

Cost-benefit analysis and returns from additional investment in Vocational Education and Training

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Executive summary

Introduction

Since 2011, national and state governments have committed to significantly increase the number of individuals with qualifications at the Certificate III level and above under the National Agreement on Skills and Workforce Development (NASWD). This report explores two key policy questions.

- *Are there net economic benefits from increasing investment in VET beyond the 2011 policy settings? If so, how large are these benefits?*
- *If there are net benefits, is it better to simply invest in additional VET places, or is it better to also undertake reforms to improve completion rates or the quality of training?*

Independent Economics has been commissioned to undertake this study by TAFE Directors Australia (TDA), under funding from the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE). As part of this study, Independent Economics has collaborated with three Industry Skills Councils in researching the costs and benefits of ‘skill sets’. For ease of reference, the sections in this executive summary correspond to the sections in the main body of the report, which can be consulted for more detailed information.

Economic drivers of the benefits and costs of VET

To evaluate whether funding for VET should be increased, the benefits of doing so are compared against the costs.

The two main benefits of VET boost the pre-tax earnings of students.

- The most important benefit from VET is improvements in the **employability** of students. Those students are more likely to participate in the workforce, less likely to be unemployed, and more likely to work full-time compared to those with no post-school education.
- VET also improves the **productivity** of students. VET study allows students to work in more highly-skilled occupations which command higher wages.

However, obtaining these benefits involves two main costs.

- VET study involves a **tuition** cost, which is borne by governments, students and businesses.
- Some students also **forego earnings opportunities** because they spend time in training that they could otherwise have spent earning income. Alternatively, their earnings may be reduced by working as an apprentice.

Most studies examining the economy-wide benefits and costs of VET focus on the benefits associated with students who complete a full qualification at a higher level than their previous study – that is, students who are both *graduates* and *up-skillers*. However, VET also benefits two other important types of students – *module completers* and *re-skillers*.

Module completers do not graduate with a full qualification but instead complete components of a qualification. This includes, but is not limited to, those undertaking Skill Sets that meet particular licencing or industry needs. According to Industry Skills Councils, skill sets have gained prominence in recent years because employers view them as a more flexible way of meeting their changing requirements than a full qualification, due to their shorter time-frame and lower costs. At present Skill Sets completers are not reported separately from other module completers. In any case, evidence from Karmel and Nguyen (2006) suggests that module completers are expected to generate 50 to 70 per cent of the employability and productivity benefits of graduates, depending on their level of study.

Re-skillers undertake study at the same or lower level than their previously-held qualification. This can benefit students by allowing them to adapt to changing industry needs. Data on outcomes for re-skilling students shows that some of these students benefit through enhanced employability.

By investigating the costs and benefits for module completers and re-skillers in detail, this report builds on previous studies. Other studies, such as a 2012 analysis by the Productivity Commission, take a more narrow approach by devoting most attention to the benefits to students who both up-skill and graduate with a full qualification.

This study also extends previous work by modelling the effect of VET on the supply of and demand for a detailed set of occupations. The effect on employment of 43 different occupations in 120 different industries is modelled. This modelling approach also recognises that industry demand for each occupation is not unlimited.

Internal rate of return on additional VET investment

After taking all of these benefits and costs into account, additional investment in VET is expected to result in significant net economic benefits. The focus is on expanding investment in Certificate III and above, in line with the priorities of the NASWD. The real internal rate of return (IRR)¹ summarises the net economic benefit to the Australian economy per additional dollar invested in VET. Estimating the IRR allows comparisons to be made with returns from alternative government priorities. To estimate this IRR, benefits generated by all three of the main types of students are included. This has been done in three successive steps in Chart A.

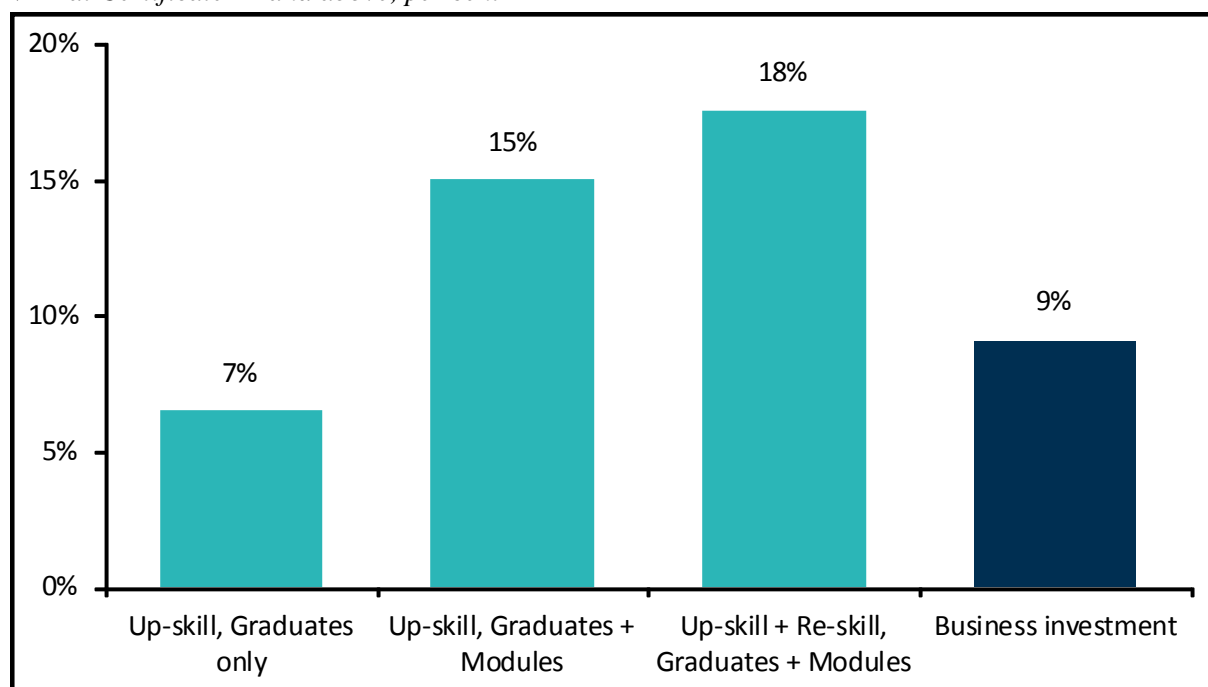
As a first step, the employability and productivity benefits to the 22 per cent of enrolled (Certificate III and above) VET students who both *up-skill and graduate* are taken into account. This results in an estimated IRR of 7 per cent. However, this narrow approach excludes the benefits generated by other groups of VET students, while still allowing for their costs.

Therefore, in a second step, the benefits to the 37 per cent of students who *up-skill and module complete* are added, including students undertaking skill sets or other non-accredited training. This more than doubles the IRR on investment in VET, to 15 per cent.

In the third step, the benefits generated by the 31 per cent of students who *re-skill and either graduate or module complete* are also added to the benefits from students who up-skill. As a result, the estimated IRR is higher again, at 18 per cent. The remaining 10 per cent of students do not complete any modules and are not included in the calculation of benefits.

¹ Technically, the real Internal Rate of Return is the discount rate that equates the present value of the real costs with the present value of the real benefits.

Chart A: Three cumulative steps in estimating the real internal rate of return (IRR) on investment in VET at Certificate III and above, per cent



Source: Independent Economics estimates using Independent Education Model

Note: *Up-skill, Graduates only* is the estimated IRR when only the benefits from students who complete a full qualification at a higher level than their previous qualification are included.

Up-skill, Graduates + Modules is the estimated IRR when only the benefits from students who complete a full qualification or modules at a higher level than their previous qualification are included.

Up-skill + Re-skill, Graduates + Modules is the estimated IRR when the benefits from students who complete a full qualification or modules at a higher, equivalent or lower level than their previous qualification are included.

This means that when all of the benefits and costs are taken into account, rather than just some, each dollar invested by governments, students or businesses in VET is expected to generate 18 cents of ongoing annual net benefits for the Australian economy.

This IRR is substantial, especially when compared to returns on business investment, which may be around 9 per cent. The high estimated return of 18 per cent indicates that, at 2011 policy settings, there is likely to have been under-investment in VET. This under-investment is likely to have been caused by myopia in potential students and limited access to loans to finance students' investment in VET. Both of these market failures would discourage potential students from undertaking VET study, despite the high returns. These market failures are a reason for government support for VET.

Policy scenarios

This IRR of 18 per cent from additional VET funding reflects a range of benefits and costs that are now quantified in dollar terms. This is done for a range of VET funding scenarios.

- The **baseline scenario** represents the future economic outcomes if government VET policy were unchanged from 2011².

² The 2011 policy settings are chosen as the reference point against which to compare the effects of additional funding commitments, because 2011 is the latest year for which funding data is available.

- The **committed funding scenario** represents the economic outcomes if total VET expenditure is higher than the baseline scenario to reflect policy commitments from governments made since 2011 under NASWD. It assumes that private spending increases in line with government VET funding. Overall, this scenario assumes that an additional \$2.7 billion is invested in VET from government and private sources, between 2013 and 2017, compared to what would have been spent at 2011 policy settings.
- The **further expansion scenario** also models economic outcomes under higher VET funding, but in this scenario the expansion in spending is larger at \$6.7 billion rather than \$2.7 billion.

The benefit and costs of additional investment in VET are estimated by comparing outcomes in the two scenarios with higher VET spending to the outcomes in baseline scenario.

Economic impact of higher VET funding

Results for the committed funding scenario are considered first. Compared to the baseline scenario, the committed funding scenario provides for a 5.6 per cent expansion to the VET system, lasting for five years and concentrating on students undertaking Certificate III level or above.

The costs of this additional VET funding are borne over the 5-year period from 2013 to 2017 as additional students are trained, while the benefits develop over the much long timeframe of their working careers. Given these different timeframes, valid comparisons of these costs and benefits need to allow for the time value of money. This can be done by converting the future streams of costs and benefits to present value terms i.e. their total value in 2013.

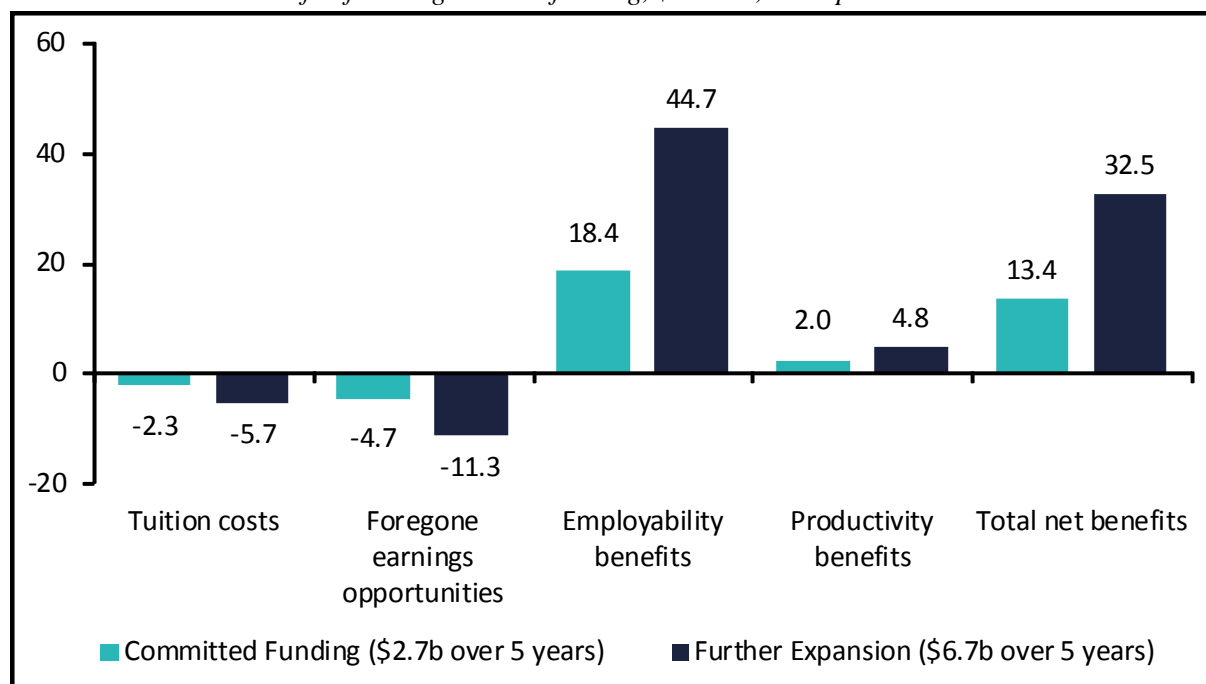
Chart B shows the present value of each cost and benefit for both of the additional funding scenarios. It can be seen that the committed funding scenario involves total costs of \$7.0 billion, made up of tuition costs of \$2.3 billion and foregone earnings opportunities of \$4.7 billion. Tuition costs include all direct costs of tuition, including the contributions from governments, students and businesses. Foregone earnings opportunities refer to the potential earnings that are lost while students are studying and hence are less available for work.

While the total costs of this investment are \$7.0 billion, these are easily outweighed by the total benefits of \$20.4 billion, yielding a net benefit of \$13.4 billion. As seen in Chart B, the total benefits include employability benefits of \$18.4 billion and productivity benefits of \$2.0 billion.

As noted earlier, the employability benefit arises because VET students are more likely to participate in the workforce, less likely to be unemployed, and more likely to work full-time compared to those with no post-school education. The productivity benefit arises because VET study allows students to work in more highly-skilled occupations. The finding of this study that the employability benefits from VET study are larger than the productivity benefits is consistent with other studies.

Of these findings, the most important is that the additional VET funding under the committed funding scenario lifts the net benefit from the VET system by \$13.4 billion, after all future additional benefits and costs are taken into account. The further expansion scenario involves a larger 5-year boost to VET funding, of 13.7 per cent rather than 5.6 per cent, and Chart B shows that the net benefit is commensurately larger at \$32.5 billion.

Chart B: Costs and Benefits from higher VET funding, \$ billion, 2013 present value



Source: Independent Economics estimates using the Independent Education Model

These net benefits are expressed as present values, which are capital amounts. Alternatively, they can be expressed as equivalent annual, ongoing net benefits. On that basis, the annual net benefit from the funding boost under the committed funding scenario is \$0.6 billion per year, while for the larger boost to funding under the further expansion scenario it is \$1.4 billion per year. This annual net benefit takes the form of higher household living standards as measured by real household consumption.

These additions to the numbers of VET students also lead to a significantly more skilled workforce. For example, under the committed funding scenario, employment of Technicians and Trades workers is 0.3 per cent higher than under the baseline scenario, while employment of Labourers is 0.2 per cent lower. This results in significant expansion of industries that are relatively dependent on VET skills. These industries include manufacturing, automotive repair and personal services (e.g. hairdressing). The education and training industry, as the provider of VET services, also receives a significant boost.

The net benefits from VET are also seen at the macro level. The committed funding scenario results in permanent gains to real GDP and employment of 0.1 per cent compared to the baseline scenario.

Economic impact of alternative VET policies to improve completion rates or the quality of training

The net benefits estimated above refer to using additional VET funding to simply expand the current VET system by increasing the number of places (at the Certificate III level and above). If VET places are currently provided on an optimal basis, then the best value for money would be obtained in this manner. On the other hand, to the extent that the VET system has limitations, it may be desirable to direct some of the additional funding to lifting completion rates and/or the quality of tuition.

While policies to **lift completion rates** can be expected to increase the benefits generated by students, they also involve additional costs from students staying in the system longer and being encouraged to do so. Whether it is better to direct some of the additional funds to policies aimed at lifting

completion rates depends on the costs and benefits. For example, Karmel and Fieger (2012) find that, for students who are not employed before study, the benefit from completing a full qualification is significantly larger than the benefits from completing modules. If policies to lift completion rates can be targeted to those students, then it may be better to spend some of the additional funds on such policies. However, firmer, more detailed conclusions require more research to investigate the costs and benefits of module completion relative to those of qualification completion.

Similarly, policies to **improve the quality of VET tuition** can increase the employability and productivity benefits from VET training, but will also involve additional costs per student. Whether it is better to use all of the additional funds to expand VET places or to use some of the additional funds to improve quality depends on the extent to which such quality-oriented funding improves student outcomes. For example, an additional 10 per cent per student spent on improving quality would need to raise the productivity of students by more than 6.5 per cent, or deliver an equivalent gain in employability, to achieve a better outcome than simply increasing the number of student places.

It has been suggested that the quality of VET training provided by private RTOs is variable. However, while there is detailed data available on the public VET system, data on the private VET system is limited, restricting comparisons of the benefits and costs under each system. As a result, a comparison of the quality of the public and private VET systems has not been made.

International students

VET can play a role in increasing the size of the labour force by attracting international students who go on to work in Australia. A 50 per cent increase in the number of international VET students granted work visas upon completing their studies is expected to boost per capita consumption levels.

Policy implications and further research

Significant economic gains are available from investing in additional VET places. These net benefits are generated by graduates, module completers and re-skillers. The large size of these net benefits indicates that, at 2011 policy settings, there is likely to have been under-investment in VET. This may have been caused by market failures, which is a reason for government support for VET. Policies to improve completion rates or training quality should be evaluated by comparing the net benefits of these policies against spending the same funds on expanding VET in its current form.

This study highlights some key areas where further research would contribute to policy development.

- Additional data that separates students who undertake skill sets from other module completers would allow the analysis to be extended to estimate the net benefits of skill sets.
- There is currently limited data available on VET providers that do not receive government funding. This restricts public versus private comparisons of the costs and benefits of VET.
- A more detailed understanding of the costs of module completion, relative to the benefits, is required to fully assess the net benefits of policies aimed at lifting completion rates.
- This report does not analyse the costs and benefits of specific policies to lift completion rates or the quality of training. Similarly, we have not assessed the quality of the Australian VET system against international benchmarks. We leave both of these analyses to future research.