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Investing in tertiary education assets

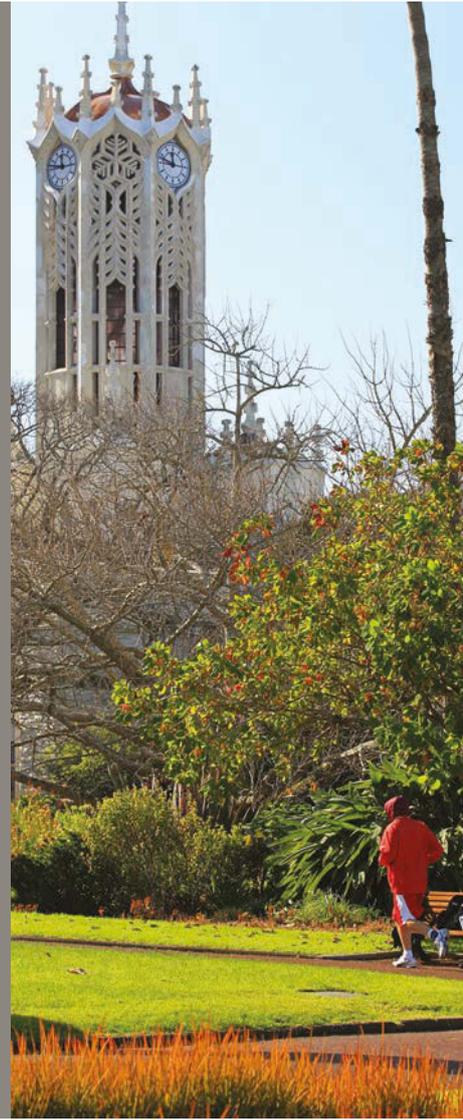


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Investing in tertiary education assets

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Auditor-General's overview

Tertiary education institutions – our universities, polytechnics, wānanga, and other tertiary education organisations – make an important contribution to New Zealand's social and economic success. In 2015, these institutions held about \$9.7 billion in net assets, including \$9.5 billion in capital assets. In 2014, they also planned to spend a further \$8.2 billion on capital assets by 2024.

*Naku te rourou nau te
rourou ka ora ai te iwi*

Investment in assets has been a theme of my Office's recent work and this report considers the effectiveness of investment in tertiary education sector assets to support educational success. To prepare this report we looked at some business cases and came up with a cost-effectiveness measure.

The tertiary education sector is facing pressures from new technology and ways of delivering education, ageing assets, and declining numbers of domestic students. Such pressures are inevitably increasing the level of competition for student enrolments. In this context, the Government's *Tertiary Education Strategy 2014-2019* supports social and economic outcomes for the tertiary education sector. The strategy aims to enhance the effectiveness of the sector as a whole, as well as the effectiveness of its parts. High-quality information needs to be provided in a timely and transparent manner to help show whether the strategy is being achieved. Such information is also required to support good accountability in the sector so that New Zealanders can know that the taxes they pay are spent effectively.

Each tertiary education institution is required to prepare an investment plan to show how it plans to give effect to the priorities in the tertiary education strategy. For particular capital investments, tertiary education institutions prepare business cases and we reviewed 14 of them.

We found those business cases were generally of a high standard. Particular strengths were that:

- benefits, risks, and risk-management approaches for the individual university or polytechnic were usually described in detail; and
- most sections dealing with risk included comments about a range of financial indicators, for example, operating and net surplus, and net cash/debt position.

However, there was little evidence of the tertiary education strategy's aim to enhance the effectiveness of the sector as a whole. In most of the business cases, tertiary education institutions did not:

- take account of the investments planned or made by other tertiary education institutions; nor

- consider how to make the most of their investments by sharing or using the existing assets of other tertiary education institutions.

The business cases we looked at were prepared in 2013 and 2014. For 2015/16, the Tertiary Education Commission specifically asked tertiary education institutions to “explore ways to increase efficiencies through shared services, infrastructure and other collaboration, such as partnerships”. Our findings and this requirement suggest it is important that tertiary education institutions give attention to wider sector considerations when they prepare future business cases to support their major investments.

For the purposes of good accountability and effective investments, and because education is so important to New Zealand’s future, we developed a cost-effectiveness measure to see whether system-wide factors could affect the relationship between the money spent on assets and educational outcomes for students – in other words, a basic cost-effectiveness measure that we called “investment effectiveness”. There are many ways to measure investment effectiveness. Our measure, for example, did not include research objectives associated with the investment in tertiary education assets. This shows an area of opportunity for tertiary education institutions and other education agencies in the future development of business cases and cost-effectiveness measures.

We used publicly available information about tertiary education institutions’ assets and education outcomes (educational performance indicators) to apply the measure. Some feedback we received expressed concern about the quality of the educational performance indicators and their use in our measure. If the educational performance indicators do not meet good quality standards, then the sector and individual tertiary education institutions need to improve that accountability information.

Applying our measure shows how tertiary education institutions may individually and collectively be affected by changes in their wider environment. We used three scenarios involving changes in student numbers. Using our measure:

- a large change in the number of international students has a small effect on investment effectiveness;
- a small change in domestic student numbers has a comparatively large effect on investment effectiveness; and
- if a group of tertiary education institutions increases its market share, this can decrease the overall (average) investment effectiveness of all tertiary education institutions.

When the results of the analysis are put together with what we saw in selected business cases, it is clear that there is an opportunity for education agencies, tertiary education institutions, and other stakeholders to explore the measurement of the effectiveness of investments in tertiary education assets and the potential opportunities for more sector-based investment decisions.

Some tertiary education institutions believe that a competitive funding model and regulatory environment make it unlikely that they will work together to improve the collective efficiency of their investments in assets. Others pointed to examples where joint investments have been successfully made and the complexities of the funding and regulatory environment were worked through. These diverse views pose both a challenge to the implementation of the strategy and an opportunity for further conversations and developments.

I hope that this report will start conversations in the tertiary sector about the further development and reporting of a range of cost-effectiveness measures and tools, for the sector and for individual tertiary education institutions.

I thank the tertiary education institutions, the Ministry of Education, the Tertiary Education Commission, the Treasury, the Productivity Commission, and Education New Zealand for providing us with documents and data for this report.

I acknowledge that this audit was completed before I took up the role of Controller and Auditor-General on 1 February 2017. However, I am pleased to endorse and agree with its findings.



Martin Matthews
Controller and Auditor-General

8 February 2017

Our recommendations

We recommend that the Ministry of Education, the Tertiary Education Commission, and other education agencies work with tertiary education institutions to improve the use of, and investment in, tertiary education assets by:

1. improving business case guidance and assessment criteria to support tertiary education institutions in considering how their business cases and asset investment proposals are affected by the investment decisions of other tertiary education institutions; and
2. considering further types of analysis, measures, and forecasting that could improve the collective effectiveness of the investment in tertiary education assets.

Introduction

- 1.1 Tertiary education institutions – our universities, polytechnics, wānanga, and tertiary education organisations – make an important contribution to New Zealand’s social and economic success. In 2015, these institutions held about \$9.7 billion in net assets, including \$9.5 billion in capital assets. In 2014, they also planned to spend a further \$8.2 billion on capital assets by 2024.
- 1.2 Tertiary education institutions receive public money but were set up with a degree of autonomy – they make their own decisions about how best to operate. They are also expected to describe how they will give effect to the Government’s strategic direction and policy. Public funding through student enrolments is their main but not their only source of revenue. Changes in student enrolment patterns can significantly affect tertiary education institutions’ revenue.

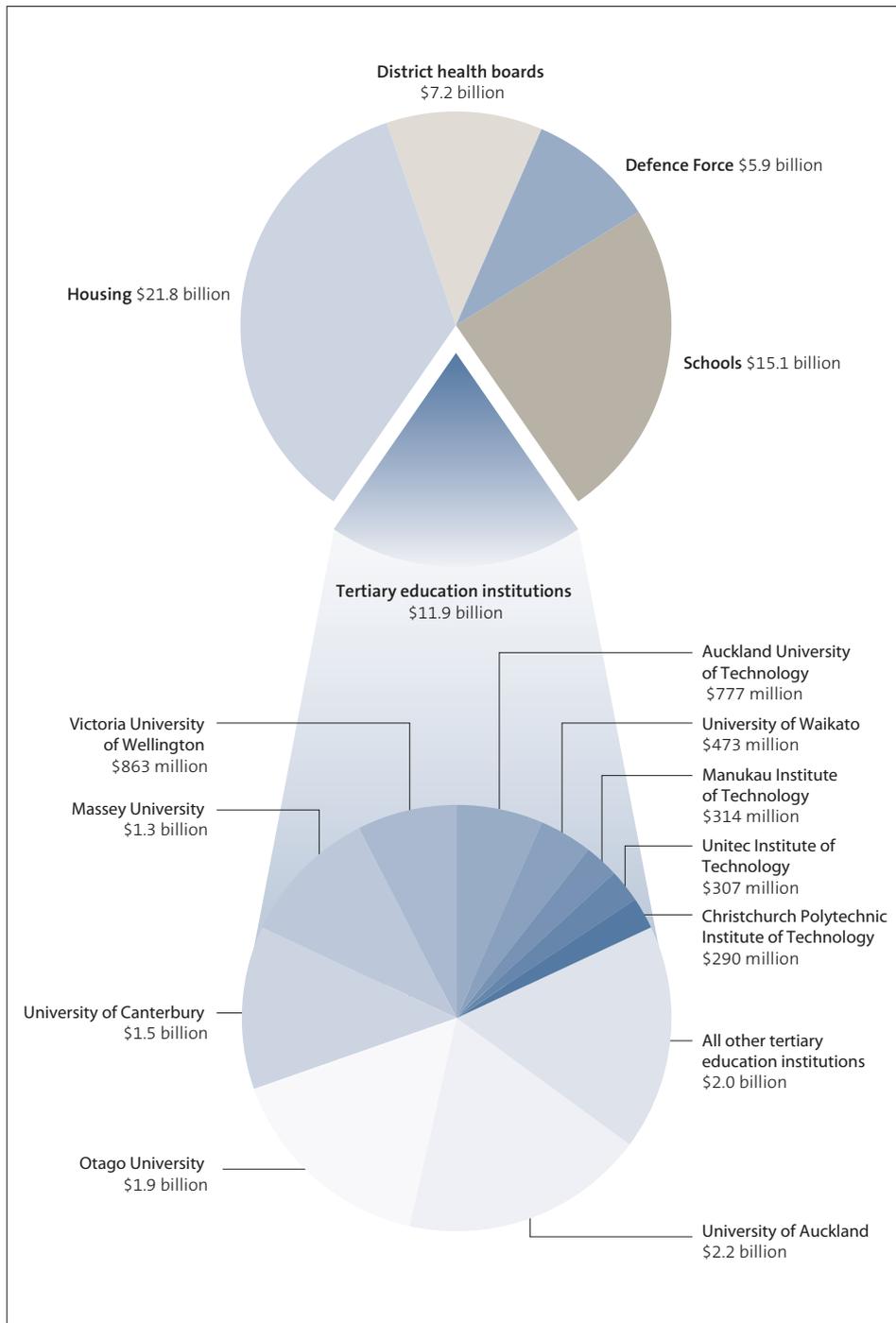
Why we did our audit

- 1.3 Tertiary education could not occur without assets – they support education and the quality of research and innovation in New Zealand, the Government’s business growth agenda, national economic aims, and the health of society.
- 1.4 Given their importance, we wanted to see whether the investment in those assets was in keeping with the Government’s strategy for tertiary education. We also carried out work to see whether we could demonstrate a link between the investment made in tertiary education sector assets and educational outcomes for students.

Value of the assets in tertiary education

- 1.5 The value of the assets in the tertiary education sector is considerable. Figure 1 compares the tertiary education sector’s total assets with those of other sectors (schools, district health boards, housing, and defence) and then shows the tertiary education institutions by asset value.

Figure 1
Total value of assets held by tertiary education institutions and other selected sectors in 2015



Source: The Treasury, *Financial Statements of the Government of New Zealand for the Year Ended 30 June 2015*, and the annual reports for 2015 of Housing New Zealand, the New Zealand Defence Force, the Ministry of Education, all district health boards, and tertiary education institutions.

- 1.6 We expected that investment decisions would consider factors that could influence the future development of tertiary education assets, such as:
- demographic changes affecting the domestic student population;
 - a competitive international market for students;
 - the effects of information technology on teaching and learning; and
 - changes in the “network” of tertiary education services delivered regionally and nationally.
- 1.7 These factors are similar to those identified by the Productivity Commission. The Commission responded to the Government’s request “to investigate how trends in technology, internationalisation, population, tuition costs and demand for skills may drive changes in models of tertiary education” by releasing a draft report in September 2016. The Commission intends to provide a final report to the Government on this topic in February 2017.¹
- 1.8 In our work, we wanted to assess whether tertiary education institutions were considering these sorts of factors and the decisions of other tertiary education institutions, and show whether these factors could affect the relationship between the money spent on assets (as measured by the net assets of each tertiary education institution) and educational outcomes for students.

What we looked at

- 1.9 The tertiary education sector is complex – there are universities, polytechnics, wānanga, private training establishments, the Ministry of Education, the Tertiary Education Commission, the New Zealand Qualifications Authority, the Education Review Office, and other education agencies and tertiary education service providers. There are also many ways to assess effectiveness.
- 1.10 For this report, we looked at the effectiveness of investments in assets from two perspectives. First, we assessed effectiveness by reviewing a selection of investment business cases prepared by universities and polytechnics (see Appendix 1). We identified the extent to which the universities and polytechnics considered wider factors and the actions of each other in their investment decisions. Secondly, we looked at data for a wider group of 29 tertiary education institutions.² We developed an “investment effectiveness” ratio to connect the investment in tertiary education assets with measures of educational success.
- 1.11 Specifically, we:
- assessed 14 business cases held by the Tertiary Education Commission from 11 universities and polytechnics;

1 See “New models of tertiary education” in the Inquiries section of the Productivity Commission’s website, www.productivity.govt.nz.

2 There were mergers after we started our work, so there are now fewer than 29 tertiary education institutions.

- reviewed the most recent organisational strategies and investment plans of those 11 universities and polytechnics;
- considered the investment effectiveness of tertiary education institutions;
- formulated some test scenarios about changing student numbers³ and how those might affect our investment effectiveness measure; and
- discussed the proposed work with some tertiary education institution groups and sought the views of officials from the Ministry of Education, the Tertiary Education Commission, Education New Zealand, the Treasury, and the Productivity Commission on our preliminary findings.

1.12 Appendix 2 lists the types of data we obtained and the methods we used.

Structure of this report

1.13 In the rest of this report:

- Part 2 sets out some of the tertiary education context in which investments in assets are made.
- Part 3 sets out our assessment of 14 business cases from 11 universities and polytechnics.
- Part 4 discusses our analysis of the investment effectiveness of tertiary education institutions.

Context for investment decisions

- 2.1 In this Part, we set out some of the wider context in which decisions about investments in tertiary education assets are made. That context includes the connections and interdependencies of tertiary education institutions and their associated organisations, other education providers, public sector education agencies, students, relevant legislation, and Government strategy and policy.
- 2.2 We have not attempted an exhaustive discussion of all agencies, regulations, stakeholders, or other matters affecting the tertiary education sector.

Components of the tertiary education sector

- 2.3 In the second quarter of 2016, there were 27 tertiary education institutions and about 500 private training establishments or private tertiary institutions (about half of which receive Government funding). Together, these organisations provide tertiary education to more than 400,000 enrolled students, including more than 50,000 international students. Private institutions provide more than half of the courses for international students and more than half of that provision occurs in Auckland.
- 2.4 Tertiary education providers also include industry training organisations, community organisations, secondary schools (some of which provide tertiary courses), and Rural Education Activity Programmes.
- 2.5 The Tertiary Education Commission, Ministry of Education, Ministry of Business, Innovation and Employment, New Zealand Qualifications Authority, Careers New Zealand, and Education New Zealand are the main public sector agencies in the sector.

Tertiary Education Strategy

- 2.6 The *Tertiary Education Strategy 2014-2019* (the strategy) is the Government's strategy aimed at supporting social and economic outcomes from the tertiary education sector.⁴ It connects tertiary education with the Government's wider social and policy objectives, as articulated, for instance, in the Business Growth Agenda.⁵

4 Ministry of Education and Ministry of Business, Innovation and Employment (2014), *Tertiary Education Strategy 2014-2019*, Wellington.

5 The Business Growth Agenda sets out the Government's long-term policy priorities for the economy. It is published each year by the Ministry of Business, Innovation and Employment. The current edition, published in 2015, is *The Business Growth Agenda: Towards 2025*.

- 2.7 The strategy affects tertiary education institutions by emphasising key areas of performance linked to funding. The strategy aims to improve the effectiveness of the sector as a whole, rather than the effectiveness of the individual organisations in the sector.

The Government's framework for investment in the tertiary sector

- 2.8 In 2015, tertiary education institutions had net assets of about \$9.7 billion. In 2014, they also planned to spend about \$8.2 billion on capital assets in the 10 years to 2024. Most of the spending was expected to be on property, plant, and equipment, and most tertiary education institutions already had significant campus rebuilding and expansion projects under way. Several had located campuses or joint-venture operations in Auckland to take advantage of the expanding market for educating international students.
- 2.9 Given the importance of assets in the tertiary education sector, the Government has a particular interest in working with the sector to try to ensure that the money invested gets the best results possible. Results are important not only for individual students but for society as a whole, given the important societal effects that successful tertiary education should bring.
- 2.10 Tertiary education institutions have a degree of autonomy. This is recognised in the Education Act 1989, particularly in section 161:

Academic freedom

- (1) *It is declared to be the intention of Parliament in enacting the provisions of this Act relating to institutions that academic freedom and the autonomy of institutions are to be preserved and enhanced.*
- (2) *For the purposes of this section, academic freedom, in relation to an institution, means—*
 - (a) *The freedom of academic staff and students, within the law, to question and test received wisdom, to put forward new ideas and to state controversial or unpopular opinions:*
 - (b) *The freedom of academic staff and students to engage in research:*
 - (c) *The freedom of the institution and its staff to regulate the subject matter of courses taught at the institution:*
 - (d) *The freedom of the institution and its staff to teach and assess students in the manner they consider best promotes learning:*
 - (e) *The freedom of the institution through its chief executive to appoint its own staff.*

- (3) *In exercising their academic freedom and autonomy, institutions shall act in a manner that is consistent with—*
 - (a) *The need for the maintenance by institutions of the highest ethical standards and the need to permit public scrutiny to ensure the maintenance of those standards; and*
 - (b) *The need for accountability by institutions and the proper use by institutions of resources allocated to them.*
- (4) *In the performance of their functions the Councils and chief executives of institutions, Ministers, and authorities and agencies of the Crown shall act in all respects so as to give effect to the intention of Parliament as expressed in this section.*

- 2.11 Although the legislation lets tertiary education institutions act autonomously, they still need to be accountable and to properly use public money. They are required each year to prepare financial statements and report on their performance.
- 2.12 Tertiary education institutions prepare investment plans and provide these to the Tertiary Education Commission for approval. In the investment plan, the tertiary education institution is required to describe how it will give effect to the Government's current and medium-term priorities described in the strategy, and set out the programmes and activities for which it is seeking funding. The Tertiary Education Commission assesses the proposed investment plans against criteria, including how the tertiary education institution contributes to the priorities described in the strategy.
- 2.13 The Government also has expectations for investment- or asset-intensive agencies. These expectations, set out in a Cabinet Circular, include "Cabinet's intention that there is active stewardship of Government resources, and strong alignment between individual investments and the Government's long-term priorities".⁶ Although the expectations do not directly apply to tertiary education institutions, the Tertiary Education Commission needs to take the expectations into account in its assessment of investment plans.
- 2.14 The Government has also set out long-term policy priorities in its Business Growth Agenda. The goals under the skills area of the agenda cite the need for an "innovative, adaptable, and inclusive education sector".

⁶ Cabinet Office Circular, *Investment Management and Asset Performance in the State Services*, July 2015. See also CAB Min (15) 11/7A.

Investment – the role of public agencies and the strategy

Tertiary education institutions

- 2.15 Tertiary education institutions are expected to consider how they can best contribute to achieving each of the strategy's priorities.
- 2.16 Most of the Tertiary Education Commission's funding of tertiary education institutions is for teaching and learning. With a few exceptions (for instance, after the Canterbury earthquakes),⁷ the Government does not provide new capital funding to tertiary education institutions. Tertiary education institutions are expected to fund capital projects, such as campus upgrades or new premises, from their existing resources or through borrowing.
- 2.17 The Tertiary Education Commission approves business cases for large capital projects, usually only if the tertiary education institution is seeking to borrow (as opposed to funding projects independently or through other means) or otherwise requires central government approvals. For this report, we looked only at business cases that were submitted to the Commission.
- 2.18 The Tertiary Education Commission also expects all tertiary education institutions to carry out regular self-assessments and obtain an independent assessment of their asset management policies and practices. The last round of independent reviews was in early 2015. The results of the reviews and self-assessments are not publicly reported.
- 2.19 As part of the annual audits, auditors receive information about, and might comment on, the planning for and controls in place to help individual tertiary education institutions to manage their capital projects. We commented on this in our 2013 report, *Managing public assets*.

Central education agencies

- 2.20 The Education Act 1989 and Crown Entities Act 2004 together require the Ministry of Education, Tertiary Education Commission, New Zealand Qualifications Authority, and Careers New Zealand to give effect to, or have regard to, the strategy when exercising their functions. Education New Zealand is required to implement the Government's policy on international education.
- 2.21 The strategy requires each central education agency to perform its role in ways that support tertiary education institutions and the wider sector to deliver the outcomes sought in the strategy. These agencies are expected to maintain high-quality standards and to focus on performance and value for money. They are expected to improve their speed and flexibility in resolving issues and problems

⁷ The University of Canterbury faced unique post-earthquake circumstances and our report does not necessarily allow for all those circumstances – but our general recommendations still apply.

reported by stakeholders as barriers to achieving the Government's priorities for tertiary education.

2.22 For example:

- The New Zealand Qualifications Authority is expected to ensure that quality assurance is effective and efficient.
- The Tertiary Education Commission is expected to direct public funds to the sector. It uses the strategy to set performance expectations and to shape its investment in tertiary education institutions in a way that reflects the strategy's priorities, shifting funding over time to the institutions that demonstrate they can make the best contribution to the outcomes sought by the Government. Funding is negotiated between education organisations and the Commission based largely on an investment planning process and related performance targets.
- Careers New Zealand is expected to lead the sector in providing relevant and useful information to support prospective students' decision-making.⁸
- Education New Zealand is a government agency that works to increase awareness of New Zealand as a study destination. It is expected to support education providers and businesses in promoting their services and products to the world.
- The Ministry of Business, Innovation and Employment is expected to develop ways to better identify skill shortages and future skills demand, and will set science and research priorities that are increasingly focused on economic outcomes.
- The Ministry of Education is expected to shape tertiary education policy to achieve the outcomes sought by the Government. It also manages Vote Tertiary Education (2014/15: \$3 billion).

2.23 One of the Tertiary Education Commission's current goals is to get better returns for the Government's investment in education by providing more effective sector stewardship. The Commission also has an important monitoring role, and reports on the tertiary education institutions' shorter-term financial performance (viability) and longer-term financial performance and cost structures (sustainability).

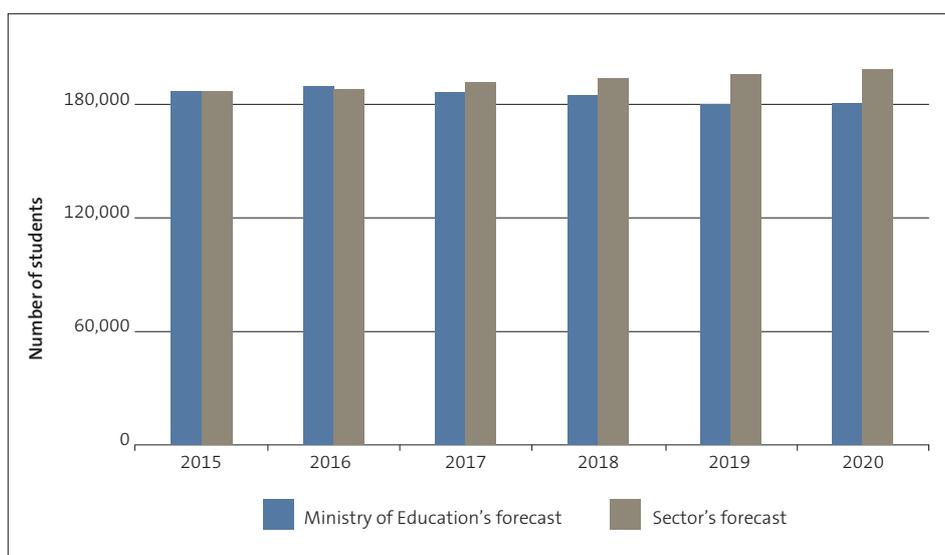
2.24 Central government agencies are expected to work together to better align their processes and requirements so that their operational work does not run counter to the goals of the strategy.

8 The functions of Careers New Zealand are being transferred to the Tertiary Education Commission.

Change in the tertiary education sector

- 2.25 New funding and fee-setting arrangements were put in place as part of the first tertiary education strategy in 2002, and led to an increase in participation in tertiary education. Statistics for 2015 show that 56% of New Zealanders aged 25-34 held a tertiary qualification.
- 2.26 Tertiary education institutions adapted to increasing numbers of students in the 10 years from 1994 to 2004, but student numbers have been more stable since 2004. Many regions are experiencing declines in domestic student numbers and they are also struggling to maintain the number of international students. Three-quarters of all international students now study in Auckland. This has led to many tertiary education institutions opening campuses or investing through subsidiary companies in Auckland.
- 2.27 Tertiary education institutions are facing pressures from new technology and ways of delivering education, ageing assets, and declining numbers of domestic students. This increases the competition for student enrolments. Tertiary education institutions need to be more efficient, given the increased financial pressure, and there are demands for them to make more effective and efficient use of their assets.
- 2.28 In this context of increasing pressures, tertiary education institutions' forecasts of student numbers are not the same as those of the Ministry of Education. We have compared the sum of the domestic student forecasts from each tertiary education institution with the Ministry's forecasts for total domestic students. The Ministry's forecasts take into account population distribution and unemployment projections. Figure 2 shows the forecasts from 2015 to 2020 and the gap between the tertiary education institutions' forecasts and those of the Ministry.

Figure 2
Forecast numbers of domestic students, by tertiary education institutions and the Ministry of Education, 2015 to 2020



- 2.29 Figure 2 shows an increasing gap between the Ministry of Education's forecasts and the forecasts that tertiary education institutions are making. The Ministry forecasts declining student numbers and tertiary education institutions forecast increasing student numbers. By 2020, the aggregated tertiary education institutions forecasts are higher than the Ministry's forecast by 18,000 – roughly equivalent to the number of students at Victoria University of Wellington.
- 2.30 Some uncertainty is expected in forecasting, and aggregate figures like these do not capture the ability of different types of tertiary education institutions to operate outside of the broad trend. Even so, the differences between these forecasts suggest that asset investments for some tertiary education institutions might be based on optimistic information.
- 2.31 In our 2015 audits of tertiary education institutions, our auditors regularly highlighted “going concern” or financial viability and/or sustainability as a risk. The risk was often generated by changes in student numbers, including policy changes that affected student enrolments and retention and financing decisions for large capital projects.
- 2.32 In the next Part, we discuss whether individual tertiary education institutions were considering wider factors (such as student numbers and the activities of other institutions) when they were making investment decisions about their assets.

3

Our assessment of business cases for investment decisions

- 3.1 In this Part, we discuss the results of our assessment of the business cases for investment decisions of selected universities and polytechnics.
- 3.2 We assessed 14 business cases from 11 universities and polytechnics. Most business cases were from 2013 and 2014 (they were the most recent business cases available from the Tertiary Education Commission when we started our work). The average amount of funding sought in the business cases was \$251 million and the median value was \$134 million.
- 3.3 The business cases were not written or structured in a uniform way, which made direct comparisons difficult. Appendix 1 lists our assessment criteria and each of the business cases we assessed.
- 3.4 We expected the sample of business cases to provide useful information about:
- whether the universities and polytechnics had considered the effect of their asset investment decisions on other tertiary education institutions;
 - whether the universities and polytechnics had considered opportunities to share or use assets for the benefit of the sector when making new investments; and
 - what kinds of financial analysis and indicators the universities and polytechnics considered important for assessing the value they would gain from their asset investments.

Business case assessment criteria

- 3.5 The business cases we reviewed were generally well prepared. When considered on their own, they were good quality documents and met most of the Treasury's expectations of better business cases.
- 3.6 Although the business cases also met most of our assessment criteria, many did not provide the analysis and discussion we were expecting about changes in domestic student numbers, the effects of competition from other tertiary education institutions, and how to use assets for the benefit of the tertiary sector.
- 3.7 We looked for evidence that the universities and polytechnics were:
- identifying management strategies to mitigate risks and realise opportunities;
 - clearly setting out risks;
 - forecasting revenue;
 - forecasting domestic student numbers;
 - forecasting international student numbers;
 - using financial and service performance metrics to monitor progress;

- considering asset investment and management decisions throughout the sector; and
- considering opportunities to use assets throughout the sector.

Identifying management strategies to mitigate risks and realise opportunities

- 3.8 The business cases we assessed included a regular focus on managing risks and benefits. The benefits realisation and risk-management approaches were usually described in detail. The risks identified were frequently categorised and prioritised, and post-programme evaluations were common.
- 3.9 The expected range of functions, such as programme management, project governance, and the role of staff and stakeholders, were described.
- 3.10 A range of options were usually identified and assessed for a variety of indicators, such as ease of delivery, alignment to the business case objectives, potential cost savings, cost of implementation, and impact on benefits.
- 3.11 Though some were more detailed than others, the links between financial information and risks and opportunities were usually clear. The sections dealing with risk often included comments about a range of financial indicators, for instance operating surplus, net surplus, and net cash/debt position.

Clearly setting out risks

- 3.12 Risks were described clearly and most accounts were very comprehensive. We noted:
- the use of formal assessments and risk assessment standards;
 - constraints and dependencies for the proposed programme of work were usually clearly stated;
 - a range of negative scenarios were often considered; and
 - risks to student numbers and expenditure were identified.
- 3.13 The business cases also assessed a range of risk scenarios – low-risk, medium-risk, and high-risk.
- 3.14 Overall, the business cases provided a comprehensive picture of the potential effect of risks and opportunities for the individual university or polytechnic.

Forecasting revenue

- 3.15 Revenue forecasts were generally comprehensive and detailed. Some forecasts were independently reviewed. Most included significant revenue forecasts, such as international student numbers and associated fees revenue.
- 3.16 The assumptions underlying the revenue projections were usually clearly stated and explained.

Forecasting domestic student numbers

- 3.17 Forecasts showed different levels of sophistication. For example, in one business case, projections were broken down by type of student enrolment, with projections given for each type's annual growth and cumulative growth. Graphs were supplemented with analysis of the projections, with descriptions about each of the types of enrolment also provided. As a whole, the projections in this business case were comprehensive and clearly explained.
- 3.18 Some business cases provided detailed breakdowns, for example, by region or department, and had comprehensive forecasts that took into consideration the effect of changes in gross domestic product and other macro-economic factors on new enrolments (with the associated effect on revenue). They also showed varying demand between colleges in the institution or enrolment programmes. Others included only a basic level of information.
- 3.19 Overall, although there were different levels of sophistication in the way business cases discussed domestic student numbers and forecasts, these type of discussions were included in all of the business cases we reviewed. However, we did not find an assessment of the potential effect on domestic student numbers of the investment decisions of other tertiary education institutions.

Forecasting international student numbers

- 3.20 As with the domestic student number forecasts, business cases demonstrated different levels of comprehensiveness in forecasting international student numbers. Twelve business cases included international student forecasts. The growth rates that they forecast varied.
- 3.21 In some business cases, strong links were drawn between the capital developments that were the subject of the business case and increasing the attractiveness of the institution to international students. In one business case, for example, strong links were drawn between new and improved buildings and specialised facilities, university rankings, the quality of university staff, and attracting international students.

- 3.22 However, we did not find an assessment of the potential effect on international student numbers resulting from the investment decisions of other tertiary education institutions.
- 3.23 Separate from our business case analysis, the Tertiary Education Commission told us that it was aware that the sum of providers' growth forecasts exceeded the projected growth in student numbers for both domestic and international students. This suggests that forecasting might be optimistic and not reflect the effect that competition from other providers could have (see Figure 2).

Using financial and service performance metrics to monitor progress

- 3.24 The business cases included metrics or indicators that the universities and polytechnics planned to use to monitor or evaluate the proposed development or initiative once it was in place. It was usually less clear how they would track the progress of the business case.
- 3.25 However, some universities and polytechnics made it clear how and what would be used to track progress. For example, in one business case, the institution's council would need to approve work continuing, based on progress updates.

Considering asset investment and management decisions throughout the sector

- 3.26 On the whole, the business cases we assessed did not consider the actions or plans of other tertiary education institutions and their potential effect on expected revenue. Most of the business cases focused on the individual university or polytechnic's asset investment decisions rather than take a wider view.
- 3.27 Two business cases were about merging operations to form a new entity. These cases promoted the combination of their resources for the benefit of the sector or provision of educational services to students throughout the tertiary sector. In these business cases, the institutions wanted to provide a better and more sustainable service than they could provide individually and to continue to provide services to largely rural and semi-rural regions.
- 3.28 Two of the 14 business cases included the asset investment decisions of other tertiary education institutions as part of their revenue forecasts (and one updated its institutional financial modelling as a result). In these business cases, the decisions of other tertiary education institutions were taken into account as an influence on the viability of the proposed investment.
- 3.29 We expected to see more of this sort of consideration – about how the investment and management decisions of other tertiary education institutions could affect the feasibility of the proposal, particularly the effect on student numbers and revenue.

- 3.30 The Treasury's guidance on preparing better business cases includes the need to discuss competition as one of a range of reasons for change as part of the strategic business case. The business cases tended to discuss the effect on revenue of changing student numbers as a result of changes in demography, school enrolments, gross domestic product, and shifts in demand between different faculties of the university or polytechnic. The effect of competition from other tertiary education institutions on student numbers was not usually considered.

Considering opportunities to use assets throughout the sector

- 3.31 The Treasury's guidance on better business cases also suggests consideration of strategic or less formal collaboration in procurement. Three of the business cases we assessed were about joint working, collaboration, and the creation of new ways of delivering tertiary education services.
- 3.32 One business case was a response to declining student numbers in a mainly rural region. Another was about two institutions working together to boost their individual effectiveness and better serve their shared regional catchment area. The third business case was about two institutions sharing resources and working together to create a centre of excellence for a specific programme of study.
- 3.33 We saw an instance where the local authority's strategy for tertiary education was noted, but the asset use or financial consequences of this strategy were not discussed in the business case.

Our concluding comments

- 3.34 Competition between tertiary education institutions for student enrolments might explain why we did not see business cases based on the better collective use of assets in the sector.
- 3.35 Some business cases, however, described plans for working with other tertiary education institutions and with businesses, schools, and the community to improve research outcomes, strategic alignment, and co-ordinate the provision of tertiary educational services.
- 3.36 Business cases often stated that investment was needed to enhance the attractiveness of the institution and that this would help attract or retain students. When the effect of investment by other institutions on student enrolments was considered, it influenced the financial assumptions in an institution's business case. In our view, more widespread analysis of the effect of investments by competing institutions would strengthen the forecast and other revenue assumptions in business cases.

- 3.37 The Tertiary Education Commission assesses the quality of the business cases it approves. The Commission applies a range of criteria, including the effect of the proposal on the sector. However, those criteria do not specifically include whether the proposal has taken into account the effect other tertiary education institutions might have on the proposed asset investment and management decisions.
- 3.38 The business cases we reviewed were mainly from 2013 and 2014. For 2015/16, the Tertiary Education Commission asked tertiary education institutions to “explore ways to increase efficiencies through shared services, infrastructure and other collaboration, such as partnerships”. If they do so, we would expect to see business plans that consider how to make the most of tertiary education assets throughout the sector.
- 3.39 When we reviewed the more recent investment plans of the 11 universities and polytechnics, some were looking for opportunities to share or use assets with others to produce operational efficiencies. Compared with the business plans we assessed, this could indicate a shift toward using assets for the benefit of the sector.

Recommendation 1

We recommend that the Ministry of Education, the Tertiary Education Commission, and other education agencies work with tertiary education institutions to improve the use of, and investment in, tertiary education assets by improving business case guidance and assessment criteria to support tertiary education institutions in considering how their business cases and asset investment proposals are affected by the investment decisions of other tertiary education institutions.

4

Looking at the effectiveness of investment in assets

- 4.1 In this Part, we use a simple measure to show a relationship between the money spent on assets and educational outcomes for students – in other words, a basic cost-effectiveness measure that we call “investment effectiveness”. We used publicly available information about tertiary education institutions’ assets and publicly available accountability information about education outcomes (educational performance indicators) to develop the measure.
- 4.2 We wanted to show how the relationship between the money spent on assets (as measured by the net assets of each tertiary education institution) and educational outcomes for students could change with changes in sector-wide factors. That is, we considered external factors that could influence the behaviour and decisions of tertiary education providers and how changes in those factors affect our investment-effectiveness measure.
- 4.3 There are different ways of measuring the effectiveness of asset investment in the tertiary education sector. Investment decisions are made not only for educational purposes but also for research purposes, or a combination of both. A range of measures would be needed to comprehensively assess such objectives. The business cases we looked at did not clearly include research objectives together with educational outcome measures as reasons for the investments.
- 4.4 The educational performance indicators (noted further below) are only a part of a fuller cost-effectiveness picture. Qualification completion rates, for example, do not necessarily attach greater value to completing degree courses in one subject area or another. Participation rates are also not strictly an educational outcome indicator but are used by the Tertiary Education Commission as a broader educational performance measure of the proportion of students from particular groups engaged in tertiary education. The Tertiary Education Commission publishes participation rates alongside the four main educational performance indicators.
- 4.5 Educational performance indicators do not provide a comprehensive cost-effectiveness picture. The challenge for the whole sector is to improve on them. Comprehensive, publicly available performance information is important for transparency and accountability. In a climate that includes a greater emphasis on investing for outcomes or an “investment approach”, improvements in cost-effectiveness measures in the public sector become even more relevant.
- 4.6 We intentionally used a simple measure to start conversations in the tertiary education sector about what is the right information for developing a range of cost-effectiveness measures for the sector and individual tertiary education institutions.

Summary of our findings

- 4.7 Our investment effectiveness measure compares the net assets of each tertiary education institution with its educational outcomes. We tested how investment effectiveness is affected by sector-wide changes in:
- international student numbers;
 - domestic student numbers; and
 - the proportion of the students in different regions.
- 4.8 The results of our testing show that a change in these factors can significantly alter the effectiveness of investment in tertiary education institutions. The effects differed for individual tertiary education institutions and for tertiary education institutions as a group. Specifically, our testing showed:
- a wide range of investment effectiveness between tertiary education institutions, with little apparent relationship to size, location, or type of tertiary education institution;
 - that tertiary education institutions offering capital-intensive courses did not necessarily have a poorer result for investment effectiveness;
 - large changes in international student numbers made little difference to investment effectiveness;
 - small changes in domestic student numbers made a comparatively large difference to investment effectiveness; and
 - one scenario of an increase in the market share of students in one region reduced the average investment effectiveness for all tertiary education institutions.
- 4.9 Changes in all three sector-wide factors had different effects for individual tertiary education institutions, depending on their operating and capital structures.

Assets, net assets, and student numbers

- 4.10 The value of the assets that tertiary education institutions hold has increased in recent years. According to the Tertiary Education Commission's capital intentions plan in 2014, tertiary education institutions were planning to spend a further \$8.2 billion on capital assets in the 10 years to 2024.
- 4.11 Figure 3 shows tertiary education institutions' total assets: property, plant, and equipment, net assets, and student numbers as at 31 December in 2014 and 2015. In accounting terms, assets are not just physical items of property, plant, and equipment, but include, for example, cash in the bank and any money owed to the institution. Net assets are total assets minus total liabilities.

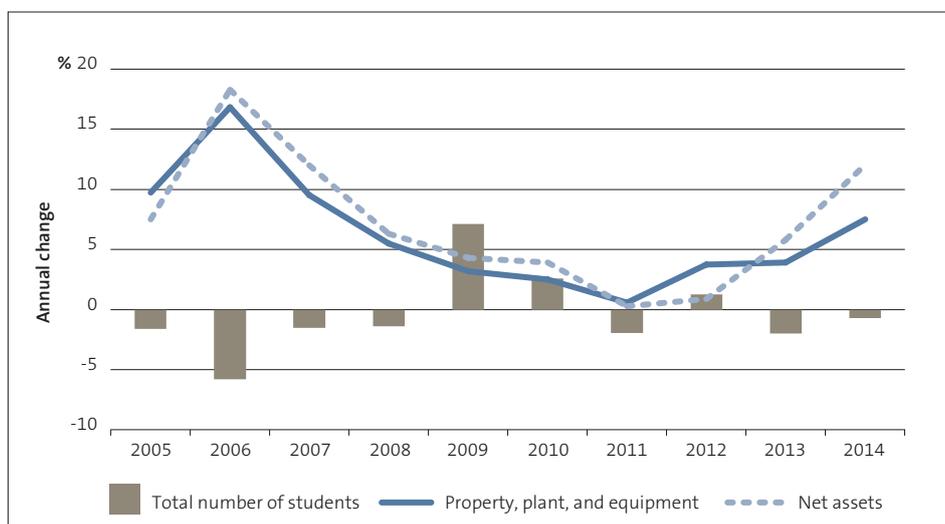
Figure 3
Tertiary education institutions' assets: property, plant, and equipment, net assets, and student numbers in 2014 and 2015

Year	Total assets	Property, plant, and equipment	Net assets	Total number of students
2014	\$11.1 billion	\$9.1 billion	\$9.4 billion	232,398
2015	\$11.9 billion	\$9.7 billion	\$10 billion	232,245

Source: Annual financial statements of tertiary education institutions and the Tertiary Education Commission's consolidated financial data.

4.12 Figure 4 shows how the tertiary education institutions' student numbers, net assets, and property, plant, and equipment changed between 2005 and 2015.

Figure 4
Change in student numbers, net assets, and property, plant, and equipment, 2005 to 2014



4.13 Figure 4 shows that, from 2005 to 2014, there was little apparent correlation between the growth in student numbers and the growth in property, plant, and equipment or net assets. Although the annual change in student numbers did not vary a lot during the 10 years, net assets and property, plant, and equipment growth declined significantly from 2006 to 2011, and then increased significantly from 2011 to 2014.

4.14 All tertiary education institutions have operating and capital structures that reflect, for example, the mix of courses offered, fee structures, proportions of international students, and types of assets. These differences influence not only the effectiveness of the investment in each tertiary education institution, but also

mean that each tertiary education institution will react differently to changes in the wider sector in which it operates.

How we assessed the effectiveness of investment in assets

4.15 There are different ways of measuring the effectiveness of an investment. Our focus was on the accumulated investment in each tertiary education institution (as measured by its net assets) and the possible relationship with educational outcomes. The financial data used are from 2014/15.

4.16 Our measure of investment effectiveness was calculated using the following formula:

$$\text{Investment effectiveness} = \frac{\text{Net assets}}{\text{Student achievement}}$$

4.17 **Net assets** are the total assets of tertiary education institutions less their total liabilities. This accumulated investment cost is affected by movements in the level of Government and other funding and the tertiary education institutions' operational and investment decisions and programmes over time.

4.18 **Student achievement** is calculated as the average of the Tertiary Education Commission's educational performance indicators (course completion, qualification completion, student progression, student retention, and participation) multiplied by the number of students attending the tertiary education institution (which, for consistency, we sourced from the Ministry of Education). The Tertiary Education Commission told us that course completion was the most relevant indicator. We ran our analysis using only course completion data and, although this changed the relative positions of some tertiary education institutions, it did not materially change the overall picture. We note that there have recently been changes to the educational performance indicators and this may change the results of our testing.

4.19 Our simple measure is similar to how the Social Investment Unit analysed the investment effectiveness of various school initiatives, which considered investment cost, number of students, and the number of Level 2 qualifications gained in the National Certificate in Educational Achievement. Our measure is not comprehensive and there are sometimes good reasons why individual tertiary education institutions may maintain a high level of assets to achieve the educational performance they intend. For example, our measure does not consider:

- the strategic value of asset intensive courses, such as engineering, science, dentistry, and medicine, or the tertiary education institutions' wider social value to regions;

- the value of assets in terms of research; and
- contextual or historical factors that influence the financial position of individual tertiary education institutions – such as those that decide to lease their buildings or purchase them over time. Some tertiary education institutions also accommodate students of other tertiary education institutions on their campuses.

4.20 For the following analysis, we excluded the three wānanga. They, in particular, show the difficulties in measuring educational performance between different types of tertiary education institutions.⁹

4.21 To explain how the measure works, Figure 5 shows that for two tertiary education institutions with the same student achievement, the one with the highest net assets (Institution B) would be the least effective investment (that is, the most expensive provider). The lower the cost of student achievement, the better the investment is (at least in terms of how many net assets are needed to achieve the educational outcomes, as measured by the average of five education performance indicators).¹⁰

Figure 5
The calculations for measuring investment effectiveness

	Net assets	Average educational performance	Total students	Investment effectiveness calculation	Conclusion
Institution A	\$1.2 billion	90%	11,000	\$1.2 billion / [90% x 11,000] = \$121,000	More effective investment (a lower cost)
Institution B	\$1.6 billion	90%	11,000	\$1.6 billion / [90% x 11,000] = \$162,000	Less effective investment (a higher cost)

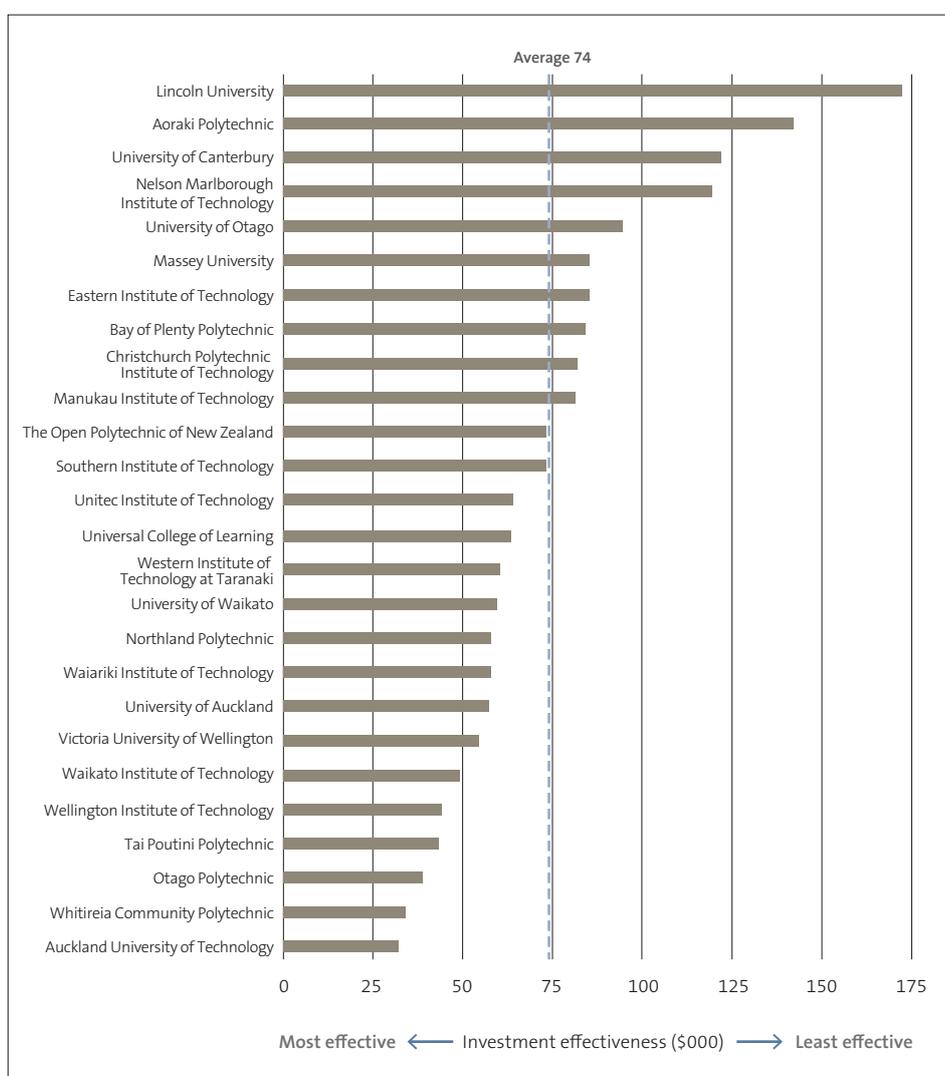
9 For two of the wānanga, the Tertiary Education Commission's educational performance measures reflect a greater focus on other educational objectives. As such, they had the lowest performance measures of all tertiary education institutions. Including them would have resulted in investment effectiveness ratios that were out of keeping with those of the other tertiary education institutions. The third wānanga has large international revenues and the Ministry of Education reports only five international students. This creates difficulties in carrying out any revenue-based analysis.

10 We discussed the inclusion of the five educational performance measures with the Tertiary Education Commission. They advised that all five indicators should be included but told us the most relevant was course completion, and that some of the other measures might be less relevant to some tertiary education institutions. Given this, we also ran our analysis using only course completion measures. Although this changed the relative positions of some tertiary education institutions, it did not materially change the overall picture.

Tertiary education institutions' investment effectiveness

4.22 Figure 6 shows (based on our formula) our assessment of investment effectiveness of the 26 tertiary education institutions that we included.

Figure 6
Effectiveness of the investment made by 26 tertiary education institutions, using 2015 data



4.23 In dollar amounts, the average score of 74 in Figure 6 means that the cost of generating one unit of educational performance is about \$74,000 for each student. The higher the cost, the less effective the investment in educational outcomes for each student.

- 4.24 At least in terms of how many net assets are needed to achieve the educational outcomes that are measured by the five educational performance indicators, the lower the cost in assets for each student, the better. Our measure is intended to illustrate one way of looking at asset effectiveness. We would expect the sector and each tertiary education institution to continue to develop the performance information that best captures comparative information as well as individual tertiary education institutions' points of difference and the breadth of their activities and purpose.
- 4.25 As Figure 6 shows, there is a wide range of investment effectiveness between tertiary education institutions. There is little apparent relationship with size, location, or type of tertiary education institution.
- 4.26 The cost of student achievement is highest (most expensive) for Lincoln University, Aoraki Polytechnic, and University of Canterbury. The cost of student achievement is lowest (less expensive) for Auckland University of Technology, Whitireia Polytechnic, and Otago Polytechnic.
- 4.27 One possible reason for some tertiary education institutions having relatively low investment effectiveness (see Figure 6) is the capital-intensive nature of some courses. However, using the Tertiary Education Commission's funding data for 2014, three of the five universities offering the most capital-intensive courses have relatively high investment effectiveness (the University of Auckland, Auckland University of Technology, and Victoria University of Wellington).¹¹ This suggests the capital-intensive nature of some courses is only one determinant of a tertiary education institution's investment effectiveness (see paragraph 4.19).
- 4.28 Having set a base of investment effectiveness, we tested how it changed when we adjusted the number of international students, number of domestic students, and market share of students between regions. The first two tests show an unsurprising relationship between increasing student numbers and increasing investment effectiveness – but the relationship is much more significant for domestic students than for international students.

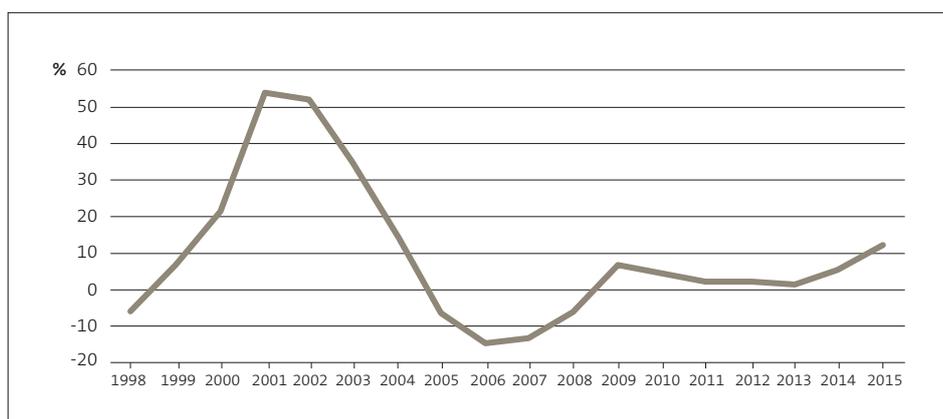
The effect of changes in the number of international students

- 4.29 To do this assessment, we prepared summary financial statements (using 2015 data) to show how changing international student numbers could affect the net assets, and therefore investment effectiveness, of each tertiary education institution.

11 The other two universities offering the most capital-intensive courses are the University of Otago and Massey University.

- 4.30 Appendix 2 shows how we put together the summary financial statements and how changing student numbers affected two tertiary education institutions in different ways.
- 4.31 To work out a sensible range for how much international student numbers could change, we reviewed historical annual international student data from 1998 to 2015 and other forecast data from the Ministry of Education.
- 4.32 Figure 7 shows the annual changes in international student numbers from 1998 to 2015.

Figure 7
Annual changes in international student numbers, 1998 to 2015



- 4.33 Figure 7 shows that annual changes in international student numbers between 1998 and 2015 ranged between a drop of 15% and an increase of 54%.
- 4.34 Although international student numbers have been relatively stable in recent years, looking at the range of reasons for past variability suggests that this stability cannot be assumed.
- 4.35 For example, Ministry of Education documents point to (mostly unexpected) causes for the larger peaks and troughs in Figure 7. The Ministry of Education notes the rapid growth of international students between 2000 and 2002 was because of a more open immigration sector, a heightened interest by Chinese students in gaining overseas tertiary qualifications, and perceptions of New Zealand being a relatively safe and low-cost country in which to study. Recent shifts in the number of international students coming from India also shows volatility.

- 4.36 Using the average movement in the historical and forecast data, it would be reasonable to expect that the 2015 international student number of 31,165 could have increased by as much as 18% (to 36,775) or decreased by as much as 10% (to 28,049) when looking at a one-year period. These changes are within the maximum and minimum movements shown in Figure 7.
- 4.37 Figure 8 shows how the 2015 average investment effectiveness would change given an 18% increase and 10% decrease in the number of international students. An 18% increase in the number of international students improves the average investment effectiveness of tertiary education institutions by 1.5%, whereas a 10% decrease reduces the average investment effectiveness by 0.9%.

Figure 8

How tertiary education institutions' 2015 average investment effectiveness could change after changes in the number of international students

Change in number of international students	Change in investment effectiveness
+18%	1.5%
-10%	-0.9%

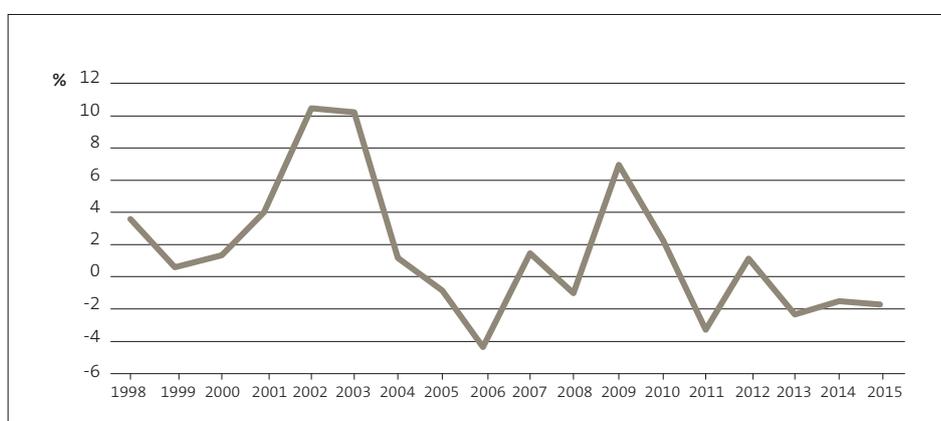
- 4.38 Based on the way international student numbers have changed in the past, the main points to note are:
- A large change in international students (+18% or -10%) means a relatively small change in the overall investment effectiveness of tertiary education institutions.
 - This relatively low sensitivity will increase if the proportion of international students increases.
 - Nelson Marlborough Institute of Technology and Lincoln University have the highest sensitivity to changing international student numbers. This is because their international students are a high proportion of their total student population (about 28% and 25%, respectively).

The effect of changes in the number of domestic students

- 4.39 We repeated this assessment to show how changing domestic student numbers could have affected the investment effectiveness of each tertiary education institution.
- 4.40 To work out a sensible range for how much domestic student numbers could change, we reviewed historical annual domestic student data from 1998 to 2015 and other forecast data from the Ministry of Education.

- 4.41 Figure 9 shows the annual changes in domestic student numbers from 1998 to 2015.

Figure 9
Annual changes in domestic student numbers, 1998 to 2015



- 4.42 Figure 9 shows that changes in domestic student numbers between 1998 and 2015 ranged between a decrease of 4.4% and an increase of 10.4%. Compared to international student numbers, domestic student numbers have been relatively stable.
- 4.43 Using the average movement in the historical and forecast data, it would be reasonable to expect that the 2015 domestic student number of 177,940 could have increased by as much as 6% (to 188,616) or decreased by as much as 4% (to 170,822) when looking at a one-year period. These changes are within the maximum and minimum movements shown in Figure 9.
- 4.44 Figure 10 shows the change in the sector's 2015 average investment effectiveness arising from an increase of 6% to a decrease of 4% in domestic students. A 6% increase in the number of domestic students improves the average investment effectiveness of tertiary education institutions by 3.1%. A 4% decrease reduces the average investment effectiveness by 2.1%.

Figure 10
How tertiary education institutions' 2015 average investment effectiveness could change after changes in the number of domestic students

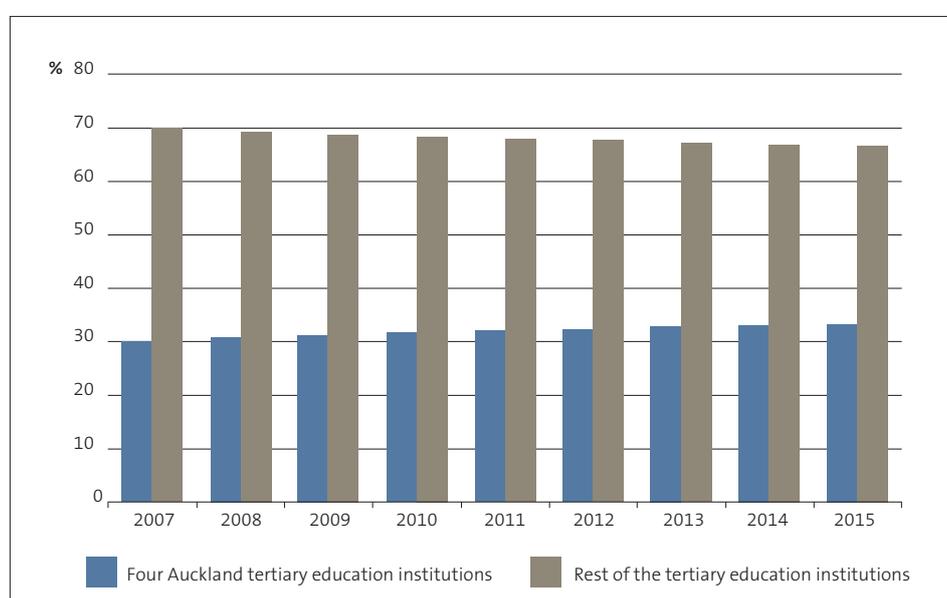
Change in domestic student numbers	Change in investment effectiveness
+6%	3.1%
-4%	-2.1%

- 4.45 Based on the way domestic student numbers have changed in the past, the main points to note are:
- A small change in domestic student numbers leads to a comparatively large change in the average investment effectiveness of tertiary education institutions.
 - The investment effectiveness of tertiary education institutions is more than two times as sensitive to changing domestic student numbers than it is to changing international student numbers.
 - Aoraki Polytechnic and University of Canterbury have the highest sensitivity to changing domestic student numbers. This is due to various factors including the proportion of domestic students, revenue, and net assets.

The effect of changes in market share of students between regions

- 4.46 Gradual changes in the market share of students throughout New Zealand are apparent when we look at the Ministry of Education's data from 2007 to 2015. Those changes are particularly apparent in the Auckland region.
- 4.47 Figure 11 shows changes in the market share of students for the four tertiary education institutions in Auckland (Auckland University of Technology, University of Auckland, Manukau Institute of Technology, and Unitec New Zealand) compared with the rest of the tertiary education institutions, from 2007 to 2015.

Figure 11
Changes in the market share of students in tertiary education institutions, 2007 to 2015



- 4.48 Figure 11 shows the market share of the four Auckland tertiary education institutions increased by 3.2% (from 30.1% to 33.3% or about 0.4% each year) from 2007 to 2015. The market share of the rest of the tertiary education institutions decreased by 3.2% (from 69.9% to 66.7% or about -0.4% each year) in the same period.
- 4.49 The annual change in market share is consistent but small. As an example of how market share changes could affect net assets and therefore investment effectiveness, we used the total change in market share for the eight-year period and applied it to our summary financial statements for 2015. In other words, in this scenario we assumed the four Auckland tertiary education institutions' 2015 market share of 33.4% increased by 3.2% to 36.6%¹² and assumed the market share for the 22 other tertiary education institutions fell from 66.6% to 63.4%.
- 4.50 When we applied these changes to our summary financial statements for 2015 we assumed no new international students, so the total 2015 domestic and international student base of 209,100 remained the same.

¹² Equivalent to increasing each tertiary education institution's student numbers by about 9%. We also assumed that this increase could be accommodated using the existing land and buildings.

- 4.51 As expected, the additional students improved investment effectiveness of the four Auckland tertiary education institutions. However, the effectiveness gains in the Auckland tertiary education institutions were more than offset by larger decreases in the effectiveness of the 22 other tertiary education institutions. The average investment effectiveness deteriorated slightly from our average starting point of \$74,000 (see Figure 6) to a higher investment cost of \$76,000 per student.

Our concluding comments

- 4.52 Knowing how individual tertiary education institutions and the sector react to sector-level factors helps to provide a better understanding of the environment in which tertiary education institutions operate and the opportunities and challenges this creates.
- 4.53 Using our simple measure of investment effectiveness and 2015 data, we have shown that changes in the number, type, and distribution of students can have potentially significant implications for the cost of achieving educational outcomes.
- 4.54 When we combine this with what we found in our business case analysis in Part 3, it is clear that there is an opportunity for education agencies, tertiary education providers, and other stakeholders to do more work on measuring the effectiveness of investment in tertiary education sector assets and forecasting the effect of changes in the wider operating environment, such as changes in student numbers.

Recommendation 2

We recommend that the Ministry of Education, the Tertiary Education Commission, and other education agencies work with tertiary education institutions to improve the use of, and investment in, tertiary education assets by considering further types of analysis, measures, and forecasting that could improve the collective effectiveness of the investment in tertiary education assets.

Appendix 1

About our assessment of the business cases

The table below lists and describes the business cases that we assessed.

Business case	Description
WelTec Whitireia: Centre of Excellence for Creative and Performing Arts	Building an integrated campus to rationalise provision of performing arts and technologies
Victoria University: Capital Investment 2014-2024	Address Kelburn Campus space constraints on growth, remove current asset-based risks to service delivery, improve the quality of assets, the strategic utilisation of operating, and capital resources
University of Canterbury (UC): Science Implementation Business Case (USB) UC Futures: College of Education and Dovedale Strategic Business Cases Addendum UC Futures: Canterbury Engineering the Future UC Futures: Whole of Organisation Financial Case	Tranche of cases about rebuilding University of Canterbury campus after earthquake damage
Unitec Whole of Organisation Transformation	Rebuilding of campus and transforming organisation
Lincoln University's Science Facilities Redevelopment	Rebuilding science facilities following earthquake damage
CPIT New Tertiary Organisation in Canterbury Better Business Case	Integration of Aoraki Polytechnic and CPIT and development of new campus
Increasing collaboration between the Bay of Plenty Polytechnic and the Waiariki Institute of Technology	Voluntary merger of two institutions of equal standing to provide more and better provision in the Bay of Plenty
MIT: Manukau City Centre Campus	To develop a substantive tertiary campus in Manukau City
University of Auckland: Newmarket Site	Acquire new property to rationalise campus provision within central Auckland and divest unwanted land and buildings
Massey University: Student Management Sector Implementation	Implementation and ongoing support of a modern and adaptable University-wide student management solution
CPIT: Trades Training Response to Christchurch Rebuild	Increasing the supply of trades-qualified people by redeveloping the campus

Our assessment criteria

Our assessment criteria were:

- Are risks clearly set out?
- What financial and service performance metrics are used to monitor project or programme progress?
- What financial and service performance metrics are used to evaluate project or programme success?
- Are forecasts shown to be monitored or evaluated (either by the provider or monitoring agency)?
- Is revenue, such as from international student numbers, forecast?
- Are domestic student numbers forecast?
- Are international student numbers forecast?
- Are management strategies identified for the risks and opportunities (for example, increasing asset efficiency)?
- Are asset investment and management decisions of other tertiary education institutions considered as part of revenue and other forecasts?
- Are opportunities to use assets across the sector considered as part of revenue and other forecasts?

We also collected some specific facts about each business case, for example, noting whether affordability indicators were used.

The Better Business Case methodology

The business cases we assessed followed the Tertiary Education Commission's mandated methodology for better business cases. The objectives of the methodology are to:

- enable smart investment decisions for public value;
- reduce the costs of developing business cases;
- reduce the time it takes to develop business cases; and
- meet recognised good practice.

The Treasury provides a range of business case guides, templates, and other resources depending on the decision being sought, the nature of programme or project, and the associated scale, risk, and uncertainty.

Appendix 2

Summary financial statements for tertiary education institutions

We put together summary financial statements using 2015 international and domestic student numbers to generate international and domestic revenues for each tertiary education institution. While this approach is not comprehensive, it uses accounting and other assumptions to show how these revenues flow through the tertiary education institution's operating and capital structure to affect the potential level of net profit, cash, and ultimately the tertiary education institution's net assets on its balance sheet.

For example, a small to moderate increase in student numbers will increase the tertiary education institution's revenues (and some associated costs). The resulting increase in net profit will increase the cash balance, total assets, and net assets. The increase in student numbers also increases the student achievement measure in our investment effectiveness formula (see paragraph 4.16).

To test whether these summary statements were reasonable, we also reviewed them with a Senior Business Analyst from the Tertiary Education Commission.

These summary statements let us see how a sector-level change could affect an individual tertiary education institution's financial position and our investment effectiveness measure. They show, for instance, that for all tertiary education institutions, an increase in student numbers will:

- increase the value of the tertiary education institution's net assets;
- increase the tertiary education institution's student achievement level (that is, increase in the number of students times the average educational performance); and
- change the effectiveness of the tertiary education institution's investments (that is, changes the result using our investment effectiveness measure).

Because every tertiary education institution has a different operating and capital structure, increasing student numbers will affect the investment effectiveness of individual tertiary education institutions in different ways.

Figure 12 uses two tertiary education institutions – Christchurch Polytechnic Institute of Technology (CPIT) and Wellington Institute of Technology (Weltec) – to summarise the differences in investment effectiveness arising from a 5% increase in student numbers.

Figure 12
Increase in investment effectiveness by increasing student numbers

	Christchurch Polytechnic Institute of Technology			Wellington Institute of Technology		
	Actual (2014/15)	Actual + 5%	Change	Actual (2014/15)	Actual + 5%	Change
Equivalent full-time students	6,440	6,762	322 (or +5%)	3,970	4,169	196 (or +5%)
Average fees per student \$000	\$14.11	\$14.11		\$11.64	\$11.64	
Student revenue \$000	\$90,841	\$95,383	\$4,542	\$46,214	\$48,525	\$2,311
Plus Other revenue \$000	\$23,637	\$23,745		\$10,797	\$10,850	
<i>Equals</i> Total revenue \$000	\$114,478	\$119,128		\$57,011	\$59,375	
Less Total expenses \$000	\$95,251	\$95,589		\$55,856	\$56,114	
<i>Equals</i> Net Income \$000	\$19,227	\$23,539	\$4,312	\$1,155	\$3,261	\$2,106
Total assets \$000	\$290,468	\$294,780		\$95,252	\$97,358	
Less Total liabilities \$000	\$22,399	\$22,399		\$17,340	\$17,340	
<i>Equals</i> Net assets \$000	\$268,069	\$272,381	\$4,312	\$77,912	\$80,018	\$2,106
Average educational outcome	0.51	0.51		0.44	0.44	
Investment effectiveness \$000	\$268,069/ [0.51 x 6,440] = \$82	\$272,381/ [0.51 x 6,762] = \$79	-3 (or -3.2%)	\$77,912/ [0.44 x 3,970] = \$44	\$80,018/ [0.44 x 4,169] = \$43	-1 (or -2.2%)
Impact on the effectiveness of the investment			Improves (the cost is lower)			Improves (the cost is lower)

Figure 12 focuses on the revenue and cash implications of a 5% increase in student numbers. We assume over the one-year period of our analysis that 30% of operating expenses (excluding depreciation and employee benefits) will increase as revenue increases, any additional net income can be invested at 5% each year, and the increase in students will not require any material changes in the tertiary education institution's asset base. These assumptions may change over time and with each tertiary education institution.

The analysis shows that CPIT's investment effectiveness is more sensitive to changing student numbers than Weltec's. A 5% increase in student numbers improves the investment effectiveness of CPIT and Weltec by 3.2% and 2.2%, respectively. One important factor affecting this sensitivity is the ratio of net assets to students – CPIT's ratio is higher than Weltec's.

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