Male	Maori	\$25,919	\$31,406	\$29,459	\$46,328
Male	Pacific Peoples	\$25,051	\$27,926	\$27,238	\$40,405
Male	Asian	\$23,333	\$22,963	\$28,627	\$39,287
Male	MELAA	\$19,965	\$25,956	\$29,472	\$42,506
Male	Other Ethnicity	\$35,112	\$40,478	\$38,096	\$56,426
Male	Total Stated	\$30,624	\$34,694	\$36,104	\$52,199
Male	Not Elsewhere Included	\$26,235	\$29,274	\$31,957	\$43,771
Male	Total	\$30,599	\$34,666	\$36,084	\$52,165
Female	European	\$21,707	\$25,902	\$25,732	\$38,004
Female	Maori	\$19,427	\$23,714	\$21,915	\$34,781
Female	Pacific Peoples	\$18,063	\$21,448	\$20,916	\$31,746
Female	Asian	\$15,420	\$16,288	\$20,814	\$31,094
Female	MELAA	\$12,837	\$16,352	\$17,266	\$29,200
Female	Other Ethnicity	\$23,704	\$26,788	\$26,628	\$38,164
Female	Total Stated	\$20,038	\$23,830	\$24,306	\$36,233
Female	Not Elsewhere Included	\$17,500	\$20,354	\$20,571	\$33,137
Female	Total	\$20,016	\$23,822	\$24,292	\$36,227
Total	Total	\$28,877	\$31,841	\$31,397	\$46,787

Source: Statistics New Zealand

Table 4-2 Ratios of average incomes of 18-44 year olds in 2013

		Income ratios					
		School qualification cf No qualification	Foundation qualification cf No qualification	Higher qualification cf No qualification	Foundation qualification cf School qualification	Higher qualification cf School qualification	Higher qualification cf Foundation qualification
Male	European	1.12	1.14	1.64	1.02	1.47	1.44
Male	Maori	1.21	1.14	1.79	0.94	1.48	1.57
Male	Pacific Peoples	1.11	1.09	1.61	0.98	1.45	1.48
Male	Asian	0.98	1.23	1.68	1.25	1.71	1.37
Male	MELAA	1.30	1.48	2.13	1.14	1.64	1.44
Male	Other Ethnicity	1.15	1.08	1.61	0.94	1.39	1.48
Male	Total Stated	1.13	1.18	1.70	1.04	1.50	1.45
Male	Not Elsewhere Included	1.12	1.22	1.67	1.09	1.50	1.37
Male	Total	1.13	1.18	1.70	1.04	1.50	1.45
Female	European	1.19	1.19	1.75	0.99	1.47	1.48
Female	Maori	1.22	1.13	1.79	0.92	1.47	1.59
Female	Pacific Peoples	1.19	1.16	1.76	0.98	1.48	1.52
Female	Asian	1.06	1.35	2.02	1.28	1.91	1.49
Female	MELAA	1.27	1.35	2.27	1.06	1.79	1.69
Female	Other Ethnicity	1.13	1.12	1.61	0.99	1.42	1.43
Female	Total Stated	1.19	1.21	1.81	1.02	1.52	1.49
Female	Not Elsewhere Included	1.16	1.18	1.89	1.01	1.63	1.61
Female	Total	1.19	1.21	1.81	1.02	1.52	1.49
Total	Total	1.10	1.09	1.62	0.99	1.47	1.49

Source: Statistics New Zealand

4.2 MBIE research

A 2014 study by three MBIE researchers² started by arguing that:

“The qualifications possessed by the labour force are important determinants of its productivity and therefore of future economic growth. From a labour market perspective, qualifications of workers shape both their readiness to participate in the workforce as well as their capacity to meet demand for specific skills.”

The purpose of this particular piece of research was to develop forecasts of labour force participation rates, but the forecasts were based on analyses of past participation rates and how they varied according to age, sex and qualifications. The general conclusion was that qualifications are associated with higher rates of participation; and that this was true for both males and females, and across virtually all age groups.

So, for example, it was shown that among males in the 40-44 year age group, participation rates were 11 percentage points higher for those with degrees and other level 4+ qualifications than they were for those with no qualifications (see Table 4-3). Participation rates were 8 percentage points higher for those with school qualifications than they were for those with no qualifications.

Among females in the same 40-44 year age group, the differentials were even larger. Indeed, the effect on participation rates of having qualifications was greater among females than males, almost regardless of age group and level of qualification.

² Williams, J., R. SriRamaratnam and X. Zhao, “Labour supply forecasting by age, gender and qualification”, Ministry of Business Innovation and Employment, Wellington, 2013

Table 4-3 Effect of qualifications on labour force participation rates
(percentage point increase in participation compared to no qualifications)

	Age group:										
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male - degree	n/a	2	10	11	11	11	10	12	13	20	17
Male - Level 4+	43	11	11	12	11	11	10	11	13	14	4
Male - school	14	-4	7	8	8	8	8	9	10	10	2
Female - degree	n/a	37	37	25	17	16	17	22	28	28	16
Female - Level 4+	42	32	26	20	17	16	17	20	21	21	7
Female - school	22	20	19	14	11	10	12	13	14	11	2

Source: Williams et al.

4.3 Treasury research on qualifications and labour market outcomes

Table 4-4 is based on findings from a Treasury study on the impact of tertiary education on the labour market outcomes of a cohort of young people who left school without achieving NCEA level 2³.

The cohort in question comprised young people who were born between July 1990 and June 1992 who left school without completing NCEA level 2 and who enrolled to study at a tertiary institution within the first few years after leaving school. The study involved matching those who enrolled in a tertiary education programme in the period from 2006 to 2010 (while they were aged 16–19 years) and had completed or withdrawn by the end of 2010 and did not re-enrol in 2011 or 2012, with their peers who did not enrol. The matching was on the basis of demographic characteristics. The labour market outcomes considered were employment, receipt of benefits and earnings.

The first column of data in Table 4-4 represents the labour market outcomes of the different sub-groups of young people in the cohort who participated in tertiary education, while the second column shows the outcomes of the matched sub-groups of young people who did not participate. It will be noted that the outcomes of the matched young people who did not participate vary according to the sub-group of the young people who enrolled. This is because each sub-group of young people who enrolled had slightly different demographic characteristics.

The impact data in the third column show the percentage points or dollars difference between the outcomes of the young people who enrolled and those of their matched non-participants, with statistically significant differences shown in bold type. The data in the relative impact column show the impact expressed as a percentage of the matched non-participants' mean.

It will be noted that, in most cases, the impact measures are statistically significant. It will also be seen that, for four out the five sub-groups, the impact on employment is positive (i.e. good), while the impact on receipt of benefits is negative (i.e. also good) for four out the five sub-groups. Similarly, for four out of the five sub-groups, the impact on monthly average earnings is positive. However, for all five sub-groups the impact on monthly average earnings is negative (albeit not necessarily significantly so), when only periods in employment are compared.

Based on this table, the main general finding from the study was that: *“tertiary study is beneficial for low-qualified school-leavers who complete a qualification, but of little value (or even costly) for those who do*

³ Tumen, S., S. Crichton and S. Dixon, “The Impact of Tertiary Study on the Labour Market Outcomes of Low-qualified School Leavers” New Zealand Treasury Working Paper 15/07, 2015

not". It also found that the outcomes from completing a Level 4 qualification were better than those from completing Level 1-3 qualification; and that completing a qualification leads to higher employment rates and lower benefits dependency, but no real difference in earnings amongst those in employment. The findings did, however, vary according to sex, ethnicity, type of provider and field of study.

Table 4-4 Estimated impacts of tertiary study on outcomes two years later

	Students	Matched non-participants	Impact	Relative impact (%)
All who enrolled				
Proportion employed (%)	58.1	54.7	3.4	6.2
Proportion receiving a benefit (%)	32.0	33.3	-1.3	-3.9
Proportion not employed or receiving a benefit (%)	15.1	17	-1.9	-11.3
Average monthly earnings (\$)	1480.0	1434	46.0	3.2
Average monthly earnings when employed (\$)	2550.0	2624	-74.0	-2.8
Did not complete a qualification				
Proportion employed (%)	52.2	53.2	-1.0	-1.9
Proportion receiving a benefit (%)	37.3	34.4	2.9	8.4
Proportion not employed or receiving a benefit (%)	16.2	17.4	-1.2	-7.1
Average monthly earnings (\$)	1301.0	1388	-86.0	-6.2
Average monthly earnings when employed (\$)	2494.0	2610	-116.0	-4.5
Completed a qualification				
Proportion employed (%)	65.8	56.7	9.2	16.2
Proportion receiving a benefit (%)	25.1	31.9	-6.8	-21.4
Proportion not employed or receiving a benefit (%)	13.6	16.4	-2.8	-17.2
Average monthly earnings (\$)	1716	1496	221.0	14.8
Average monthly earnings when employed (\$)	2608	2640	-32.0	-1.2
Completed a level 1-3 certificate				
Proportion employed (%)	65	56.5	8.5	15.0
Proportion receiving a benefit (%)	25.7	32.1	-6.4	-19.9
Proportion not employed or receiving a benefit (%)	13.7	16.3	-2.6	-16.2
Average monthly earnings (\$)	1691	1487	204.0	13.7
Average monthly earnings when employed (\$)	2604	2633	-29.0	-1.1
Completed a level 4 certificate				
Proportion employed (%)	67.8	57.1	10.8	18.9
Proportion receiving a benefit (%)	23.4	31.3	-7.9	-25.2
Proportion not employed or receiving a benefit (%)	13.3	16.6	-3.2	-19.5
Average monthly earnings (\$)	1776	1516	260.0	17.2
Average monthly earnings when employed (\$)	2618	2655	-38.0	-1.4

Source: Treasury

4.4 Implications of the evidence

In the context of this report, the evidence in this section has some important implications about the relationship between qualifications and productivity, and between qualifications and GDP.

The Census data suggest that there is a strong association between the level of an individual's qualifications and their income. Insofar as there is a link between incomes and productivity, and incomes and GDP, it is essential for economic prosperity to increase the number and proportion of people with qualifications, especially higher

level qualifications. However, it should be noted that the Census data is for incomes from all sources, rather than earnings. Income differentials are likely to be less than earnings differentials because incomes include "non-earned" income such as Job Seeker Support and in-work benefits.

The MBIE research indicated that there is a strong relationship between possessing a qualification and being able to participate in the labour force, i.e. to be economically productive. It also showed that higher level qualifications were important in this regard. However, the scope of this work did not extend to examining the effect of qualifications on earnings and productivity.

The Treasury study findings have several possible interpretations. One interpretation is that qualifications have no impact on productivity at the individual level, but that they contribute to greater levels of aggregate GDP because the effect is to expand the employable labour force.

Another interpretation is that the effect on individual productivity among this cohort of young people is hidden. The authors of the Treasury report noted that many of the young people within the cohort will have been working in minimum wage jobs. There is no proof of this, but we infer from this that the qualified young people could have been more productive than their non-qualified peers without their higher productivity being reflected in their earnings.

A related possibility is that the effect of qualifications on productivity and earnings within the cohort is simply delayed and that, in due course, evidence of higher productivity will emerge. The reason for this speculation is that the research examined the labour market outcomes of the cohort only two years after they ceased studying.

It should be cautioned, however, that the Treasury research focused on a distinct sub-group of young people, and that it does not automatically follow that the findings are representative of the wider population.

Overall, the evidence examined above strongly imply that qualifications enhance the ability of individuals to participate in the workforce, so increasing its productive capacity. Some of the evidence shows a strong association between qualifications and incomes, from which it might be inferred that qualifications boost individual productivity. We believe, however, that the causal link between qualifications and ability to participate in the workforce is stronger than the link between qualifications and individual productivity.

5 Populating the model

Given the preceding findings, it is possible to populate most of the logic model shown in Figure 3.1 with data, although there is a serious lack of data on learning outcomes; in particular, the extent to which Ako Aotearoa's projects have affected qualification completions.

However, the lack of data is not fatal, and it can be circumvented in two possible ways. The first is to use an assumed value for the extent to which Ako Aotearoa has contributed to increased qualification completions, given evidence on the extent to which completion rates have improved over time. The second is to interpolate, given the other data in the model, the minimum impact on completions Ako Aotearoa would need to have had in order to have delivered an increase in GDP equivalent to the project funding.

Figure 5-1 reflects the first of these approaches, in which the key assumption is that the effect of Ako Aotearoa's projects has been to increase completion rates by 1%. This leads to an extra 112 learners becoming employed. These additional employees are then estimated to increase GDP by \$7.07 million a year. The resultant benefit to cost (GDP to Ako Aotearoa project cost) ratio is \$7.07million: \$2.87 million, or almost 2.5: 1.

It needs to be questioned, though, whether the Ako Aotearoa projects in question will have actually enabled one percent of the learners involved to complete their qualifications when they would not have done so otherwise. After all, completion rates were generally increasing between 2008 and 2013 and, clearly, other factors will have influenced this.

Measuring tertiary education completion rates is a complex process, because the rates vary according to NQF level and the number of years allowed for completion. However, Education Counts data provide some useful indications. For example, taking all NQF levels together, the percentage of students completing a qualification at the same level as, or higher than, the one they started within one year increased from 22% in 2008 to 32% in 2013. The percentage of students completing a qualification at the same level as, or higher than, the one they started within two years increased from 35% in 2008 to 46% in 2013. Data on three year (and over) completion rates covering the whole of the period from 2008 to 2013 are not yet available, but it is evident that completion rates have been increasing at around two percentage points a year. It does not, therefore, stretch the bounds of possibility to assume that Ako Aotearoa's projects contributed to a one percentage point increase in completion rates over a five year span.

Using the interpolation approach, the final GDP increase is set at the same as the Ako Aotearoa project cost. This would necessitate only 45 additional learners enabled to become employed, and this would require only 330 learners to complete their qualifications when they would not otherwise have done so. In turn, this implies that the Ako Aotearoa projects would have needed to increase completions by 0.4 percent in order for the project cost to equal the increment to GDP.

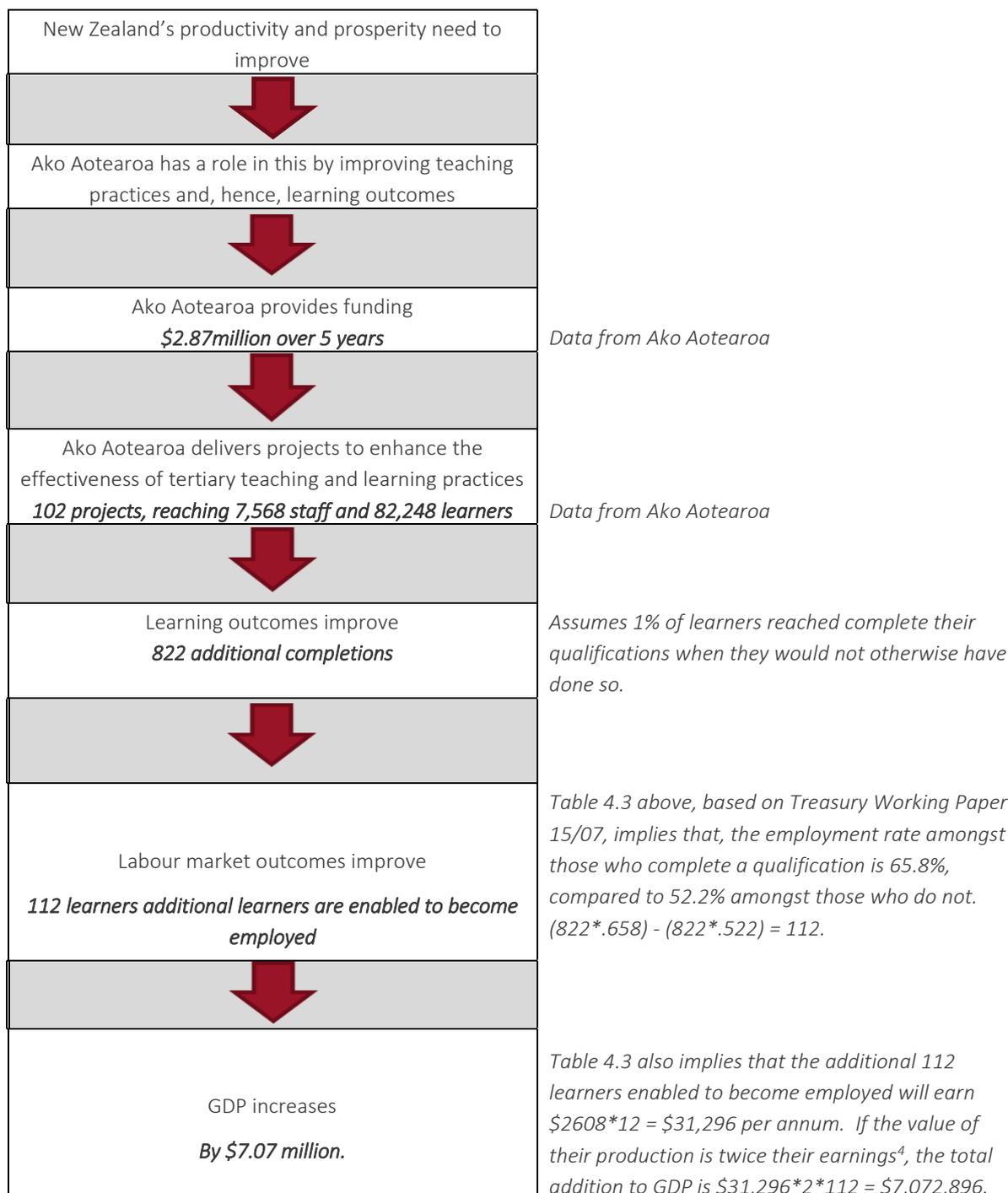
These findings could be challenged on the grounds that they do not take account of all the relevant costs, in particular the Ako Aotearoa overhead costs that could be apportioned to the NPF and RHPF projects. This would imply that the findings overstate the benefit: cost balance.

On the other hand, it is strongly arguable that the findings understate the benefit: cost balance. This is partly because the benefits side of the equation do not include the welfare payments saved because more learners are enabled to become employed. The quantum of the savings is not known, but the Treasury research cited above indicated that learners who complete their qualifications are significantly less likely to receive welfare payments than those who did not.

The benefit: cost balance is also likely to be understated because the calculations assume that the only effect of the Ako Aotearoa projects is to increase the number of learners who complete their qualifications when they would otherwise have failed to do so. These marginal learners are enabled to become employed and the

productive capacity of the workforce increases. There is assumed to be no effect on the learners who would have completed their qualifications anyway. But, in our view, this is unlikely because we believe that there will have been some effect on the individual productivity of the learners and, hence, an increase in GDP. It is not possible, however, to estimate how large this effect might have been.

Figure 5-1 Populated logic model assuming Ako Aotearoa enabled an extra 1% of learners to complete their qualifications



⁴ The New Zealand input-output tables show that the 2:1 relationship between the value of production and earnings is true for all industries combined, although it varies from industry to industry.

6 Conclusions and recommendations

The findings of this report are indicative, rather than definitive, but they point to the conclusion that Ako Aotearoa's NFP and RHFP projects are likely to have delivered economic benefits in excess of their costs. A more definitive conclusion would have needed better data on how the Ako Aotearoa projects affected the learning and labour market outcomes of the students they reached.

The external evidence we reviewed indicated that completing a qualification is critical to achieving good labour market outcomes, and that merely enrolling for a course leading to a qualification contributes little, if anything to outcomes. We recommend, therefore, that Ako Aotearoa should examine ways in which the design and application of its Impact Evaluation Framework could be improved, in order to obtain better information on how its projects affect qualification completion rates.

It is also important to note that, even if Ako Aotearoa did possess good data on whether and to what extent its projects have affected qualification completions, it would still have been difficult to create a complete and definitive account of Ako Aotearoa's economic impacts. Such an account would have required better external evidence on how more effective teaching and learning practices are related to improved labour market outcomes. In this report we were only able to relate increased qualification completion rates to increased productive capacity of the workforce. Ideally, we would have liked to have been able to explore how the more effective teaching and learning practices contribute to increased productivity at the level of the individual. In addition, it would also have been useful to be able to enumerate the savings in welfare payments that result from greater employability of learners. However, we are not aware of any research that sheds light on these two issues.