

NATIONAL VOCATIONAL EDUCATION
AND TRAINING RESEARCH PROGRAM

RESEARCH REPORT

Labour mobility and vocational education and training in Australia

Kostas Mavromaras
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Zhang Wei

NATIONAL INSTITUTE OF LABOUR STUDIES
FLINDERS UNIVERSITY



Australian Government

Department of Industry, Innovation,
Climate Change, Science, Research
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This document should be attributed as Mavromaras, K, Mahuteau, S & Wei, Z 2013, *Labour mobility and vocational education and training in Australia*, NCVER, Adelaide.

COVER IMAGE: GETTY IMAGES/THINKSTOCK

ISBN 978 1 922056 51 1
TD/TNC 112.05

Published by NCVER, ABN 87 007 967 311

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About the research

Labour mobility and vocational education and training in Australia

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Labour mobility is a core element of a well-functioning and flexible labour market. Although mobility is considered to be generally desirable, this is not always the case, as individual job-movers can become better or worse off after their move. This paper examines the factors which influence ‘good’ or ‘bad’ mobility.

Using data from the Student Outcomes Survey compiled by the National Centre for Vocational Education Research (NCVER), the researchers examine the types of mobility and outcomes ensuing for those who have just completed a vocational education and training (VET) course in Australia over the period 2001–11. The different types of mobility considered include changing industry sector only, changing occupation only, and changing both sector and occupation. To determine whether job quality improves with mobility, the researchers have compared several measures of quality before and after a VET course, focusing on the association between mobility and better pay, better occupational status, a higher chance of full-time employment and a lower chance of casual employment.

Key messages

- Consistent with other labour mobility studies, it is the younger age groups and those with higher-level qualifications who are more mobile.
- Around 30% of all people completing a VET qualification change their occupation, industry sector or both within six months of finishing their studies.
- Individuals with VET qualifications who change their occupation but stay in the same industry sector have the best labour market outcomes.
- Industry sector mobility is rarely beneficial to individuals, although they may be making this change to realise benefits in the longer-term.

The benefits of changing occupation and the drawbacks of changing industry have an apt ‘human capital’ interpretation. Mobility is always a little risky, because the individual leaves behind the skills, knowledge and networks associated with a particular job. On the other hand, moving to a new occupation (particularly after completing a higher-level qualification) signals the acquisition of ‘new technology’. Thus we see the benefits of moving to a new occupation but remaining in the same industry – the pay-off from acquiring new skills without the penalty of losing sector-specific knowledge and networks.

Tom Karmel
Managing Director, NCVER

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Executive summary

The main purpose of this research is to document and examine statistically the nature of labour mobility, with particular reference to the quality and outcomes of labour mobility during the last decade in Australia. Using data from the 2001–11 Student Outcomes Surveys and multivariate regression analysis, the research focuses on the employment of vocational education and training (VET) participants before and after the completion of their VET study. We define different types of mobility and examine how their prevalence is associated with different levels of vocational education and training. We define different labour market outcomes following each type of mobility to reflect the quality of the job obtained after the VET course. The objective is to derive an empirical measure of ‘good’ versus ‘bad’ mobility.

Labour mobility is one of the core elements of a well-functioning labour market. It is an essential part of the ability of an economy and a labour market to adapt to changes in the pattern of jobs and of worker skills and preferences. Labour mobility is a complex concept, principally because people change jobs for a variety of reasons, in different ways, and with different outcomes for their lives and careers. The literature abounds with research about the way people move geographically, between employers, occupations, industries, jobs, types of contract, hours worked and, in the most extreme manifestation of mobility, the way they either join or leave the labour force. Labour mobility can occur for positive or negative reasons and can also have positive or negative outcomes. It is crucial for policy to distinguish between them.

Labour mobility has been traditionally perceived to be ‘bad’ if it has been involuntary (for example, a lay-off) or if it has led to other less desirable labour market outcomes, such as less stable and secure employment, and ‘good’ if it has been voluntary (for example, leaving for a higher-paying or more interesting job) or if it has led to other preferred outcomes. It could equally well be argued, however, that mobility that may be bad for workers (for example, a lay-off during a recession) may be good for their employers, if, for example, this were the only way to avoid bankruptcy. Clearly, labour mobility involves different players, so what may be good mobility and what may be bad mobility will often depend on the point of view of the observer.

We define different types of mobility to reflect the different changes in human capital associated with changing jobs. These include changing industry sector only, changing occupation only, changing both sector and occupation and, finally, as a reference category, changing neither occupation nor industry sector. We explain that these changes impact differentially on different types of human capital. For example, an occupation-only change means that the new job after vocational education and training involves doing something new or better (what the literature calls a ‘new technology’) in the same sector as before the VET course. The implication is that the job change has improved occupation-specific human capital without harming industry sector-specific human capital (that is, networks and experience). In contrast, an industry sector-only change means that the new job after the VET course involves doing the same job but in a new industry sector. Here the implication is that the job change involves the loss of advantages stemming from having established networks and knowing one’s own sector.

To assess whether mobility after participating in vocational education and training has been good or bad we examine whether job quality improves with mobility by comparing several measures of job quality before and after a VET course, focusing on the association between mobility and better pay, better occupational status, a higher chance of full-time employment and a lower chance of casual

employment. We argue that a major indicator of the quality of a job is whether it pays well. Hence our first indicator is pay. In recognition of the view that the quality of a job is judged on more than the wage it offers, we incorporate into the research an indicator of the status of the occupation, the ANU Status Scales index. The ANU index captures other, primarily non-pecuniary, aspects of the job. The other two indicators we use are whether mobility has led to a full-time job, which is considered by a large proportion of the workforce to be a preferred type of employment, and whether mobility has led to a non-casual employment contract, which is also considered by a large proportion of the workforce to be a preferred type of employment. We also differentiate between what happened before the Global Financial Crisis (GFC) and after, by splitting our sample between 2001–07 and 2008–11. In several instances, where we judge more detail could help, we split the second part of the sample between 2007–08 (the core financial crisis years for Australia) and 2010–11 (the post-financial crisis years for Australia).

Our estimation strategy consists of two major estimation parts. The first describes the incidence of mobility by level of VET qualification. It also examines how well vocational education and training fits the expectations of the student and the job the student obtains after the VET course. The second set of estimations examines the association between each of the four specific types of mobility and our selection of labour market outcomes, which we interpret as job-quality indicators, in order to distinguish between good and bad mobility.

The first set of estimations involving the examination of the incidence of different types of mobility suggests that VET completion at certificate III level and above is linked to higher levels of all types of labour mobility, especially with both occupation and sector mobility. Estimation results and descriptive data also suggest that mobility of all types decreased before and increased somewhat after the onset of the financial crisis, indicating that, following the slowdown of the economy in 2008–09, people who wanted to stay in employment after a VET course were more likely to have to change occupation and/or sector in order to achieve this, or that lack of opportunities restricted the mobility of the least able. However, the composition of those who moved remained largely unchanged, suggesting that the financial crisis simply accelerated mobility but did not change its structure.

The second set of estimations produces three main messages. First, occupational mobility has been shown to be the main route for VET-trained workers to improve their labour market position. Our estimation results are in line with international evidence which suggests that occupation changes are the manifestation of workers ‘improving their technology’, and that workers who change occupation are rewarded for their improved productivity. Our results show this to occur in all of the dimensions of labour market outcomes investigated. This is the side of mobility where the market appears to work well, in that it encourages change that also benefits the worker.

Second, our research results extend to sector mobility. We show that sector mobility is rarely beneficial to the worker. The intuition is that the worker who changes sector leaves behind all the valuable networks that are physically anchored in their original sector and cannot be of use in their destination sector. Moreover, our research shows that occupational mobility can confer fewer benefits when it is combined with sector mobility. This result is present in all the dimensions of labour market outcomes we investigated.

Finally, we show that the financial crisis has had a negative effect on the outcomes of mobility. Occupational mobility, which improves the technology of the worker, confers fewer benefits after the financial crisis. Sector mobility, which deprives the worker of their past networks, results in greater

losses. The results surrounding the financial crisis period are in line with the view that the cyclical downturn has intensified the labour market stresses generated from the longer-term structural changes in the Australian economy.

Introduction

Labour mobility is a complex concept, principally because people move jobs for a variety of reasons, in different ways, and with different outcomes for their lives and careers. The literature abounds with research about the way people move geographically, between employers, occupations, industries, jobs, types of contract, hours worked and, in the most extreme manifestation of mobility, the way they either join or leave the labour force. Labour mobility can take place for positive or negative reasons and can also have positive or negative outcomes. It is crucial for policy to distinguish between them. Labour mobility has been traditionally perceived to be ‘bad’ if it has been involuntary (for example, a lay-off) or if it has led to other worsened labour market outcomes, such as less stable and secure employment, and ‘good’ if it has been voluntary (for example, a move to a higher-paying or more interesting job) or if it has led to other preferred outcomes (see, for example, Gregg & Wadsworth 1995). It could equally well be argued, however, that mobility that may be bad for workers (for example, a lay-off during a recession) may be good for their employers, if, for example, this were the only way for the employer to avoid bankruptcy. Clearly, as labour mobility involves different partners, what may be good mobility and what may be bad mobility will often depend on the point of view of the observer.

The macroeconomic view of labour mobility takes a different stance by examining mobility as a phenomenon that facilitates change in the economy by matching the right workers to the right jobs. When demand for any specific product is reduced, some of the workers and the firms involved in its production will need to shift their labour and capital respectively to production that is economically sustainable. How this happens in reality is not always clear, because both firms and workers have to operate under uncertainty, and they will not always get it right. Workers may anticipate correctly a major drop in demand and quit their jobs for a sector with a better future. But they also may not anticipate it and become laid off. Both cases will be manifested as labour mobility, the former as voluntary and the latter as involuntary. In reality, however, both cases will have been caused by structural change in the macroeconomy. In many instances labour mobility appears to be the result of cyclical change in the economy, with lay-offs in the downturn and hires in the upturn. Empirically it is often difficult to distinguish between cyclical and structural mobility, principally because of the view that cyclical downturns simply accelerate the manifestation of structural weaknesses (with upturns doing the opposite) following the long-run path of economic growth.

In the macroeconomic context, good mobility would be defined as the mobility that manages change by shifting workers into the best possible jobs consistent with the long-run trend of the economy. Indeed good mobility may in itself help the long trend of the economy by facilitating the better use of all the human capital available in the labour market. Good mobility is not only important when the economy is growing; it is equally important during recessions, in that it helps the economy to perform at its best at a time when the economy as a whole, as well as the workers and the firms individually, will be at their most vulnerable.

One of the unavoidable costs of labour mobility is the destruction of some human capital. In this context the role of education and training is a crucial tool for achieving good mobility. The main purpose of this research is to document and examine statistically the nature of labour mobility, with particular reference to the quality and outcomes of labour mobility during the last decade in Australia.

The paper is structured as follows. The next chapter describes the theoretical and empirical background of labour mobility. It explains the complexity of labour mobility and its relationship to human capital formation and destruction. This discussion leads naturally to the distinct macroeconomic and microeconomic aspects of labour mobility and how they can be accommodated in empirical research. The following chapter describes the data. This paper is using data on the Australian VET system for the years 2001–11. The chapter following this explains the extent of the data and presents and discusses the descriptive statistics pertinent to labour mobility and its outcomes. These two chapters combined set the scene for the multivariate regression analysis presented and discussed in the next chapter. In order to preserve the readability of the paper, a complete set of descriptive statistics and all technical aspects of the econometric analysis are found in the appendix. There is a final concluding chapter.

Human capital and labour mobility

Background

Labour mobility has several attributes pertinent to this research. First, labour mobility is highly *complex*. Second, labour mobility is *encountered very frequently*, its frequency often concealed by aggregate labour market statistics. Third, labour mobility is intricately *associated with human capital changes*, including changes in *education and training*. The complexity of labour mobility necessitates model simplification to make any analysis both generalisable and tractable. It is customary to view mobility as a phenomenon which involves an interaction between the workers and the firms, whereby workers try to get the best value from jobs and firms try to achieve the highest value from their workers. It is worth noting that other agents are often of importance, such as organisations representing the workers, the firms, or the state, and that these agents often have their own distinct agendas.

In the context of mobility, the labour market can be understood as the mechanism which helps allocate workers to the firms to gain the greatest value from the skills the workers have to offer. The demand for labour can be best seen as ‘derived demand’, in that labour will be demanded most vigorously by those firms whose eventual product is most required by the market and will be shed most vigorously by those firms whose eventual product is demanded least by the market.¹ The fact that labour is not purchased for its own sake is an important distinction, which lies at the heart of understanding why labour turnover is such a complex phenomenon. Even looking at an oversimplified outline of the role of labour, it is easy to see the complexity added because in many instances individual labour, or the way it is combined in production, needs to be as diverse as the end product. The end products demanded by the market change regularly, and their change is often both unexpected and unpredictable. It is also possible to see complexity added because labour needs to change as often as technology, firm organisation, international competition and the consumers’ tastes (for specific end products) change. Further complexity results from the fact that labour can be combined with capital in many different ways. The exact labour–capital combination we observe depends on the forms of capital presently available, the current skills of the workforce and the relative price of the various alternative labour–capital combinations. The form of capital most likely to be used will depend on the available technologies and their relative prices, which will in turn depend on national and international economic and political circumstances. Labour mobility can be the outcome of change in any one or more of these interdependent factors.

At the macroeconomic level, labour mobility is often associated with the process of structural change as the means through which workers who used to work in obsolete industries become reallocated to expanding and new industries (Schumpeter 2012). Labour mobility is also often associated with the cyclical nature of economic activity, whereby workers lose their jobs during a downturn and regain them during an upturn. Cyclical and structural change can interact with each other: a severe downturn may speed up the demise of structurally weak firms, while an upturn may postpone it. In today’s Western labour markets a great deal of structural mobility is caused by rapid technological change, which

¹ The ‘Hicks-Marshall rules of derived demand’ explain how the demand for end goods can be translated into the demand for labour that helps produce these end goods. Accessible explanations are provided by many standard labour economics textbooks, Elliott (1991) being a good example.

requires many people needing to update their skills and qualifications and many firms seeking workers with updated or completely new skills and qualifications.

At the microeconomic level, labour mobility is often associated with matching workers holding jobs to frictional unemployment and mismatch in the workplace, in a process of individuals searching for a good job and firms searching for good workers, both operating with different sets of information. The natural ageing and eventual retirement of workers also cause a sizeable movement in the labour market. Because information is rarely perfect in content or timing, a part of the workforce continually readjusts its position in recognition of being in a sub-optimal match, as lay-off and quit statistics reveal. Even in periods of macroeconomic stability, labour mobility is frequent. It is noteworthy that, during the relatively stable growth years of 2001–07, there was an average of 1.11 million job changes a year in Australia. While the composition of mobility changed during the slower macroeconomic conditions in 2008–11, the level of job change remained high, at 0.96 million in 2009 (Australian Bureau of Statistics 2010). This high frequency of labour mobility is a flow statistic that is often concealed behind small net changes in unemployment, employment and general labour market participation, all of which are stock aggregates. The distinction is pertinent for this research, as labour mobility is closely associated with the development of national human capital.

General and specific human capital

Human capital formation and destruction are both closely associated with labour mobility. There is a well-known distinction in modern labour economics between general and specific human capital. The term ‘specific human capital’ refers to skills and knowledge that can only be used for a specific type of production. This concept can be refined to reflect varying degrees of specificity, ranging from skills that can only be used to do a specific job or work in a specific workplace, to working for a specific employer, sector, or country. A change in job will typically not influence the value of the general human capital of the worker (this is the definition of general human capital), but will always entail some loss in specific human capital. Skills and knowledge that are unique to a job or a firm will be in part lost when someone moves to another job or firm. The overall human capital loss from the dissolution of a worker–job match will be borne by both the worker and the firm, the actual share for each being dependent on the circumstances. The fact that we observe a high frequency of (voluntary and involuntary) labour mobility in the economy implies that there are many occasions when mobility is expected to confer net benefits to either workers who quit or employers who lay off their workers. Irrespective of who initiates the dissolution of a worker–job match, when a worker moves, their firm-specific human capital will be completely destroyed but their general human capital will be preserved. There will also be parts of their human capital that are neither completely firm-specific nor completely general, and these parts will be only partly damaged. How this happens will depend on specific occupation and sector circumstances. For example, if a worker changes employer by moving to another employer in the same industry sector, the sector-specific human capital will be largely preserved. If however they have moved to another job (in the same sector) their occupation-specific human capital may be partly damaged.

The literature distinguishes between the mobility associated with particular changes in human capital. Mobility within the same occupation and sector will retain most existing human capital. Mobility to another sector but the same occupation will entail losses in sector-specific human capital. Mobility within the same sector but to another occupation will entail losses in occupation-specific human capital. Mobility to another sector and another occupation sounds like a ‘new start’, where only the more general forms of human capital held by the individual who makes this move will be preserved.

The distinction between different types of mobility has sound foundations in both theoretical and empirical labour macroeconomics and microeconomics. Dolton and Kidd (1998) provide a useful introduction to the theoretical and empirical microeconomic distinction between job changes and occupational changes. Their empirical results focus on the difference between firm-specific compared with occupation-specific and general human capital. By contrast, Moscarini and Vella (2008) focus on the macroeconomic implications of mobility that involve occupation-specific human capital. They use Current Population Survey (CPS) data from the United States to find that a major distinction in understanding the workings of labour mobility is whether mobility is associated with a change in occupation or not. They suggest that ‘a change of occupation necessarily entails a change of technology for the worker, while the same does not necessarily hold for a change of employer or sector’ (p.2), and that occupational mobility is strongly embedded in the Schumpeterian perspective of creative destruction. Their argument is based on the theoretical view that specific human capital is accumulated above all at the occupational level. Kambourov and Manovski (2009) also find evidence to support the view that it is occupation-specific capital that drives successful labour market outcomes. They argue that sector-specific human capital does not confer any additional benefits to the worker. Their analysis, however, does not deal directly with the issue of mobility and can only guide our thinking indirectly, by pointing towards the higher importance of occupation than sector in the study of specific human capital.

We draw two general messages from the literature immediately pertinent to this research. First, there is limited microeconomic theoretical guidance and empirical evidence to help us assess the way human capital of different kinds may be rewarded by the market and may move around in the market. Second, the limited research there is suggests there are two opposing effects, depending on the part of the workforce on which we focus. On the one hand, Moscarini and Vella (2008) argue that workers who invest in ‘new technology’ (by VET participation, for example) are the most successful, and that new technology is largely manifested through occupational mobility and results in a better labour market position. Moscarini and Vella (2008) do not consider sector mobility explicitly. On the other hand, Kambourov and Manovski (2009) argue that occupational mobility for the whole workforce (which includes those who move with ‘new technology’ and those who move without it) would result in a worse labour market position due to a loss in occupation-specific human capital. Our research deals only with those who have invested in new technology: we focus on that part of the workforce who participated in vocational education and training. Consequently, we test whether occupational mobility after vocational education and training confers benefits or not, along the lines suggested by Moscarini and Vella (2008). We also refine and extend their analysis by incorporating in our estimations sector mobility in all its combinations with occupation mobility.

Outlining the empirical strategy of the research

This section describes how the statistical analysis that follows relates to the theory of general and specific human capital and its implications for labour mobility. To do this we give an overview of our dataset, focusing on its strengths and limitations and its effects on the specific hypotheses we are able to test by using it. For example, one of the main strengths of the data is that they provide information on occupation and sector classifications both before and after the VET course, enabling us to identify changes in occupation- or sector-specific human capital. The data also provide annual information on years that cover the period before and during the 2008 financial crisis. As a result, we can test the differences between sector-specific and occupation-specific human capital in some detail. One of the main weaknesses of the data is that they do not include any mobility that was not related to having participated in vocational education and training. As a result, we do not have a

‘control’ category as a reference group to be able to understand the mobility that took place without any VET involvement. In the remainder of this chapter we describe how our empirical strategy is shaped by the data at hand, the questions we would like to be answering and the questions which can reliably be answered by our data.

We use an annual nationally representative sample of all VET students in Australia, the Student Outcomes Survey (SOS). This provides information on employment status before and after vocational education and training, as well as the level of the qualification obtained as a result of undertaking the VET course. The way the sample is collected determines the information it contains. In particular, the data have no information about those workers who moved jobs but did not participate in vocational education and training. What we can assume about the people who participated in a VET course is that, at some point in time before the course, they had decided that participating in the course would be beneficial for them. The implication is that this will be a self-selected subsample of the working population, in that they thought that their present human capital could benefit from the additional skills that VET participation could bring. Put simply, these are people who expected to benefit from vocational education and training and who chose to participate in it. The absence of anyone who did not participate in vocational education and training precludes us from estimating the more general relationship between VET participation and labour mobility (does vocational education and training facilitate mobility?) and this limitation in the data should be borne in mind. Although we cannot estimate a causal relationship between VET participation and mobility, the data allow us to estimate the association between different types of mobility and different types of vocational education and training. The data also allow us to estimate the association between two broad outcomes of VET participation (achievement of purpose and job relevance of outcome) and labour mobility.

We define three categories of VET upskilling: certificates I and II; certificates III and IV; and diplomas and advanced diplomas. We identify four different types of labour mobility before and after vocational education and training: both occupation and sector remain the same – no mobility; sector remains the same but occupation changes; occupation remains the same but sector changes; and both occupation and sector change. It is clear that each category has different implications for the preservation or loss of existing specific human capital. Following the thinking of Moscarini and Vella (2008) and of Kambourov and Manovski (2009), we aim to determine whether occupational mobility after vocational education and training improves labour market outcomes compared with other forms of mobility, including sector mobility, whether combined with occupation mobility or not.

To assess whether mobility after vocational education and training has been good or bad, we need to employ a set of indicators of the quality of the jobs obtained after vocational education and training. We use four indicators: weekly earnings; occupation status; full-time as opposed to part-time employment; and non-casual as opposed to casual contracts. We argue that a major indicator of the quality of a job is whether it pays well. Hence our first indicator is pay. We use weekly earnings as opposed to the customary hourly wage rate, because the data include information on the amount of hours the job requires/offers. Ideally we would like to have known the hours worked and the degree to which the worker wishes to work more or less hours than they actually work. This type of information is available in the Household, Income and Labour Dynamics in Australia Survey, but not the Student Outcomes Survey. In recognition of the view that the quality of a job is judged on more than just the wage it offers, we incorporate in the research an indicator of the status of the occupation, the ANU occupational status index.² The ANU index captures other, primarily non-

² The ANU occupational status indices (ANU4 and AUSEI06) are explained in detail in the data section. Further information on these scales can be found in <<http://ipumsi.anu.edu.au/SiteTools/index.php>>.

pecuniary, aspects of the job. Occupational mobility is defined in this context by movement at the 1-digit occupation level (on which our definition of mobility is based), but not at the 4-digit occupation level (on which the ANU index is based). The other two indicators are whether mobility has led to a full-time job, which is considered by a large proportion of the workforce to be a preferred type of employment, and whether mobility has led to a non-casual employment contract, which is also considered by a large proportion of the workforce to be a preferred type of employment.

Estimation strategy

We carry out two sets of estimations. The first describes the incidence of mobility by level of VET qualification. It also examines how well the vocational education and training fits the expectations of the student and the job the student obtains after vocational education and training. The estimations are largely descriptions of the data, albeit of a multivariate nature, and they do not lend themselves to any causal interpretation. This part of the econometric analysis looks for statistically significant regularities in the labour mobility data, and we find them. The knowledge that the Student Outcomes Survey is a self-selected sample of people who expected to benefit from vocational education and training influences our interpretation of the associations we find, but does not reduce the value of our results. The second set of estimations examines the association between each of the three specific types of mobility and our selection of labour market outcomes, which we interpret as job-quality indicators, in order to distinguish between good and bad mobility. Our evidence supports the view that occupation mobility could be considered to be good mobility, while sector mobility should be scrutinised much more carefully in relation to the potential value it may confer on those who move. Before we present the multivariate estimation results we explore the data in detail.

Data and core definitions

The project uses data from the Student Outcomes Survey, managed by NCVET. The survey gathers information on VET students who graduated or completed at least one module of their VET course. The survey provides detailed information on the labour market status of VET graduates and module completers before and after their vocational education and training, although information during training is limited. A crucial attribute of the data is that they record whether individuals change occupation or sector after completing a VET module or course. Although the dataset does not allow for the repeated observation of individual VET participants, it contains repeated cross-section surveys from 2001 to 2011. Smaller samples are drawn in even-numbered years and larger samples are in odd-numbered years. To the degree that these surveys are representative of the national population of VET students in these years, the data allow for monitoring national developments at the micro (individual) level in a representative fashion between 2001 and 2011.

The VET students sample

This project uses all available Student Outcomes Survey datasets from 2001 to 2011. These surveys contain similar but not completely identical information across the years. It is only after the year 2005 that the yearly data collections are directly comparable with one another. The following few differences have had to be addressed before the dataset could be used to its full potential. First, separate questionnaires were used for graduates and for module completers for the years 2001 to 2003. It was only from 2004 that the same questionnaires were used. Second, only information on TAFE (technical and further education) students was collected before 2005. Information on students from other VET providers, including adult and community education (ACE), private and other government providers, has been collected and published since 2005. Third, the classifications of occupation and sector changed from ASCO 1997 and ANZSIC 1993 respectively, to ANZSCO 2006 and ANZSIC 2006,³ so that the new classifications are used from 2007 onwards. The data have had to be equalised to allow over-time comparisons at the occupation and sector levels.

Putting the 11 datasets for each year from 2001 to 2011 together results in a repeated cross-sectional dataset with a total of 612 062 observations, which is the main sample on which this research is based.

Types and levels of VET qualifications

The Australian VET system provides skills and knowledge for work through a national training system, which consists of a network of government, sector and training providers, who work together to provide nationally consistent training across Australia. Students can choose to study individual subjects or full courses that lead to formal qualifications. VET providers in Australia include TAFE institutes, universities, secondary schools, sector organisations, private enterprises, agricultural colleges, community education providers and other government providers. The VET system provides training opportunities across a wide range of subject areas and offers nationally recognised qualifications at the levels of certificate I, certificate II, certificate III, certificate IV, diploma and advanced diploma, the last two of which are qualifications that can be accredited in either the higher

³ ASCO = Australian Standard Classification of Occupations; ANZSIC = Australian and New Zealand Standard Industrial Classification.

education or the VET sectors. There have been about 1.7 million students per year enrolled in the VET system since 2001.

The definition of VET graduates and VET module completers

We will follow the definition of VET graduates and VET module completers used by NCVET. The term ‘module completer’ exclusively refers to ‘actual’ module completers, who are defined as those who have successfully completed part of a course (a module) and then left the VET system. Thus, continuing students in the module completer sample are excluded from the module completers. Also, students in the module completer sample who self-identify as graduates are identified as graduates. The number of actual graduates and module completers each year is shown in table 1.

Table 1 Number of ‘actual’ graduates and module completers by year

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Actual graduates	55 924	46 611	40 356	16 078	47 460	19 264	45 863	22 205	52 859	26 012	63 048
Actual module completers	30 128	8 257	23 879	5 988	24 783	7 333	21 342	6 857	22 463	7 801	17 551
Total	86 052	54 868	64 235	22 066	72 243	26 597	67 205	29 062	75 322	33 813	80 599

Source: Student Outcomes Survey 2001–11.

Definition of changes in occupation and industry sector

A change in occupation between before and after training is defined using the 1-digit occupation codes in the Student Outcomes Survey and presented in table 2. As mentioned previously, the occupation codes changed between 2006 and 2007, so for the years before 2007 occupation changes are derived using ASCO 1997, while for the years 2007 to 2011 ANZSCO 2006 is used.

Table 2 Change in occupation by year

	Change		No change		Total
	Cases	%	Cases	%	Cases
2001	12 429	27.8	32 276	72.2	44 705
2002	9 097	30.0	21 182	70.0	30 279
2003	9 643	26.5	26 781	73.5	36 424
2004	3 639	28.5	9 134	71.5	12 773
2005	8 920	20.3	35 071	79.7	43 991
2006	4 159	23.9	13 220	76.1	17 379
2007	10 577	22.9	35 625	77.1	46 202
2008	4 921	25.7	14 201	74.3	19 122
2009	12 429	25.2	36 945	74.8	49 374
2010	5 256	24.5	16 183	75.5	21 439
2011	11 188	21.9	39 991	78.1	51 179
Total	92 258	24.7	280 609	75.3	372 867

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

A change in industry sector between before and after training has been derived similarly by using the 1-digit sector codes from ANZSIC 1993 before 2007 and from ANZSIC 2006 afterwards and are presented in table 3.

Table 3 Change in sector by year

	Change		No change		Total
	Cases	%	Cases	%	Cases
2001	10 724	25.4	31 454	74.6	42 178
2002	8 183	28.1	20 930	71.9	29 113
2003	8 370	24.8	25 406	75.2	33 776
2004	3 280	27.2	8 794	72.8	12 074
2005	9 412	21.4	34 579	78.6	43 991
2006	3 995	23.4	13 060	76.6	17 055
2007	10 636	23.2	35 281	76.8	45 917
2008	4 809	25.2	14 270	74.8	19 079
2009	22 389	37.8	36 859	62.2	59 248
2010	4 911	23.1	16 370	76.9	21 281
2011	10 926	21.2	40 613	78.8	51 539
Total	97 635	26.0	277 616	74.0	375 251

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

Occupation and sector mobility

We have defined four categories according to the combination of change in occupation and sector: no change; change in occupation only; change in sector only; and change in both occupation and sector.

Our classification of mobility is to some extent different from the typical concept of job mobility, which refers to a change of employer or business. The main reason for this is that we cannot identify job mobility from the Student Outcomes Survey data. Therefore, the no-change category in our context consists of workers who have not changed a job as well as those who have changed employer or business but have not changed either occupation or sector. Descriptive statistics across our four categories of mobility are reported in table 4, followed by several individual characteristics by type of occupation and sector mobility. What we seem to have is either no change or, if change, it is mostly both occupation and sector rather than only one of the two.

Table 4 Different types of occupation and sector mobility by year

	No change		Change in occupation only		Change in sector only		Change in occupation & sector		Total
	Cases	%	Cases	%	Cases	%	Cases	%	Cases
2001	27 676	66.2	3 522	8.4	2 652	6.3	8 007	19.1	41 857
2002	18 294	63.2	2 504	8.7	1 979	6.8	6 161	21.3	28 938
2003	22 591	67.4	2 630	7.8	2 122	6.3	6 210	18.5	33 553
2004	7 787	64.8	953	7.9	788	6.6	2 482	20.7	12 010
2005	31 295	74.5	2 457	5.9	2 221	5.3	6 015	14.3	41 988
2006	11 899	70.2	1 060	6.3	989	5.8	2 993	17.7	16 941
2007	32 586	71.5	2 429	5.3	2 547	5.6	8 027	17.6	45 589
2008	12 888	68.7	1 154	6.1	1 055	5.6	3 669	19.6	18 766
2009	33 113	67.7	2 948	6.0	3 456	7.1	9 372	19.2	48 889
2010	14 755	69.9	1 469	7.0	1 202	5.7	3 671	17.4	21 097
2011	36 974	72.7	3 139	6.2	2 741	5.4	7 973	15.7	50 827
Total	249 858	69.4	24 265	6.7	21 752	6.0	64 580	17.9	360 455

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

The reader should note that table 4 shows the incidence of different types of mobility in a specific way. It only shows the mobility of those people who participated in vocational education and training, and it refers specifically to the comparison of their labour force status immediately before and immediately after they enrolled in vocational education and training. The analysis that follows, therefore, does not compare those who undertake vocational education and training with those who do not. Simply put, this study does not concern itself with the decision to undertake vocational education and training or not and how this may influence mobility. As a consequence, the inference we present here only refers to the comparison between the different VET qualification levels and how these may differ over time.

Table 5 shows the average age of VET student by type of mobility. The youngest VET students end up changing both occupation and sector after their VET course. VET students who change either occupation only or sector only are a bit older on average, while those VET students who change neither occupation nor sector are on average clearly older, in some survey years by almost ten years more.

Table 5 Average age of students by type of mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector
2001	36.0	30.9	30.2	28.1
2002	34.8	30.8	29.8	27.7
2003	36.9	31.7	31.5	28.7
2004	35.9	31.1	30.8	28.0
2005	38.0	32.5	32.1	29.4
2006	37.0	31.0	30.2	28.0
2007	37.8	32.3	31.6	28.2
2008	37.1	31.6	30.8	27.5
2009	37.8	34.2	34.1	29.6
2010	37.3	33.9	32.4	28.4
2011	39.1	35.4	34.5	29.8
Total	37.4	32.5	32.0	28.7

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

The gender composition of VET students in table 6 shows few differences by type of mobility between males and females. In general there seem to be more female than male VET students in most survey years, and in some years females appear to be more mobile than males, but the gender differences in table 6 are not nearly as pronounced and systematic as the age differences presented in table 5.

Table 6 Percentages of females by type of occupation and sector mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector	Total
2001	52.9	52.3	59.1	55.4	53.7
2002	54.3	52.5	60.4	57.7	55.3
2003	53.3	55.4	60.2	57.0	54.6
2004	55.5	54.1	62.4	58.5	56.5
2005	51.4	57.7	63.3	61.6	53.8
2006	51.8	55.5	62.7	57.5	53.7
2007	49.7	53.7	60.6	59.7	52.3
2008	52.1	55.2	55.8	57.5	53.5
2009	51.5	51.1	57.6	54.7	52.5
2010	51.7	47.7	54.9	50.7	51.4
2011	52.2	51.2	55.3	54.0	52.6
Total	52.1	53.1	59.1	56.7	53.4

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

Table 7 presents the proportion of people with a disability or long-term condition in each type of occupation and sector mobility. There does not appear to be a strong systematic difference, only a weak suggestion by the data that people with disabilities may be changing occupation and sector less often than people without disability.

Table 7 Percentages of students with disability by type of mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector	Total
2001	3.4	2.8	2.8	2.6	3.2
2002	3.2	2.6	3.2	2.1	2.9
2003	4.9	4.3	4.3	4.1	4.7
2004	5.7	4.6	4.7	4.1	5.2
2005	6.5	6.0	5.3	5.2	6.2
2006	6.1	6.4	4.9	5.7	6.0
2007	6.2	6.3	6.6	5.4	6.1
2008	5.9	5.3	6.6	4.7	5.7
2009	5.8	6.3	6.6	5.4	5.8
2010	5.8	4.8	5.4	4.7	5.5
2011	5.7	6.1	6.2	5.5	5.8
Total	5.4	4.9	5.2	4.5	5.2

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

Level of study in vocational education and training

Table 8 presents type of mobility by level of educational attainment of the VET course. There are clear differences in education level by type of mobility, but the patterns do not appear to be straightforward. We do not know whether mobility was caused by the choice of education level, or whether the choice of education level was caused by mobility intentions which were subsequently fulfilled. Table 8 presents the percentages within each type of mobility.

Table 8 Distribution of level of study in vocational education and training by type of mobility

	No change		Change in occupation only		Change in sector only		Change in occupation & sector		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Diplomas +	33 342	13.3	4 548	18.7	3 815	17.5	11 729	18.2	53 434	14.8
Certificate IV	47 349	19.0	4 709	19.4	3 467	15.9	9 163	14.2	64 688	17.9
Certificate III	64 613	25.9	8 006	33.0	7 288	33.5	23 681	36.6	103 588	28.8
Certificate II	37 582	15.0	3 258	13.4	3 473	16.0	11 038	17.1	55 351	15.4
Certificate I	7 167	2.9	595	2.5	623	2.9	2 206	3.4	10 591	2.9
Other	59 805	23.9	3 149	13.0	3 086	14.2	6 763	10.5	72 803	20.2
Total	249 858	100.0	24 265	100.0	21 752	100.0	64 580	100.0	360 455	100.0

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

An alternative and equally interesting picture would be to present percentages within each education level, as shown in table 9. It appears that students with a certificate III as well as a diploma have the smallest proportion of no change in occupation or sector after training.

Table 9 Distribution of type of mobility by level of study in vocational education and training

	No change		Change in occupation only		Change in sector only		Change in occupation & sector		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Diplomas +	33 342	62.4	4 548	8.5	3 815	7.1	11 729	22.0	53 434	100
Certificate IV	47 349	73.1	4 709	7.3	3 467	5.4	9 163	14.2	64 688	100
Certificate III	64 613	62.4	8 006	7.7	7 288	7.0	23 681	22.9	103 588	100
Certificate II	37 582	67.9	3 258	5.9	3 473	6.3	11 038	19.9	55 351	100
Certificate I	7 167	67.7	595	5.6	623	5.9	2 206	20.8	10 591	100
Other	59 805	82.2	3 149	4.3	3 086	4.2	6 763	9.3	72 803	100
Total	249 858	69.4	24 265	6.7	21 752	6.0	64 580	17.9	360 455	100

Source: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

Field of study

Table 10 presents the distribution of field of study by type of mobility. While there does not appear to be a pattern of mobility associated with the field of study itself, this is an area that is explored further in the next chapter.

Table 10 Distribution of field of study in vocational education and training

	No change		Change in occupation only		Change in sector only		Change in occupation & sector		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Natural and physical sciences	1 143	0.6	101	0.6	75	0.4	356	0.7	1 675	0.6
Information technology	5 770	2.8	383	2.1	430	2.5	1 269	2.5	7 852	2.7
Engineering and related technologies	35 046	17.2	3 183	17.5	3 018	17.6	8 759	17.4	50 006	17.3
Architecture and building	10 277	5.0	1 164	6.4	739	4.3	3 286	6.5	15 466	5.3
Agriculture, environmental and related studies	13 574	6.7	918	5.0	892	5.2	2 314	4.6	17 698	6.1
Health	14 079	6.9	1 489	8.2	808	4.7	2 887	5.7	19 263	6.7
Education	16 098	7.9	949	5.2	906	5.3	1 850	3.7	19 803	6.8
Management and commerce	44 474	21.7	4 582	25.1	5 215	30.5	13 243	26.3	67 514	23.3
Society and culture	24 846	12.2	2 121	11.6	2 056	12.0	7 307	14.5	36 330	12.5
Creative arts	5 322	2.6	472	2.6	559	3.3	1 974	3.9	8 327	2.9
Food, hospitality and personal services	16 841	8.3	2 031	11.1	1 396	8.2	4 885	9.7	25 153	8.7
Mixed field programs	13 188	6.5	675	3.7	852	5.0	1 915	3.8	16 630	5.7
Subject only enrolment	3 219	1.6	170	0.9	175	1.0	365	0.7	3 929	1.4
Total	203 877	100.0	18 238	100.0	17 121	100.0	50 410	100.0	289 646	100.0

Note: Data from the Student Outcomes Survey 2003–11 only. Missing responses are excluded from this calculation.

VET provider

Table 11 presents the type of mobility by the type of VET provider. It appears to suggest that mobility is positively associated with the use of private VET provision. In addition, we notice that in the category of ‘others’ the percentage of changes in both occupation and sector is much lower than the average. And the way this difference reshuffles in the rest of the mobility categories is mostly towards no change at all, with a much higher percentage in this category than for TAFE and private providers.

Table 11 Distribution of job mobility category by type of VET provider

	No change		Change in occupation only		Change in sector only		Change in occupation & sector		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
TAFE	153 270	72.1	12 356	5.8	12 057	5.7	34 812	16.4	212 495	100.0
Private	19 068	63.4	2 221	7.4	2 084	6.9	6 723	22.3	30 096	100.0
Other	1 172	77.9	79	5.2	70	4.6	185	12.3	1 506	100.0
Total	173 510	71.1	14 656	6.0	14 211	5.8	41 720	17.1	244 097	100.0

Note: Data from the Student Outcomes Survey 2005–11 only. Missing responses are excluded from this calculation.

Was the main reason for training achieved?

Table 12 describes the proportion of VET participants who believe their main reason for training was wholly achieved by their training. We find that about three-quarters of the participants acknowledge their main reason for vocational education and training to have been achieved and that the proportion does not vary significantly between different mobility categories.

Table 12 Proportion of main reason for study achieved after training by type of mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector	Total
2001	66.6	71.5	65.6	71.3	67.8
2002	66.6	74.0	67.8	72.7	68.6
2003	64.7	71.3	63.2	69.5	66.0
2004	66.0	75.6	66.6	73.1	68.3
2005	73.8	75.7	71.6	74.8	73.9
2006	73.6	76.3	71.6	74.8	73.9
2007	74.9	77.2	70.4	74.3	74.7
2008	75.7	79.9	72.2	77.3	76.1
2009	75.8	76.8	73.9	76.8	75.9
2010	75.2	76.2	73.0	77.2	75.5
2011	75.8	77.1	72.1	76.4	75.8
Total	72.3	75.2	69.9	74.3	72.7

Note: Student Outcomes Survey 2001–11. Individuals whose main reason for study is partially achieved are not taken into account. Missing responses are excluded from this calculation.

How relevant was the training to the job?

An alternative measure may be whether individuals found their training relevant to their job. Table 13 presents what was reported in this context. Similar to the information in table 12, about three-quarters of the VET recipients report that they found their training to have ‘some relevance’ or to be ‘highly relevant’. However, the proportion varies more significantly by mobility categories than table 12. Compared with the no-change category, those who only change occupation are six percentage points more likely to report that training is relevant to the job. In contrast, the category where there is a change in sector only are three percentage points less likely to report that training is relevant to the job.

Table 13 Extent to which training is relevant to job by type of mobility

	No change		Change in occupation only		Change in sector only		Change in occupation & sector		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Highly relevant	102 340	41.1	12 672	52.4	9 132	42.1	31 714	49.3	155 858	43.4
Some relevance	77 320	31.1	6 233	25.8	5 888	27.1	14 443	22.4	103 884	28.9
Little relevance	24 991	10.0	2 041	8.4	2 334	10.8	6 113	9.5	35 479	9.9
Not at all relevant	44 215	17.8	3 244	13.4	4 331	20.0	12 119	18.8	63 909	17.8
Total	248 866	100.0	24 190	100.0	21 685	100.0	64 389	100.0	359 130	100.0

Note: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

Labour market outcomes

Here we present statistics on the four labour market outcomes after the completion of VET study that been chosen to reflect the quality of labour mobility; namely, weekly earnings; ANU occupational status index; full-time against part-time job; and casual against non-casual job.

Wages

A conventional measure for judging labour market outcomes is the level of the wage a job offers. Table 14 presents average weekly earnings by type of mobility. We use a weekly amount in order to capture the hours required by the job and reflect the income it offers. Table 14 shows that workers who moved after a VET course receive lower weekly earnings than those who did not move. The difference for those who used vocational education and training to change occupation is small, but the differences for those who changed sector (with or without an occupation change) are much larger. An implication of table 14 is that all types of mobility are on average detrimental to the earnings of those who move. There are many instances and reasons why mobility may lead to lower earnings; indeed, this is the theoretical prediction of Kambourov and Manovski (2008) for occupational mobility. For example, when someone is laid off, their next job may not pay well, as they may not be able to secure good references. Similarly, when someone quits for health reasons, their next job may also pay less. However, given that the sample at hand consists of people who have gone through the trouble of further training and given that this pattern is also present for the 2001–07 period, when the labour market was very buoyant, the suggestion that mobility was on average detrimental to earnings is somewhat counterintuitive. As we explain in the next section, intuition is restored when we apply multivariate regression, where, after the influence of individual characteristics on earnings has been taken into account by the regression methodology, we find that some types of mobility are indeed associated with higher earnings and some are not.

Table 14 Average weekly earnings of VET students by type of mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector
2001	543.7	526.7 (96.9%)	484.7 (89.1%)	451.8 (83.1%)
2002	564.0	555.4 (98.5%)	489.0 (86.7%)	460.8 (81.7%)
2003	573.6	557.1 (97.1%)	522.3 (91.1%)	463.0 (80.7%)
2004	619.3	580.4 (93.7%)	536.4 (86.6%)	504.9 (81.5%)
2005	704.7	633.8 (89.9%)	590.9 (83.9%)	531.7 (75.5%)
2006	720.5	648.2 (90.0%)	632.2 (87.7%)	553.4 (76.8%)
2007	750.4	711.4 (94.8%)	659.9 (87.9%)	566.3 (75.5%)
2008	779.2	751.4 (96.4%)	703.1 (90.2%)	618.5 (79.4%)
2009	795.6	759.6 (95.5%)	733.0 (92.1%)	661.7 (83.2%)
2010	816.7	820.9 (100.5%)	738.7 (90.4%)	635.1 (77.8%)
2011	936.4	896.4 (95.7%)	844.5 (90.2%)	708.6 (75.7%)

Note: Earnings are measured in nominal Australian dollars. The ratio of the wage for each mobility category divided by the no-change category wage is shown in brackets.

For the numbers in table 14 to make sense and not provide a misleading picture, it must be noted that what is observed in this table is the combined effect of the individual characteristics that influence earnings *and* the mobility choices of individuals. A possible suggestion arising from table 14 is that the composition of the ‘stayers’ in the no-change column is of higher quality (in terms of characteristics that influence the level of earnings) than the composition of the ‘movers’ in all three remaining columns. There can be many reasons why stayers may be less likely to want to move, including that

they are happy in their job, they are more likely to be in a well-matched job, or because their employer offers stable employment conditions. The reader should note that the simple method of two-way tabulation does not provide sufficient information to answer such questions. As we show below, multivariate regression restores intuition, showing that some types of mobility benefit earnings, while other types harm them.

The ANU4 and AUSEI06 indices

ANU4 and AUSEI06 are two indices developed by the Australian Demographic and Social Research Institute at the Australian National University. The ANU4 and AUSEI06 provide socioeconomic scores for different occupational categories. Scores are scaled to range between 0 (lowest status) and 100 (highest status). The ANU4 scale utilises the ASCO-2 (ASCO 1997) for the data until 2006, and the AUSEI06 utilises the ANZSCO 2006 for the data from 2007. These two indices are highly correlated and therefore there is no need to convert one to the other for the purpose of over-time comparisons.

Table 15 ANU4 and AUSEI06 scales: VET students by type of mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector
2001	43.5	45.2	39.5	43.2
2002	44.1	46.6	39.4	43.9
2003	44.4	46.3	39.1	43.6
2004	42.1	44.6	36.3	41.4
2005	44.0	44.7	38.2	41.0
2006	42.0	43.3	37.8	40.0
2007	43.3	45.1	40.2	41.6
2008	44.8	45.3	41.4	42.6
2009	45.3	44.8	42.9	43.2
2010	45.6	46.1	41.7	41.3
2011	47.1	47.2	43.0	42.2
Total	44.6	45.6	40.6	42.4

Note: ANU4 is derived for observations from 2001 to 2006 and AUSEI06 is used from 2007 to 2011.

Average scores by type of mobility are reported in table 15, followed by the results of the other two indicators of job quality; namely, full-time against part-time job, and casual against non-casual job, shown in tables 16 and 17, respectively. There is a consistent picture across these tables: those who change occupation only always get the best outcome (that is, highest ANU scores and the largest proportion with a full-time and non-casual job). In contrast, the outcome of the change in industry sector category is always the worst. The remaining two categories lie in between, and no change appears to be slightly better than change in both occupation and sector.

Employment contracts

Table 16 suggests that in most circumstances training increases the chances of subsequent full-time employment. This is particularly so for people who train and change occupation. Those who change sector show little change in their full-time employment status after training completion.

Table 16 Proportion of full-time employment after training by type of mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector	Total
2001	65.4	72.3	67.4	66.3	66.3
2002	62.4	70.2	66.2	64.3	63.8
2003	63.2	68.6	63.3	62.1	63.4
2004	60.5	64.2	59.4	62.7	61.2
2005	65.5	65.7	64.7	61.9	64.9
2006	65.7	68.8	66.1	64.1	65.7
2007	66.6	69.0	63.9	63.7	66.1
2008	65.7	70.5	65.4	65.5	66.0
2009	64.8	66.4	63.6	62.9	64.5
2010	64.8	72.3	62.9	61.7	64.7
2011	66.4	69.8	65.8	62.8	66.0
Total	65.1	69.1	64.7	63.5	65.0

Note: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

Table 17 suggests that people who trained and subsequently found a job in a different occupation had a lower incidence of casual work than those who stayed in the same occupation and sector. In contrast, those who changed sector (irrespective of whether they changed occupation or not) have a higher incidence of casual employment. The evidence suggests that changing sector can be damaging, while training for another occupation in the same sector results in obtaining better employment contract conditions after vocational education and training. These associations appear to have been relatively stable throughout the 2000s.

Table 17 Proportion of non-casual employment after training by type of mobility

	No change	Change in occupation only	Change in sector only	Change in occupation & sector	Total
2001	65.4	70.6	61.2	61.5	64.8
2002	66.9	72.2	62.4	60.7	65.8
2003	63.8	70.0	60.9	59.2	63.2
2004	63.8	64.6	58.2	56.2	61.9
2005	65.5	65.0	56.3	55.1	63.5
2006	66.2	68.7	59.4	59.8	64.8
2007	66.7	67.0	58.1	59.1	64.9
2008	68.1	70.3	59.1	62.5	66.6
2009	66.3	64.3	61.5	60.9	64.8
2010	67.2	68.1	56.9	57.8	65.0
2011	69.0	68.6	59.9	59.3	66.9
Total	66.4	68.3	59.8	59.5	64.9

Note: Student Outcomes Survey 2001–11. Missing responses are excluded from this calculation.

Multivariate regression analysis

Overview

This section contains the multivariate regression analyses that examine the different types of labour mobility by VET completers. We present two major sets of estimations. One focuses on the incidence of different types of mobility and how each type of mobility is associated with vocational education and training. The other focuses on the various labour market outcomes following different types of mobility. All estimations have been carried out separately for the years of steady growth (2001–07) and for the Global Financial Crisis years of relative caution and slower growth in the Australian economy (2008–11).

The first set of estimations begins with the regressions of the four different mobility outcomes after completion of a VET study. It continues with the regressions of two important VET outcomes reported by the students; namely, whether the purposes of their study were achieved and whether the content of their VET study proved to be relevant to the job attained after their VET course. The prime objective of this first set of estimations is to describe in depth the relationship between vocational education and training and mobility in a way that can only be achieved through the use of multivariate regression. The interpretation of the results is centred on the following questions. For those who completed a VET module or a course and for those who have a job six months after that completion, what type of mobility route did they end up with for entering, re-entering, or remaining in the labour force? Moreover, was the degree to which the VET course helped them to achieve their original objectives, as well as the degree to which their VET course was relevant to their jobs, associated with any specific type of mobility?

The second set of estimations focuses on the outcomes of different types of mobility and differentiates between the good and bad attributes of the job attained after vocational education and training, good or bad mobility being defined as that leading to good or bad job-quality attributes. The estimations are designed to reveal which of the different types of mobility are more likely to be associated with better labour market outcomes and which are not. As previously explained, the definition of good labour market outcomes and, by extension, the definition of good or bad mobility, uses higher wages, higher ANU index of occupational status, non-casual contract status and full-time employment as indicators of better jobs. For such comparisons to work, we do not require – or even suggest – that the indicators we propose are a comprehensive set of all the attributes that make for a better quality job, only that, if we were to hold all other things equal, most people would agree that getting a job with higher pay, or getting a job with a higher occupational status, or getting a full-time job as opposed to a part-time job, or getting a non-casual as opposed to a casual job are more desirable outcomes. The interpretation of the results of the second set of estimations is centred around the definition of good and bad mobility (and the question of how this can be linked to the types of mobility observed in our data; namely, only occupation, only sector, and both sector and occupation), and draws on our earlier discussion of the theoretical distinction between occupational and sector mobility.⁴

⁴ We also ask whether the estimated associations differ at the two selected different times in the business cycle, but this is not central to our research questions.

Types of job mobility after vocational education and training

What type of human capital do workers utilise after they complete a VET course? Is the increased human capital from completing a VET course associated with changing occupation, sector, or occupation and sector? In this section we examine the role that different levels of vocational education and training play in mobility outcomes and how this may have changed after the onset of the 2008 Global Financial Crisis. The message is that vocational education and training facilitates the upskilling of those workers whose human capital is partially depleted through mobility. There is little difference between higher-level certificates and diplomas.

Mobility of all types decreased before and increased somewhat after the onset of the Global Financial Crisis, indicating that people who wanted to stay in employment after a VET course were more likely to have to change occupation and/or sector in order to achieve this, or that lack of opportunities restricted the mobility of the least able. However, the composition of those who moved remained largely unchanged, suggesting that the financial crisis simply accelerated mobility but did not change its structure.

This section estimates the association between the level of vocational education and training and the type of mobility, while controlling for age, gender and disability. The data are restricted to only those VET completers who had a job after their VET course, in order to make a comparison between occupation and sector before and after vocational education and training.⁵ A change in either occupation or sector will entail some loss in specific human capital and appears to be moderately more likely to occur among VET completers with certificates III/IV or diplomas (as opposed to certificates I or II). We interpret this to mean that vocational education and training is used to replace the lost specific human capital with new (specific or general) human capital, or at least to signal to employers a willingness to work towards gaining the new human capital that will fit them for the job. In the cases where both sector and occupation are new, this relationship is stronger, presumably because there is more specific human capital that is lost through this move and a higher need for replacement through vocational education and training.

⁵ We attempted to model non-random selection into employment for all VET completers using a Heckman correction model and a propensity score matching (PSM) model. Neither method could be implemented because of data limitations. The Heckman method requires data on some determinants of employment choice that are independent of VET completion and vice versa. Such data are not available. The propensity score matching method requires sufficient information to find close matches between the groups of VET completers who are employed and those who are not. Again, information that could satisfy the appropriate statistical requirements is not available in the data.

Table 18 Probability of job mobility after training

	2001–11		2001–07		2008–11	
	ME	t-ratio	ME	t-ratio	ME	t-ratio
<i>Panel 1: No occupation change and no sector change</i>						
Age	0.020	48.77	0.020	36.86	0.018	29.55
Age square/100	-0.015	-26.94	-0.014	-19.18	-0.014	-16.87
Male	0.021	12.80	0.033	15.79	0.003	1.26
With disability	-0.017	-4.28	-0.009	-1.70	-0.028	-4.66
Certificate III/IV	-0.054	-27.06	-0.044	-17.33	-0.068	-20.73
Diploma or above	-0.076	-27.37	-0.089	-25.61	-0.053	-11.44
Module completer	0.064	31.92	0.070	28.13	0.054	15.98
Try for different career or better job	-0.166	-73.59	-0.170	-60.37	-0.157	-41.99
Year 2001–07	-0.004	-2.39	-	-	-	-
No mobility (%)	71.2		70.9		71.8	
<i>Panel 2: Occupation change only</i>						
Age	-0.002	-6.93	-0.002	-5.06	-0.001	-2.75
Age square/100	0.001	2.21	0.000	0.57	0.000	0.85
Male	0.005	5.39	0.004	3.11	0.006	4.45
With disability	0.003	1.40	0.002	0.70	0.004	1.40
Certificate III/IV	0.019	16.85	0.019	13.43	0.017	9.74
Diploma or above	0.025	15.07	0.029	13.59	0.018	6.66
Module completer	-0.013	-12.42	-0.016	-11.49	-0.010	-5.41
Try for different career or better job	0.038	28.53	0.044	25.71	0.027	13.05
Year 2001–07	0.008	8.61	-	-	-	-
Mobility (%)	6.7		6.9		6.3	
<i>Panel 3: sector change only</i>						
Age	-0.001	-5.88	-0.001	-4.00	-0.001	-2.69
Age square/100	0.000	0.28	0.000	-0.97	0.000	-0.03
Male	-0.012	-13.67	-0.015	-13.54	-0.007	-5.20
With disability	0.005	2.34	0.001	0.51	0.010	2.98
Certificate III/IV	0.007	6.48	0.005	3.49	0.010	5.92
Diploma or above	0.010	6.92	0.010	5.52	0.010	4.15
Module completer	-0.004	-3.38	-0.006	-4.81	0.002	0.83
Try for different career or better job	0.029	23.58	0.031	20.08	0.026	12.4
Year 2001–07	-0.002	-2.44	-	-	-	-
Mobility (%)	6.0		5.9		6.1	
<i>Panel 4: Change in both occupation and sector</i>						
Age	-0.017	-50.56	-0.017	-38.61	-0.016	-32.21
Age square/100	0.014	30.48	0.015	23.22	0.013	19.57
Male	-0.014	-10.83	-0.022	-13.24	-0.002	-1.13
With disability	0.009	2.76	0.005	1.27	0.013	2.76
Certificate III/IV	0.029	17.85	0.020	9.94	0.040	15.37
Diploma or above	0.041	17.95	0.051	17.67	0.024	6.50
Module completer	-0.047	-29.81	-0.048	-24.54	-0.046	-17.41
Try for different career or better job	0.099	51.38	0.096	39.96	0.104	32.3
Year 2001–07	-0.002	-1.20	-	-	-	-
Mobility (%)	16.1		16.3		15.8	
No. of observations	326 762		199 737		127 025	
Wald Chi Square	33 369.9		22 006.9		11 692.6	
Log likelihood	-281 053.6		-172 736.5		-108 038.6	

Note: Student Outcomes Survey 2001–11. A Multinomial Probit model is used for estimation. We report marginal effects (ME), which are calculated using the predicted probabilities derived from the estimation.

Table 18 presents the results from three sets of estimations which are designed to explain the mobility outcome of those VET completers who were employed both before and after their VET course. Results are presented in four panels; each panel has the heading of the change surrounding VET completion. The first panel can reasonably be interpreted as those people who did not change their job. It will include some who did, but their new job was in the same (1-digit) occupation and industry as their prior job. We cannot identify this latter group in the data, but we expect them to be a reasonably small number compared with the other category – those who stayed in the same job. Those who did move will suffer less loss of specific human capital than movers who changed occupation and/or industry.

The second panel comprises those who changed only their occupation; the third panel is those who changed only their sector, and the fourth changed both occupation and sector. The purpose of the estimations is to examine the type of VET qualification that is associated with each of these four types of mobility. Each panel has three sets of results in the form of couples of columns: one couple for the complete observation period (2001–11), a second for the pre-crisis period (2001–07) and the third for the crisis period (2008–11). We note that the financial crisis that has done so much damage to the rest of the world has to date had a relatively mild effect in Australia.

Reading the Multinomial Probit marginal effects to calculate predicted probabilities

We use table 18, 2001–11 period and the variable diploma to build this example. Table 18 shows that the outcome of no occupation and no sector change occurs with a probability of 71.2%, but those who studied a diploma in that category have a marginal effect of -0.076, which means that they are 7.6 percentage points less likely to belong to this group. We can calculate the probability that someone who studied a diploma belongs to the category who does not change to be 63.6% (the difference between 0.712 and 0.076 expressed in percentage terms). In a symmetric way we can calculate the probability for someone who studied a diploma to change only their occupation to be 9.2% ($0.067 + 0.025 = 0.092$), to change only their sector to be 7.0% ($0.060 + 0.010 = 0.070$) and to change both occupation and sector to be 20.2% ($0.161 + 0.041 = 0.202$). It is worth noting that, as probabilities do by definition, the sum of all sets of probabilities will be 100 ($71.2 + 6.7 + 6.0 + 16.1 = 100\%$). Using this method, readers can work through the table and create those scenarios that may be of interest to them. The reader should note that the high statistical significance of the estimated marginal effects in table 18 practically guarantees the high significance of the predicted probabilities presented here.

Table 18 suggests that as age increases the probability that a VET completer remains in the same job and sector increases too. With the exception of mobility into a new sector, which shows a moderately increasing age effect, all other age/mobility profiles indicate that mobility decreases with age, reaching a minimum at or after retirement age.

Mobility into a new occupation or a new sector is positively associated with certificate III/IV and diplomas, with a stronger association present when a change in both occupation and sector is encountered. This supports the proposition that higher-level VET qualifications are valuable in restoring some or all of the specific human capital that is lost when changing occupation or industry, the more so when moving a greater ‘distance’ from the prior job; that is, when changing both occupation and industry. Module completers (as opposed to course completers) are more likely not to move, which suggests that they choose to do only that part of a VET course necessary for their current type of job. Those who change both occupation and sector are the least likely to complete only a module and the most likely to complete the certificate or diploma courses. VET completers with disabilities and female VET completers are more likely to move, but the differences between those

who move and those who do not are small for the former. The differences between the probability of different types of mobility are also small.

The columns in the middle and the right of table 18 allow us to examine whether there are any differences in mobility between the 2001–07 period before the Global Financial Crisis and the 2008–11 period during the crisis. Table 18 appears to suggest that there has been little change in mobility during the financial crisis. Further calculations suggest that overall mobility decreased before the start of the financial crisis (from 18.2% in 2001–04 for changing both occupation and sector, to 14.3% in 2005–07) and then increased moderately during the financial crisis (to 15.8% in 2008–11).⁶ During the same period, the probability of no change at all increased first from 67.1% to 74.8%, to decrease subsequently to 71.8%. It is noteworthy that, despite these changes in mobility, the composition in terms of demographic and educational characteristics of the different types of mobility remained unchanged. The implication of the findings in table 18 is that the more subdued economic activity after 2008 may have influenced the overall mobility of VET completers but did not alter in any major way the composition of mobility from what it was during the earlier growth years.

Before we examine closely the question of what type of mobility may be associated with better (post-mobility) labour market outcomes, we focus more on the role of vocational education and training in the context of mobility. In particular, we use two questions in the Student Outcomes Survey which ask the students whether the reason for study was achieved after training (table 19), and whether the job they hold after training is relevant to the training they received (table 20), to estimate how the perceptions of students may translate into or be associated with different types of mobility after vocational education and training. The intuitive purpose of these two estimations is to see which type of mobility is more or less strongly associated with vocational education and training and which (according to the views of the student) has achieved its reason and is relevant to their job. These estimations differentiate by level of VET study and split the sample into three time periods.

Table 19 below estimates the ‘degree to which the reason for study was achieved’ and table 20 estimates ‘how relevant training is to the current job’. Table 19 conveys a clear message about occupational mobility, but not about sector mobility. Occupational mobility (whether in the same or in a new sector) has a strong, positive and statistically significant association with the student perception that the main reason for study was achieved. This association becomes stronger for certificate III/IV and even stronger for diplomas. In contrast, sector-only mobility shows a mix of positive and negative weak associations, which are often not statistically significant, indicating that the choice to move sector may not be as strongly linked with VET choices as is the choice to change occupation.

⁶ These numbers are based on additional estimations carried out to examine any differences in mobility types within the period of 2001–07. We split the pre-GFC period into two sub-periods, 2001–04 and 2005–07. We found that in 2001–04 all types of mobility were higher than in 2005–07; that is, mobility was reducing in the years approaching the GFC. The specific numbers for each type of mobility are for 2001–04 and 2005–07 respectively: for occupation-only change, 8.2 and 5.5%; for sector-only change, 6.5 and 5.4%; for both occupation and sector change, 18.2 and 14.3%; for no change at all, 67.1 and 74.8%.

Table 19 The association between mobility and the probability the main reason for study was achieved after training

	2001 – 2007		2008 – 2009		2010 – 2011	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
<i>Panel 1: Below certificate III</i>						
Occupation change only	0.026	3.15	0.003	0.19	0.001	0.11
Sector change only	-0.005	-0.58	-0.026	-2.03	-0.064	-4.04
Change in both occupation and sector	0.024	4.65	0.012	1.46	-0.009	-1.01
No. of observations	53 436		21 395		19 152	
Pseudo R ²	0.05		0.07		0.08	
<i>Panel 2: Certificate III/IV</i>						
Occupation change only	0.079	14.97	0.052	6.22	0.027	3.24
Sector change only	0.023	3.60	0.020	2.22	0.006	0.69
Change in both occupation and sector	0.076	19.43	0.055	9.85	0.054	9.72
No. of observations	73 177		30 472		35 526	
Pseudo R ²	0.07		0.08		0.08	
<i>Panel 3: Diploma or above</i>						
Occupation change only	0.121	12.76	0.048	2.39	0.076	4.68
Sector change only	0.053	4.61	0.017	0.84	0.031	1.72
Change in both occupation and sector	0.134	19.04	0.063	4.88	0.066	5.40
No. of observations	23 553		7 681		10 764	
Pseudo R ²	0.09		0.10		0.08	

Note: The estimation equation contains variables on age, age square, gender, disability, pre-VET course qualifications and skill level at work, module completion, whether further study was attempted after completion, the presence of employment conditions after studying vocational education and training, and satisfaction with the vocational education and training itself. A binary probit model is used for estimation.

The question asked in the estimation of table 20 is more specific than that asked in table 19, in that table 20 asks whether the VET course was relevant to the job the student got after vocational education and training. We think that, given the focus of this study on labour market outcomes, this latter question, which relates vocational education and training to the current job after, is more pertinent than the former question, which relates vocational education and training to more general, possibly not job-related, reasons for studying. The message coming from table 20 is clearer and more focused: where vocational education and training is more relevant to the job that follows (i) we find a clear signal of more occupational mobility for all levels of vocational education and training, (ii) we do not find a clear signal for sector mobility, as there is less sectoral mobility for all certificates and more sectoral mobility for diplomas. In most instances the occupational mobility associations are a lot larger than those of sector mobility or occupation and sector mobility.

The message from these two estimations should not be over-interpreted, as the estimates show only an association between a perception about a VET outcome and a (subsequent) labour market outcome. Although the VET course precedes the labour market outcome, the survey answers have been provided at the same time; therefore, we cannot know whether the attributes of the VET course gave rise to the observed type of mobility or whether the type of mobility influenced the student's judgment about the attributes of the course. This is a question that cannot be answered by using the present data. Nonetheless, the fact is that there is a clear positive and strong association between generally successful and job-relevant VET courses and the incidence of changing occupation after vocational education and training, but there is no such association between generally successful and

job-relevant VET courses and the incidence of changing sector after a VET course. There is also a clear indication that the role of vocational education and training differs by its level and that it changed during and after the Global Financial Crisis.

Table 20 The association between mobility and the probability of a job after training being relevant to training

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
<i>Panel 1: Below certificate III</i>						
Occupation change only	0.050	5.29	0.032	2.00	0.024	1.52
Sector change only	-0.049	-4.94	-0.027	-1.79	-0.061	-3.50
Change in both occupation and sector	-0.002	-0.32	-0.014	-1.40	-0.017	-1.55
No. of observations	53 398		21 403		19 137	
Pseudo R square	0.11		0.12		0.10	
<i>Panel 2: Certificate III/IV</i>						
Occupation change only	0.070	13.78	0.053	6.43	0.039	5.08
Sector change only	-0.010	-1.55	-0.026	-2.77	-0.020	-2.17
Change in both occupation and sector	0.028	7.24	0.006	1.05	0.005	0.86
No. of observations	73 104		30 475		35 519	
Pseudo R square	0.09		0.08		0.09	
<i>Panel 3: Diploma or above</i>						
Occupation change only	0.102	12.08	0.038	2.14	0.053	4.30
Sector change only	0.032	3.08	0.041	2.40	-0.010	-0.66
Change in both occupation and sector	0.114	18.43	0.052	4.70	0.013	1.37
No. of observations	23 541		7 684		10 755	
Pseudo R square	0.13		0.13		0.14	

Note: The explanatory variables we use are the same as in table 19. A binary probit model is used for estimation.

We now turn to the examination of the quality of labour mobility after vocational education and training.

Labour mobility and labour market outcomes

This section estimates the association between the different types of labour mobility of VET completers and their employment outcomes. A variety of attributes of post-VET employment are used as indicators of the quality of mobility. The main idea here is that no single indicator can offer a definitive view on the quality of labour mobility, meaning that we need to examine a broad variety of complementary indicators.

In the previous sections we established that different types of labour mobility differ in their frequency. We now move to an investigation of the association between different types of mobility and different types of employment outcomes. We present a set of different outcomes: weekly earnings; occupational status (measured by the ANU index); obtaining full-time employment; and obtaining a non-casual job. It is clear that these indicators of the quality of labour mobility are not independent of each other, nor do they provide full coverage of all aspects that would indicate that a move is good. We do not suggest that any one of the proposed outcomes can provide a comprehensive description of mobility. We think that estimating them jointly (that is, using an econometric model where they are all present and where they are all jointly associated with all outcomes) would be a

formidable undertaking with the type of data at hand and would endanger the statistical robustness of our findings. We therefore present a set of estimations that can produce robust results with the available data. We use one estimation for each of the indicators to examine them individually and then form an overall judgment at the end of our estimations.

Our thinking is guided by the findings from the theoretical literature about the relationship between types of mobility and types of human capital changes, presented at the start of this paper. We examine mobility separately for the three distinct types of VET qualifications, which are represented in three separate panels in each subsequent table (certificates I and II, certificates III and IV, and diplomas and advanced diplomas).⁷ This amounts to presenting three estimation results for each outcome by level of qualification. In line with the objectives of this paper, we present results for the years before the financial crisis and after. We refine the ‘after’ category by distinguishing between 2008–09 and 2010–11 in order to trace the development of labour mobility after the crisis. At the time this project was designed there was already a minority view among economists that the financial crisis was continuing after 2009, that view now (June 2012) is becoming stronger in the profession and justifying the investigation of the more recent data from year 2011. Finally, the coefficients and marginal effects presented in each table should be interpreted as percentages.⁸ We should note that job mobility can be endogenous, in that it may be correlated with some unobserved factors that also influence labour market outcomes. The customary way to model endogeneity in the absence of panel data is to use the method of instrumental variables. The data at hand do not contain sufficient information for this method of estimation.

Earnings and mobility

We begin with table 21, which examines the relationship between weekly earnings and mobility. Higher weekly earnings are an indicator of better mobility. The top panel presents those with a VET completion at certificate I/II level. The main result in panel 1 of table 21 is that all VET completers who move in any way enjoy a higher wage (from 6.4 to 9.3% in 2001–07) than those who do not. Because certificates I and II are the shortest VET courses and mostly involve only a minimal level of study, it is sensible to interpret the increase in wages as the result of the move and not of the VET completion. The most likely explanation is that movers increase their weekly earnings (this is one of the reasons they move) and that once in their next job they often have to complete one or other firm- or job-specific certificate I or II.

A different picture emerges when we move to panel 2, which estimates the impact on weekly earnings of labour mobility after a VET completion at certificates III or IV level. Here, we see that in the pre-crisis years, only occupational mobility was associated with higher wages throughout the whole observation period. Sector mobility was associated with 2.3% higher wages and sector and occupational mobility was associated with 1.8% lower wages. Both percentages are low, but they are statistically significant. The wages of those who changed only their occupation were even higher after the Global Financial Crisis began and stayed so in 2010–11. The wages of those who changed sector only increased in 2008–09, and decreased afterwards, but the changes were relatively small. The wages of those who changed both occupation and sector were higher by 7.5% (from -0.018 to 0.057)

⁷ In this section, the term ‘certificates I and II’ also include other non-AQF certificates.

⁸ For example, the coefficient at the top left of the first panel in table 21, taking the value of 0.093, implies that those who changed only occupation after their VET completion have on average a wage that is 9.3% higher than the reference category, which is those who changed neither occupation nor sector.

between 2001–07 and 2008–09, but then dropped again by almost 6% in the 2010–11 years (from 0.057 to -0.001).

Table 21 Association between mobility and weekly earnings after training

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
<i>Panel 1: Below certificate III</i>						
Occupation change only	0.093	6.17	0.086	3.57	0.093	3.77
Sector change only	0.084	5.74	0.052	2.37	0.066	2.63
Change in both occupation and sector	0.064	6.81	0.121	8.12	0.122	7.36
No. of observations	49 211		20 361		18 082	
R ²	0.33		0.40		0.43	
<i>Panel 2: Certificate III/IV</i>						
Occupation change only	0.067	6.89	0.100	6.54	0.105	7.56
Sector change only	0.023	2.18	0.033	2.22	0.011	0.71
Change in both occupation and sector	-0.018	-2.64	0.057	5.78	-0.001	-0.15
No. of observations	68 642		29 356		34 004	
R ²	0.22		0.23		0.25	
<i>Panel 3: Diploma or above</i>						
Occupation change only	0.141	8.69	0.091	3.07	0.097	3.98
Sector change only	0.008	0.42	0.022	0.76	-0.002	-0.08
Change in both occupation and sector	0.032	2.79	0.020	1.07	-0.115	-6.29
No. of observations	22 370		7 420		10 336	
R ²	0.28		0.27		0.28	

Note: Full regression results are in appendix B. We use nominal wages. The estimation equation contains variables on age, gender, disability, pre-VET course qualifications and skill level at work, module completion, whether further study was attempted after completion, the presence of employment reasons for undertaking vocational education and training, and satisfaction with the VET course. The ordinary least squares model is used for estimation.

Diplomas and advanced diplomas are the highest VET qualification and they typically take between one and two years full-time to complete. From the point of view of improving skills and knowledge they are the most intensive forms of study the VET system has to offer and in many aspects they compare with university degrees. Panel 3 in table 21 contains the estimates for VET completers of diplomas and advanced diplomas. The wages of those who moved occupation only, between 2001 and 2007, are 14.1% higher than those who did not move. Other types of mobility are not associated with higher wages (with coefficients at 0.008 and 0.032). It may be that diplomas confer advantages on all who choose them, but it may also be that these qualifications are simply chosen by the stronger students and their superior talents emerge in the labour market. Whichever the interpretation, diplomas appear to be facilitating productive mobility in a substantial way. The 2008–09 crisis reduced considerably the wage advantage associated with occupational mobility (from 14.1 to 9.1%).

The continuation of the financial crisis in the years 2010–11 may be seen in our data, in that the gains from occupational mobility do not return to their pre-2008 levels. (They remain virtually unchanged from 9.1 to 9.7%.) By contrast, joint sector and occupation mobility is associated with considerably lower weekly earnings: wages 3.2% higher than those who did not move in 2001–07, to 11.5% lower for the same transition in 2010–11, which is a net difference of -14.7%. The implication of this finding is that on this occasion both sector and occupation mobility must have resulted in considerable human capital destruction, as manifested by wages that are 14.7% lower, despite the considerable wage advantage that must have been generated through VET completion at the diploma level.

The overall finding from the estimation of the determinants of weekly earnings is that occupational mobility is the most beneficial of all types of mobility, in line with the theoretical understanding that occupational mobility entails changes in technology that improve productivity. The higher levels of VET training appear to be facilitating this process in a beneficial way, which is exactly what they are designed to do.⁹

Occupational status and mobility

The ANU socioeconomic index is our second indicator. This is an index that reflects the value of a job in a broader way, incorporating elements of lifetime earnings, so that a higher index indicates better mobility. Whereas in our estimations the wage may be measuring accurately the ‘spot price’ of labour mobility, the ANU index may be measuring some of the ‘longer-term value’ of labour mobility, offering an indicator of the long-run benefits of mobility. Table 22 presents the three estimations for the ANU index.

Table 22 suggests that there is a minimal association between sector-only mobility and better quality jobs, as measured by the ANU index. Only occupation mobility and both sector and occupation mobility are associated with higher ANU index values. These values were reduced in 2008–09 but began to improve in 2010–11. Combining the 2010–11 picture on weekly earnings with the ANU index for the same time suggests that the intensely negative weekly earnings effect associated with a sector and occupation change for diploma VET completers (at = -11.5%) may be compensated by the future advantage suggested by the positive value for the ANU index (at 4.1 index points).

⁹ We have replicated the estimations in table 21 by carrying out additional regressions to establish the mobility and earnings patterns among the more tightly defined subsample of those VET participants who reported ‘a career move’ as the prime reason for VET participation. We found that restricting the sample in this manner produced no significant qualitative differences in the results, in that there were no statistically significant sign reversals in the estimated associations. However, many of the estimated coefficients that were significant in table 21 lost their statistical significance. We suggest that the reduction of the sample to a size of less than 10% of the original one used in table 21 has rendered estimation results too imprecise for use. Detailed results can be found in table A20 in appendix B.

Table 22 Association between mobility and the ANU socioeconomic index after training

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
<i>Panel 1: Below certificate III</i>						
Occupation change only	2.848	8.25	1.629	2.95	2.821	4.86
Sector change only	-0.811	-2.40	-0.978	-1.95	-3.895	-6.55
Change in both occupation and sector	3.071	13.99	2.699	7.88	1.659	4.25
No. of observations	47 022		21 430		19 161	
R ²	0.45		0.36		0.39	
<i>Panel 2: Certificate III/IV</i>						
Occupation change only	7.408	30.72	3.968	10.08	4.275	12.00
Sector change only	0.165	0.62	0.070	0.18	-0.755	-1.95
Change in both occupation and sector	4.874	28.81	4.147	16.44	2.236	9.12
No. of observations	64 349		30 506		35 548	
R ²	0.38		0.26		0.28	
<i>Panel 3: Diploma or above</i>						
Occupation change only	10.382	25.48	4.741	6.46	5.983	9.78
Sector change only	0.177	0.39	1.117	1.56	0.077	0.12
Change in both occupation and sector	10.142	35.27	6.016	12.69	4.112	9.03
No. of observations	20 837		7 687		10 766	
R ²	0.35		0.28		0.32	

Note: Full regression results are in appendix B. The estimation equation contains variables on age, gender, disability, pre-VET course qualifications and skill level at work, module completion, whether further study was attempted after completion, the presence of employment reasons for studying vocational education and training, and satisfaction with the VET course. The ordinary least squares model is used for estimation.

This would imply that, in the aftermath of the Global Financial Crisis, VET completers who chose to change both their occupation and sector were prepared to make weekly earnings sacrifices to achieve better future prospects (as these are represented by the better ANU index).

Does the field of study matter?

Before we estimate the relationship between employment contracts and mobility, we explore a potentially important facet of the relation between earnings and occupational status, and mobility. Up to now we have distinguished only between lower-level certificates I/II, top-level certificates III/IV, and all diplomas. We refine our definition of human capital by introducing in the estimation information on the field of study involved in the VET participation. The idea here is that some fields of study may perform better than others, as they may create skills that are more sought after in the market than others. To capture this complexity accurately, it would be necessary to map fields of study on occupations and sectors and then follow the resulting mobility outcomes. This is a highly complex undertaking and lies beyond the scope of this research, but is one that has been in part addressed in Mavromaras et al. (2013). Here we use the simplest estimation method to illustrate the different mobility outcomes after vocational education and training by field of study. We capture the combined association between field of study and specific type of mobility by interacting the mobility information with the field of study information. Even in its simplest form (four types of mobility and 12 categories of field of study, resulting in 48 estimated interaction terms, each one of which has to be combined with its corresponding main terms), the estimation results are complex to present and hard to interpret in any detailed form. We therefore present the results in appendix tables A21 and

A22 and discuss here the core intuitions that they convey. For simplicity, we estimated only the earnings and the occupational status outcomes.

Results are clear and accord with the general intuition. First, we still find that occupational mobility confers the most benefits, but this is not a new result. Second, we find that for some fields of study, notably, engineering, architecture, and agriculture, environmental and related studies, the distinction between occupational and sector mobility is less distinguishable in terms of the relationship between the type of mobility and the associated outcomes. Simply put, our results suggest that a VET participant who studied an engineering subject does not suffer from a sector change; indeed, the outcomes from a sector and an occupation change are not very different. In contrast, a VET participant who studied education clearly suffers from a sector change. Having experimented with these estimations, we are left with the feeling that there is much more that could be understood in this area, and we recommend it as an area for fruitful future research.

Employment contracts and mobility

Table 23 looks at the extent to which the labour mobility of VET completers improves the chances of full-time status in employment. For most people, achieving full-time employment will be an indicator of good mobility. Panel 1 of table 23 shows that all types of mobility are associated with higher chances of full-time employment (compared with the experiences of VET completers who did not move), but this is probably the result of people moving into full-time jobs that subsequently require a certificate I or II, rather than the completion of a certificate I or II somehow facilitating VET completers to gain full-time employment. In contrast, certificates III and IV and diplomas, being qualifications that entail considerable human capital-building, are another story. It is only occupational mobility that is associated with an increased probability of full-time employment. Whatever advantage mobility may have conferred before the Global Financial Crisis seems to have disappeared; indeed, the familiar negative association for diploma VET completers who changed both occupation and sector in the years 2010–11 can be traced for full-time employment as it was for weekly earnings.

Table 23 Association between mobility and the probability of getting a full-time job after training

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
<i>Panel 1: Below certificate III</i>						
Occupation change only	0.080	8.86	0.028	1.74	0.040	2.49
Sector change only	0.062	6.99	0.032	2.19	0.055	3.30
Change in both occupation and sector	0.089	15.8	0.101	11.12	0.117	11.94
No. of observations	51 883		21 375		19 085	
Pseudo R ²	0.15		0.20		0.20	
<i>Panel 2: Certificate III/IV</i>						
Occupation change only	0.044	6.63	0.050	4.75	0.070	7.50
Sector change only	0.034	4.71	0.021	1.97	0.012	1.11
Change in both occupation and sector	0.005	1.11	0.014	1.99	-0.001	-0.13
No. of observations	71 514		30 442		35 448	
Pseudo R ²	0.14		0.14		0.14	
<i>Panel 3: Diploma or above</i>						
Occupation change only	0.118	11.23	0.057	2.73	0.081	4.73
Sector change only	0.074	6.15	0.035	1.68	0.012	0.62
Change in both occupation and sector	0.084	10.79	0.046	3.37	-0.044	-3.22
No. of observations	23 221		7 679		10 746	
Pseudo R ²	0.13		0.13		0.12	

Note: As in table 19.

Achieving non-casual employment is a possible indicator of good mobility for many people. Table 24 suggests that there is a positive association between occupation-only mobility and the probability of securing a full-time job before the Global Financial Crisis for all certificates, but this is not present after 2008. Sector-only mobility, as well as both occupation and sector mobility, are associated with more casual jobs for VET completers for all qualifications. In what is by now becoming a familiar pattern, this negative association is stronger in the years 2010–11. Clearly, in this case too, VET completers may be moving to completely new jobs in types of contracts that are generally perceived to be disadvantageous to the workers, such as part-time or casual work, presumably because they cannot find any other employment or because they are forced to start at the bottom of the ladder in their completely new environments.

Table 24 Association between mobility and the probability of getting a non-casual job after training

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
<i>Panel 1: Below certificate III</i>						
Occupation change only	0.041	4.25	-0.020	-1.20	-0.007	-0.40
Sector change only	-0.049	-4.94	-0.057	-3.74	-0.055	-3.13
Change in both occupation and sector	-0.001	-0.14	0.030	3.02	-0.004	-0.35
No. of observations	53 396		21 389		19 106	
Pseudo R ²	0.05		0.08		0.07	
<i>Panel 2: Certificate III/IV</i>						
Occupation change only	0.022	3.37	0.002	0.18	0.013	1.34
Sector change only	-0.058	-7.68	-0.031	-2.85	-0.076	-6.70
Change in both occupation and sector	-0.054	-11.48	-0.021	-2.97	-0.053	-7.59
No. of observations	73 145		30 456		35 474	
Pseudo R ²	0.03		0.03		0.03	
<i>Panel 3: Diploma or above</i>						
Occupation change only	0.074	6.81	0.043	2.03	0.038	2.23
Sector change only	-0.032	-2.50	-0.022	-1.02	-0.119	-5.78
Change in both occupation and sector	-0.008	-0.99	-0.026	-1.86	-0.109	-8.02
No. of observations	23 557		7 683		10 757	
Pseudo R ²	0.08		0.10		0.08	

Note: As in table 19.

'Good' versus 'bad' mobility

The overall picture arising from our estimations of labour market outcomes and mobility after vocational education and training is that occupational mobility is 'good' and sector mobility is 'bad'. We have used a mix of labour market outcomes to reflect job attributes, taking the view that mobility that leads to a job with desirable attributes is good and mobility that leads to a job with less desirable attributes is bad. The mix of job attributes was chosen to cover several angles of what would be called qualitatively a 'good job' and consequently 'good mobility'. The labour market outcomes we considered and their benefits were thus multifaceted. Some of them were short-term and of immediate and direct pecuniary impact (for example, weekly earnings of the job), and some were of a longer-term nature and more likely to also confer future benefits (for example, occupational status of the job). Full-time and non-casual were chosen to reflect the mix of permanence and status that these two job attributes encompass. We found that the estimation results offered very similar interpretations for the relationships between all labour market outcomes and all types of mobility. Although estimations offer quantitative results, we would not focus on them, as the outcomes are measured in different scales and do not therefore lend themselves to direct quantitative comparisons. Nevertheless, comparisons across time and between VET qualification levels can be made and offer useful intuition. The comparison between good and bad mobility focuses on three main results.

First, occupational mobility has been shown to be the main route for VET-trained workers to improve their labour market position. Our estimation results are in line with international evidence which suggests that occupation changes are the manifestation of workers improving their technology, and that workers who change occupation are rewarded for their improved productivity. Our results show this to occur in all of the dimensions of labour market outcomes investigated by us. This is the side of

mobility where the market appears to work well, in that it encourages change that also benefits the worker.

Second, our research results extend to sector mobility. We show that sector mobility is rarely beneficial to the worker. The intuition is that the worker who changes sector leaves behind all the valuable networks that are physically anchored in their origin sector and cannot be of use in their destination sector. Moreover, our research shows that occupational mobility can confer fewer benefits when it is combined with sector mobility. This result is present in all the dimensions of labour market outcomes we investigated.

Finally, we have shown that the financial crisis has had a negative effect on the outcomes of mobility. Occupational mobility, which improves the technology of the worker, confers fewer benefits after the financial crisis. Sector mobility, which deprives the worker of their past networks, results in greater losses. The results relating to the financial crisis period are in line with the view that the cyclical downturn has intensified the labour market stresses generated from the longer-term structural change in the Australian economy.

Conclusion

This research set out to examine labour mobility in the Australian labour market in the years 2001–11. The underlying aim was to investigate the distinction between ‘good’ and ‘bad’ mobility, not in the strict economic sense, where all mobility is good under the assumption of freely operating economic agents, but in the sense that different types of mobility may be associated with good or bad outcomes. To pursue this objective, this research had to address some of the fundamental concepts underpinning labour mobility in the Australian market, which is defined by a balance of market freedom and government regulations. Although the basic concept of mobility is relatively simple (one either moves or not), the causes of mobility and the outcomes of mobility for the individuals concerned and for society are complex. One of the main causes and outcomes of mobility is the change in human capital, in that mobility often destroys certain parts of the human capital belonging to the person who moves, while mobility is often facilitated by the acquisition of new human capital; for example, through the completion of a VET course. One of the core complexities that this research has attempted to disentangle is that of human capital specificity in the context of mobility, since the type of mobility will clearly influence which type of human capital is endangered and which is not. The research presented some of the concepts underpinning the distinction between specific and general human capital and made this distinction operational at the empirical level by distinguishing between occupation and sector mobility. The distinction was in part led by the literature, where occupation change is understood to influence directly the specific ‘technology’ the worker brings to the market, while sector change is understood to influence the specific sector knowledge, including the networks and culture that may directly and indirectly facilitate higher productivity. In the present context, VET participation was interpreted as the workers obtaining the ‘new technology’, which they subsequently use in the labour market. It has been possible to operationalise the distinction between occupation and sector by using the Student Outcomes Survey to produce data for estimation purposes. The survey provides a rich dataset, but the data are very targeted, in that they allow only the investigation of VET students who complete at least part of their intended qualification. All inference offered by this research is restricted, therefore, to the labour mobility of a self-selected group in the labour market and does not generalise to the whole Australian population. The large number of people who complete VET courses every year justifies the research of VET completers as a group that warrants individual attention.

The strategy for the empirical investigation was kept simple. First, we estimated the type of mobility associated with VET completion, restricting our sample to those VET completers who were in employment both before and after vocational education and training. This restriction was necessary in order to introduce the distinction between the occupation and sector change surrounding VET study. Our attempts to model the selection process into employment after vocational education and training were not supported by the data, reinforcing the message that we can only be sure that the estimation results apply to VET completers. We find that 69.4% of all VET completers remain in the same occupation and sector six months after finishing their studies, with 6.7% changing only their occupation, another 6.0% changing only their sector and 17.9% changing both occupation and sector. The main message from the examination of the incidence of different types of mobility is that VET completion at certificate III level and above is linked to higher levels of all types of labour mobility, and especially with both occupation and sector mobility. We found that the volume of mobility was at its highest in the years 2001–04, dropped in the years 2005–07 and increased in the years 2008–11, after the Global Financial Crisis. During these changes in volume, the composition of mobility

remained largely unchanged, suggesting that the effect of the financial crisis on the Australian labour market has been limited and that the correct interpretation of the mobility we observe is more structural than cyclical.

Second, we estimated the relationship between a variety of outcomes and the type of mobility by qualification level. The main idea here is that there is no single outcome that would represent adequately whether a move is good or bad. However, by estimating several such outcomes in exactly the same fashion we can form an overall view about the broad impact of each type of mobility on those who choose to move. The outcomes we studied ranged from short-run (for example, the wage as the spot price of labour) to long-run (for example, the ANU socioeconomic index of jobs as the long-term prospects from labour), in order to encompass the many ways in which mobility may influence both the current and future value of employment for the workers who move. We also examined different employment contracts (full-time versus part-time and casual versus non-casual) and differentiated between the first two years (2008–09) and the most recent two years (2010–11) of the Global Financial Crisis period, as experimentation with the data suggested some interesting differences in the cyclical nature of outcomes. The main message relating to what is good and what is bad mobility is that changing only occupation while preserving sector-specific human capital is a clear winner. We interpret this as the case where a worker moves to a new occupation using their VET course to gain a new ‘technology’, which they apply while working in the same sector. Staying in the same sector preserves all their ‘network’ and ‘culture’ specific human capital, which then helps them to apply their new technology as effectively as possible. It is also possible that the more able workers would be more encouraged to engage in this type of mobility, which would offer a complementary interpretation to the present empirical results. Changing only sector but not occupation, or changing both sector and occupation, is not associated with many good outcomes. The picture is that, at least in the short run (as represented by the wage and the contract type achieved after changing sector, with or without occupation change), the loss of the sector-specific human capital is associated with worse outcomes. An important point that arises from the positive ANU socioeconomic index results, however, is that both sector and occupation mobility may be a form of investment, in that the immediate results appear to be negative, but the longer-term outcomes (represented by the positive ANU index result) may be positive. This suggests that changing both occupation and sector at the same time may be undertaken with the longer-term in mind, especially for certificate III/IV and diploma VET completers.

Estimation results suggest that completion of vocational education and training at the diploma and advanced diploma levels is strongly associated with the presence of better mobility outcomes, the picture being one where diplomas look broadly more akin to university degrees than the rest of VET qualifications. Certificates III and IV do less well. This is a picture that also arises in other research which compares the employment outcomes associated with certificates III/IV and diplomas. Estimation results also suggest that, although the Global Financial Crisis appears to have influenced the Australian labour market, its effect was of a modest size. In conclusion, we find that occupational mobility works well for VET participants and that sector mobility either does not benefit those who move or harms them.

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Appendix A: Definition of variables

Job mobility variables:

- *Occupation change only*: Dummy variable, takes the value 1 if an individual has an occupation change only after the VET training, zero otherwise.
- *Sector change only*: Dummy variable, takes the value 1 if an individual has a sector change only after the VET, zero otherwise.
- *Change in both occupation and sector*: Dummy variable, takes the value 1 if an individual has a change in both occupation and sector after the VET training, zero otherwise.
- No occupation change and no sector change is the reference category.

Employed after training: Dummy variable, takes the value 1 if an individual is employed after the VET training, zero otherwise.

Wage: Log of usual weekly gross earnings from the main job after VET training.

ANU index: ANU4 for 2001–06 and AUSEI06 for 2007–11, continuous variable, the value of which lies between 0 and 100.

Full-time job after training: Dummy variable, takes the value 1 if an individual has a full-time job after the VET training, zero otherwise.

Non-casual job after training: Dummy variable, takes the value 1 if an individual has a non-casual job after the VET training, zero otherwise.

Main reason for study achieved: Dummy variable, takes the value 1 if an individual's main reason for study is achieved after the VET training, zero otherwise.

Job relevant to training: Dummy variable, takes the value 1 if an individual has a job highly relevant or somehow relevant to the VET training, zero otherwise.

Age: Continuous variable, expressed in years.

Age²/100: Continuous variable, expressed in years.

Male: Dummy variable, takes the value 1 if an individual is male, zero otherwise.

With disability: Dummy variable, takes the value 1 if an individual has a disability, zero otherwise.

Below Year 12 before VET: Dummy variable, takes the value 1 if an individual did not complete Year 12 before the VET training, zero otherwise.

Level of VET training:

- *Certificate III/IV*: Dummy variable, takes the value 1 if an individual studied a certificate III/IV in VET, zero otherwise.
- *Diploma or above*: Dummy variable, takes the value 1 if an individual studied a diploma or above in vocational education and training, zero otherwise.
- *Below certificate III* is the reference category.

Module completer: Dummy variable, takes the value 1 if a module completer, zero otherwise.

Further study: Dummy variable, takes the value 1 if an individual has enrolled in another course of study since undertaking the VET training, zero otherwise.

Non-employment reason: Dummy variable, takes the value 1 if an individual did the VET training for a non-employment reason, zero otherwise.

Satisfied with training: Dummy variable, takes the value 1 if an individual is satisfied with the VET training, zero otherwise.

Skilled job before training: Dummy variable, takes the value 1 if an individual had a managerial, professional or associate professional job before the VET training, zero otherwise.

Appendix B: Descriptive statistics and full regression results

Table A1 Descriptive statistics

Variable	Mean	Std. Dev.
Occupation change only	0.07	0.25
Sector change only	0.06	0.24
Change in both occupation and sector	0.18	0.38
Employed after training	0.76	0.43
Log of wage	6.20	0.86
ANU index	42.91	20.71
Full-time job after training	0.62	0.49
Non-casual job after training	0.61	0.49
Main reason for study achieved	0.66	0.47
Job relevant to training	0.71	0.45
Age	33.83	13.99
Age ² /100	13.40	10.66
Male	0.46	0.50
With disability	0.09	0.29
Below year 12 before vocational education and training	0.47	0.50
Certificate III/IV	0.45	0.50
Diploma or above	0.14	0.35
Module completer	0.29	0.45
Further study	0.32	0.47
Non-employment reason	0.25	0.43
Satisfied with training	0.82	0.39
Skilled job before training	0.32	0.47

Note: The sample consists of all VET participants from Student Outcomes Survey 2001–11, and includes 774 558 observations.

Table A2 Determinants of weekly earnings after training (below certificate III)

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
Occupation change only	0.093	6.17	0.086	3.57	0.093	3.77
Sector change only	0.084	5.74	0.052	2.37	0.066	2.63
Change in both occupation and sector	0.064	6.81	0.121	8.12	0.122	7.36
Male	0.405	61.37	0.352	33.75	0.353	32.46
Age	0.107	72.23	0.124	55.85	0.123	54.36
Age ² /100	-0.123	-62.35	-0.138	-48.05	-0.132	-46.00
With disability	-0.331	-23.22	-0.333	-15.77	-0.283	-12.81
Below Year 12	-0.199	-29.69	-0.195	-18.77	-0.200	-18.35
Module completer	0.142	19.57	0.143	12.62	0.132	11.46
Further study	-0.151	-19.32	-0.101	-8.07	-0.086	-6.52
Non-employment reason	-0.148	-19.13	-0.125	-10.43	-0.136	-10.15
Satisfied with training	0.019	2.15	0.019	1.13	-0.002	-0.10
Skilled job before training	0.294	37.89	0.285	24.99	0.353	30.07
Constant	3.955	145.03	3.690	88.24	3.703	84.63
No. of observations	49 211		20 361		18 082	
R ²	0.333		0.400		0.432	
F	1 891.7		1 041.6		1 055.2	

Table A3 Determinants of weekly earnings after training (certificate III/IV)

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
Occupation change only	0.067	6.89	0.100	6.54	0.105	7.56
Sector change only	0.023	2.18	0.033	2.22	0.011	0.71
Change in both occupation and sector	-0.018	-2.64	0.057	5.78	-0.001	-0.15
Male	0.415	79.17	0.372	46.95	0.374	51.06
Age	0.071	51.64	0.079	42.18	0.080	46.85
Age ² /100	-0.083	-45.09	-0.090	-36.55	-0.090	-40.53
With disability	-0.176	-14.09	-0.221	-13.10	-0.226	-14.30
Below Year 12	-0.075	-13.83	-0.098	-12.47	-0.084	-11.52
Module completer	-0.014	-1.53	-0.059	-4.77	-0.055	-4.33
Further study	-0.184	-31.74	-0.121	-13.80	-0.146	-18.15
Non-employment reason	-0.201	-27.39	-0.200	-16.72	-0.172	-15.71
Satisfied with training	0.047	7.44	-0.024	-2.09	-0.013	-1.22
Skilled job before training	0.274	45.45	0.239	28.60	0.287	37.34
Constant	4.749	197.47	4.801	138.98	4.820	150.13
No. of observations	68 642		29 356		34 004	
R ²	0.215		0.228		0.254	
F	1 443.0		664.9		891.2	

Table A4 Determinants of weekly earnings after training (diploma or above)

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
Occupation change only	0.141	8.69	0.091	3.07	0.097	3.98
Sector change only	0.008	0.42	0.022	0.76	-0.002	-0.08
Change in both occupation and sector	0.032	2.79	0.020	1.07	-0.115	-6.29
Male	0.235	24.87	0.211	13.28	0.222	16.77
Age	0.103	36.57	0.101	23.16	0.090	26.23
Age ² /100	-0.119	-31.12	-0.112	-19.42	-0.097	-22.24
With disability	-0.205	-8.53	-0.175	-4.72	-0.271	-9.25
Below Year 12	-0.030	-2.54	-0.032	-1.65	-0.034	-2.30
Module completer	0.014	0.89	-0.054	-2.38	-0.077	-3.38
Further study	-0.271	-26.71	-0.200	-11.74	-0.118	-8.58
Non-employment reason	-0.192	-16.12	-0.172	-7.99	-0.149	-8.53
Satisfied with training	0.061	5.66	0.022	1.03	0.023	1.30
Skilled job before training	0.281	25.96	0.258	14.93	0.314	22.87
Constant	4.201	87.10	4.416	56.65	4.660	71.84
No. of observations	22 370		7 420		10 336	
R ²	0.276		0.271		0.278	
F	656.7		211.4		306.0	

Table A5 Determinants of the ANU index after training (below certificate III)

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
Occupation change only	2.848	8.25	1.629	2.95	2.821	4.86
Sector change only	-0.811	-2.40	-0.978	-1.95	-3.895	-6.55
Change in both occupation and sector	3.071	13.99	2.699	7.88	1.659	4.25
Male	-5.466	-36.63	-8.041	-33.74	-8.572	-33.68
Age	0.405	12.26	0.275	5.48	0.357	6.79
Age ² /100	-0.342	-7.88	-0.092	-1.42	-0.172	-2.58
With disability	-1.778	-5.64	-2.078	-4.33	-2.341	-4.54
Below Year 12	-7.155	-47.10	-8.428	-35.62	-9.050	-35.58
Module completer	2.803	17.39	5.337	20.71	3.187	11.86
Further study	1.994	11.08	1.784	6.24	1.879	6.08
Non-employment reason	1.596	9.13	2.369	8.68	2.043	6.54
Satisfied with training	-1.113	-5.42	-0.234	-0.62	-1.125	-2.80
Skilled job before training	26.037	152.19	19.204	74.03	21.554	78.61
Constant	27.631	44.69	31.014	32.56	31.600	30.92
No. of observations	47 022		21 430		19 161	
R ²	0.450		0.359		0.3949	
F	2 953.5		923.8		961.1	

Table A6 Determinants of the ANU index after training (certificate III/IV)

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
Occupation change only	7.408	30.72	3.968	10.08	4.275	12.00
Sector change only	0.165	0.62	0.070	0.18	-0.755	-1.95
Change in both occupation and sector	4.874	28.81	4.147	16.44	2.236	9.12
Male	-4.394	-34.09	-7.268	-35.69	-7.384	-39.42
Age	0.785	23.39	1.033	21.53	0.961	22.25
Age ² /100	-0.745	-16.61	-0.904	-14.27	-0.789	-14.06
With disability	-0.805	-2.65	-1.436	-3.31	-0.336	-0.84
Below Year 12	-5.167	-38.84	-7.303	-36.16	-7.133	-38.24
Module completer	-0.588	-2.57	0.866	2.74	0.542	1.68
Further study	2.480	17.27	3.465	15.35	2.917	14.14
Non-employment reason	-0.276	-1.51	0.409	1.34	0.322	1.16
Satisfied with training	-1.399	-8.83	-1.581	-5.43	-1.727	-6.38
Skilled job before training	23.938	164.20	15.602	72.78	16.463	83.91
Constant	21.704	36.22	20.252	22.78	21.361	26.06
No. of observations	64 349		30 506		35 548	
R ²	0.376		0.258		0.278	
F	2 979.4		817.3		1 051.4	

Table A7 Determinants of the ANU index after training (diploma or above)

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
Occupation change only	10.382	25.48	4.741	6.46	5.983	9.78
Sector change only	0.177	0.39	1.117	1.56	0.077	0.12
Change in both occupation and sector	10.142	35.27	6.016	12.69	4.112	9.03
Male	-2.702	-11.58	-2.729	-6.91	-3.123	-9.48
Age	1.264	18.51	1.841	17.11	1.319	15.53
Age ² /100	-1.210	-13.24	-1.894	-13.29	-1.205	-11.15
With disability	-0.264	-0.45	0.129	0.14	-0.456	-0.63
Below Year 12	-2.319	-8.20	-2.994	-6.31	-3.656	-10.02
Module completer	-2.546	-6.84	-3.378	-6.03	-3.659	-6.53
Further study	-0.163	-0.64	0.626	1.48	1.479	4.31
Non-employment reason	-2.307	-7.69	-2.334	-4.38	-1.965	-4.50
Satisfied with training	0.025	0.09	-0.071	-0.13	-1.210	-2.73
Skilled job before training	20.600	77.68	14.526	33.97	17.506	51.22
Constant	14.763	12.41	9.384	4.85	19.009	11.80
No. of observations	20 837		7 687		10 766	
R ²	0.353		0.281		0.320	
F	872.5		230.1		388.8	

Table A8 Determinants of the probability of getting a full-time job after training (below certificate III)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.080	8.86	0.028	1.74	0.040	2.49
Sector change only	0.062	6.99	0.032	2.19	0.055	3.30
Change in both occupation and sector	0.089	15.80	0.101	11.12	0.117	11.94
Male	0.331	81.40	0.312	46.50	0.300	41.78
Age	0.030	31.31	0.044	29.08	0.043	27.81
Age ² /100	-0.039	-30.03	-0.053	-27.21	-0.051	-26.18
With disability	-0.148	-14.61	-0.166	-10.86	-0.130	-7.95
Below Year 12	-0.035	-7.84	-0.036	-4.92	-0.020	-2.57
Module completer	0.019	3.83	0.052	6.65	0.072	8.93
Further study	-0.071	-13.26	-0.035	-4.00	-0.013	-1.38
Non-employment reason	-0.110	-20.75	-0.081	-9.58	-0.094	-9.76
Satisfied with training	-0.010	-1.73	0.014	1.23	0.006	0.50
Skilled job before training	0.119	24.06	0.168	22.61	0.184	23.98
No. of observations	51 883		21 375		19 085	
Pseudo R ²	0.149		0.197		0.197	
Log likelihood	-28 612.9		-11 304.1		-10 022.1	

Table A9 Determinants of the probability of getting a full-time job after training (certificate III/IV)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.044	6.63	0.050	4.75	0.070	7.50
Sector change only	0.034	4.71	0.021	1.97	0.012	1.11
Change in both occupation and sector	0.005	1.11	0.014	1.99	-0.001	-0.13
Male	0.330	99.55	0.287	54.66	0.288	58.70
Age	0.006	6.35	0.015	10.97	0.017	14.22
Age ² /100	-0.014	-10.55	-0.022	-12.61	-0.025	-15.65
With disability	-0.105	-11.07	-0.107	-8.11	-0.139	-11.16
Below Year 12	0.012	3.07	-0.002	-0.37	0.017	3.25
Module completer	-0.013	-1.91	-0.048	-5.21	-0.034	-3.63
Further study	-0.141	-32.98	-0.104	-15.75	-0.104	-17.01
Non-employment reason	-0.134	-24.44	-0.131	-14.26	-0.117	-13.86
Satisfied with training	0.008	1.67	-0.018	-2.26	-0.004	-0.54
Skilled job before training	0.121	29.96	0.142	24.70	0.165	31.27
No. of observations	71 514		30 442		35 448	
Pseudo R ²	0.141		0.135		0.144	
Log likelihood	-39 771.2		-16 684.7		-19 321.9	

Table A10 Determinants of the probability of getting a full-time job after training (diploma or above)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.118	11.23	0.057	2.73	0.081	4.73
Sector change only	0.074	6.15	0.035	1.68	0.012	0.62
Change in both occupation and sector	0.084	10.79	0.046	3.37	-0.044	-3.22
Male	0.191	29.39	0.187	16.40	0.181	19.40
Age	0.043	21.67	0.041	12.78	0.035	13.73
Age ² /100	-0.053	-19.78	-0.049	-11.48	-0.041	-12.83
With disability	-0.103	-5.74	-0.134	-4.56	-0.117	-5.04
Below Year 12	0.032	3.76	0.031	2.12	0.025	2.27
Module completer	-0.017	-1.49	-0.029	-1.68	-0.030	-1.70
Further study	-0.198	-26.69	-0.156	-11.88	-0.112	-10.47
Non-employment reason	-0.137	-15.48	-0.123	-7.32	-0.095	-6.83
Satisfied with training	-0.004	-0.47	0.028	1.69	0.024	1.78
Skilled job before training	0.129	17.23	0.164	13.44	0.167	17.06
No. of observations	23 221		7 679		10 746	
Pseudo R ²	0.134		0.128		0.115	
Log likelihood	-13 261.3		-43 99.6		-60 71.5	

Table A11 Determinants of the probability of getting a non-casual job after training (below certificate III)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.041	4.25	-0.020	-1.20	-0.007	-0.40
Sector change only	-0.049	-4.94	-0.057	-3.74	-0.055	-3.13
Change in both occupation and sector	-0.001	-0.14	0.030	3.02	-0.004	-0.35
Male	0.080	18.42	0.049	6.94	0.033	4.35
Age	0.033	34.70	0.039	26.24	0.035	22.79
Age ² /100	-0.041	-32.13	-0.045	-23.44	-0.039	-19.97
With disability	-0.081	-8.51	-0.083	-5.73	-0.094	-6.06
Below Year 12	-0.066	-15.06	-0.070	-9.91	-0.076	-10.13
Module completer	-0.029	-6.12	0.057	7.41	0.039	4.88
Further study	0.004	0.83	0.027	3.22	0.028	3.16
Non-employment reason	-0.110	-21.13	-0.087	-10.56	-0.077	-8.27
Satisfied with training	-0.012	-2.04	0.048	4.14	0.016	1.30
Skilled job before training	0.057	11.32	0.061	8.01	0.068	8.53
No. of observations	53 396		21 389		19 106	
Pseudo R ²	0.047		0.079		0.071	
Log likelihood	-34 033.6		-13 151.7		-11 806.4	

Table A12 Determinants of the probability of getting a non-casual job after training (certificate III/IV)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.022	3.37	0.002	0.18	0.013	1.34
Sector change only	-0.058	-7.68	-0.031	-2.85	-0.076	-6.70
Change in both occupation and sector	-0.054	-11.48	-0.021	-2.97	-0.053	-7.59
Male	0.074	21.15	0.054	9.71	0.055	10.55
Age	0.016	17.55	0.023	17.33	0.023	19.12
Age ² /100	-0.020	-16.76	-0.028	-16.04	-0.028	-18.17
With disability	-0.080	-8.97	-0.050	-4.04	-0.058	-5.00
Below Year 12	0.006	1.64	-0.011	-2.04	-0.013	-2.56
Module completer	-0.078	-11.67	-0.077	-8.43	-0.080	-8.51
Further study	-0.089	-21.93	-0.045	-7.05	-0.050	-8.46
Non-employment reason	-0.122	-23.36	-0.121	-13.61	-0.107	-13.10
Satisfied with training	0.001	0.32	-0.010	-1.20	-0.016	-2.09
Skilled job before training	0.037	9.19	0.047	8.02	0.050	9.13
No. of observations	73 145		30 456		35 474	
Pseudo R ²	0.034		0.031		0.033	
Log likelihood	-44 309.1		-18 347.0		-21 515.9	

Table A13 Determinants of the probability of getting a non-casual job after training (diploma or above)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.074	6.81	0.043	2.03	0.038	2.23
Sector change only	-0.032	-2.50	-0.022	-1.02	-0.119	-5.78
Change in both occupation and sector	-0.008	-0.99	-0.026	-1.86	-0.109	-8.02
Male	0.008	1.26	-0.003	-0.22	-0.006	-0.62
Age	0.047	24.24	0.056	17.93	0.040	16.65
Age ² /100	-0.056	-21.37	-0.066	-15.89	-0.045	-14.90
With disability	-0.101	-5.79	-0.139	-4.81	-0.087	-3.88
Below Year 12	0.001	0.17	0.021	1.50	0.002	0.23
Module completer	-0.041	-3.73	-0.070	-4.13	-0.063	-3.71
Further study	-0.094	-13.00	-0.055	-4.33	-0.043	-4.26
Non-employment reason	-0.105	-12.34	-0.103	-6.29	-0.076	-5.72
Satisfied with training	0.012	1.63	0.018	1.11	0.000	0.03
Skilled job before training	0.085	11.51	0.075	6.04	0.061	6.26
No. of observations		23 557		7 683		10 757
Pseudo R ²		0.082		0.102		0.076
Log likelihood		-14 164.1		-4 420.1		-6 041.4

Table A14 Determinants of the probability of main reason for study achieved after training (below certificate III)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.026	3.15	0.003	0.19	0.001	0.11
Sector change only	-0.005	-0.58	-0.026	-2.03	-0.064	-4.04
Change in both occupation and sector	0.024	4.65	0.012	1.46	-0.009	-1.01
Male	0.072	18.98	0.062	10.29	0.037	5.93
Age	0.003	3.43	0.007	5.59	0.006	4.57
Age ² /100	-0.001	-1.25	-0.006	-3.87	-0.005	-2.78
With disability	-0.083	-9.22	-0.094	-7.02	-0.098	-6.88
Below Year 12	-0.001	0.00	0.004	0.69	0.006	0.90
Module completer	-0.031	-7.27	-0.018	-2.75	-0.034	-5.15
Further study	0.005	1.04	0.016	2.34	0.022	3.05
Non-employment reason	0.028	6.34	0.028	4.28	0.026	3.56
Satisfied with training	0.259	44.50	0.341	30.58	0.357	30.49
Skilled job before training	0.061	14.06	0.060	9.36	0.067	10.22
No. of observations		53 436		21 395		19 152
Pseudo R ²		0.054		0.070		0.076
Log likelihood		-28 513.8		-10 728.0		-9 329.6

Table A15 Determinants of the probability of main reason for study achieved after training (certificate III/IV)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.079	14.97	0.052	6.22	0.027	3.24
Sector change only	0.023	3.60	0.020	2.22	0.006	0.69
Change in both occupation and sector	0.076	19.43	0.055	9.85	0.054	9.72
Male	0.044	13.27	0.037	7.61	0.043	9.40
Age	-0.004	-4.32	-0.002	-1.98	-0.003	-2.97
Age ² /100	0.006	4.76	0.004	2.59	0.005	3.53
With disability	-0.056	-6.68	-0.042	-3.71	-0.061	-5.64
Below Year 12	0.039	11.40	0.024	4.98	0.035	7.73
Module completer	-0.285	-41.57	-0.275	-29.61	-0.278	-28.81
Further study	-0.064	-16.80	-0.029	-5.12	-0.036	-6.77
Non-employment reason	0.034	7.80	0.038	5.65	0.038	5.98
Satisfied with training	0.212	47.67	0.246	29.18	0.267	33.76
Skilled job before training	0.045	12.22	0.052	10.44	0.056	11.72
No. of observations	73 177		30 472		35 526	
Pseudo R ²	0.068		0.084		0.082	
Log likelihood	-38 796.4		-14 547.5		-17 438.1	

Table A16 Determinants of the probability of main reason for study achieved after training (diploma or above)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.121	12.76	0.048	2.39	0.076	4.68
Sector change only	0.053	4.61	0.017	0.84	0.031	1.72
Change in both occupation and sector	0.134	19.04	0.063	4.88	0.066	5.40
Male	-0.026	-4.06	-0.017	-1.45	-0.010	-1.03
Age	0.010	5.05	0.009	2.83	0.005	2.19
Age ² /100	-0.006	-2.48	-0.006	-1.39	-0.004	-1.16
With disability	-0.067	-3.93	-0.041	-1.44	-0.076	-3.38
Below Year 12	0.030	3.76	0.067	5.06	0.049	4.68
Module completer	-0.267	-24.18	-0.276	-15.93	-0.283	-15.81
Further study	-0.014	-1.94	0.002	0.16	0.012	1.25
Non-employment reason	0.173	25.05	0.167	13.24	0.147	13.75
Satisfied with training	0.219	28.47	0.274	16.77	0.258	18.61
Skilled job before training	0.066	9.21	0.037	3.05	0.026	2.58
No. of observations	23 553		7 681		10 764	
Pseudo R ²	0.088		0.099		0.079	
Log likelihood	-13 647.8		-4 308.9		-6 048.0	

Table A17 Determinants of the probability of job after training being relevant to training (below certificate III)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.050	5.29	0.032	2.00	0.024	1.52
Sector change only	-0.049	-4.94	-0.027	-1.79	-0.061	-3.50
Change in both occupation and sector	-0.002	-0.32	-0.014	-1.40	-0.017	-1.55
Male	0.038	8.66	0.018	2.51	0.004	0.57
Age	0.007	7.80	0.012	8.39	0.014	9.20
Age ² /100	-0.007	-5.56	-0.012	-6.31	-0.014	-7.54
With disability	-0.019	-2.02	-0.023	-1.57	-0.006	-0.38
Below Year 12	0.026	5.94	0.028	3.95	0.028	3.97
Module completer	-0.096	-20.07	-0.038	-4.96	-0.042	-5.56
Further study	0.024	4.62	0.050	6.10	0.021	2.43
Non-employment reason	-0.385	-79.07	-0.401	-52.54	-0.363	-40.88
Satisfied with training	0.125	20.51	0.177	15.20	0.199	16.32
Skilled job before training	0.038	7.63	0.035	4.50	0.049	6.34
No. of observations	53 398		21 403		19 137	
Pseudo R ²	0.107		0.121		0.102	
Log likelihood	-30 848.7		-12 181.6		-10 761.1	

Table A18 Determinants of the probability of job after training being relevant to training (certificate III/IV)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.070	13.78	0.053	6.43	0.039	5.08
Sector change only	-0.010	-1.55	-0.026	-2.77	-0.020	-2.17
Change in both occupation and sector	0.028	7.24	0.006	1.05	0.005	0.86
Male	0.043	13.67	0.034	7.07	0.030	6.76
Age	0.012	14.46	0.013	11.51	0.015	15.31
Age ² /100	-0.014	-13.18	-0.016	-10.56	-0.018	-13.78
With disability	-0.019	-2.43	-0.021	-1.95	-0.026	-2.61
Below Year 12	0.044	13.59	0.019	4.06	0.030	6.86
Module completer	-0.233	-34.27	-0.201	-22.40	-0.218	-23.28
Further study	-0.058	-15.84	-0.032	-5.88	-0.034	-6.78
Non-employment reason	-0.228	-44.52	-0.213	-24.68	-0.207	-26.31
Satisfied with training	0.122	28.82	0.134	16.92	0.167	22.14
Skilled job before training	0.038	10.60	0.039	7.79	0.055	12.01
No. of observations	73 104		30 475		35 519	
Pseudo R ²	0.088		0.082		0.092	
Log likelihood	-35 969.7		-14 211.0		-16 459.1	

Table A19 Determinants of the probability of job after training being relevant to training (diploma or above)

	2001–07		2008–09		2010–11	
	Marginal effect	t-ratio	Marginal effect	t-ratio	Marginal effect	t-ratio
Occupation change only	0.102	12.08	0.038	2.14	0.053	4.30
Sector change only	0.032	3.08	0.041	2.40	-0.010	-0.66
Change in both occupation and sector	0.114	18.43	0.052	4.70	0.013	1.37
Male	-0.016	-2.70	-0.004	-0.39	-0.017	-2.19
Age	0.033	18.78	0.035	12.50	0.027	14.02
Age ² /100	-0.037	-15.47	-0.038	-9.98	-0.029	-11.51
With disability	-0.031	-1.91	-0.003	-0.11	-0.019	-1.06
Below Year 12	0.055	7.54	0.054	4.34	0.036	4.28
Module completer	-0.192	-17.51	-0.174	-10.48	-0.172	-10.48
Further study	-0.074	-11.15	-0.044	-3.83	-0.040	-4.82
Non-employment reason	-0.148	-18.30	-0.124	-8.16	-0.110	-9.29
Satisfied with training	0.110	15.04	0.120	7.85	0.146	11.72
Skilled job before training	0.103	15.82	0.064	5.80	0.074	9.45
No. of observations	23 541		7 684		10 755	
Pseudo R ²	0.134		0.133		0.143	
Log likelihood	-11 823.1		-3 719.2		-4 446.4	

Table A20 Estimated impact of mobility on weekly earnings after training for those who try for different career

	2001–07		2008–09		2010–11	
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio
<i>Panel 1: Below certificate III</i>						
Occupation change only	0.023	0.47	0.155	1.68	0.173	1.84
Sector change only	0.120	2.85	0.091	1.22	0.303	3.52
Change in both occupation and sector	0.054	1.95	0.192	4.03	0.218	4.35
No. of observations	3 765		1 349		1 110	
R ²	0.19		0.31		0.35	
<i>Panel 2: Certificate III/IV</i>						
Occupation change only	0.123	4.52	0.046	1.00	0.133	3.23
Sector change only	0.030	1.13	0.076	1.83	0.032	0.78
Change in both occupation and sector	0.008	0.47	0.023	0.88	-0.005	-0.21
No. of observations	8 067		3 200		3 684	
R ²	0.12		0.16		0.17	
<i>Panel 3: Diploma or above</i>						
Occupation change only	0.114	2.59	0.154	2.00	0.111	1.37
Sector change only	-0.054	-1.32	0.055	0.80	0.052	0.72
Change in both occupation and sector	0.006	0.21	0.003	0.08	-0.035	-0.75
No. of observations	3 175		962		1 094	
R ²	0.10		0.10		0.11	

Note: We use nominal wages. The estimation equation contains variables on age, gender, disability, pre-VET course qualifications and skill level at work, module completion, whether further study was attempted after completion, the presence of employment reasons for studying vocational education and training, and satisfaction with the VET training. The Ordinary Least Squares model is used for estimation.

Table A21 The joint impact of mobility and field of education on weekly earnings after training

	No change (ref.)	Change in occupation only	Change in sector only	Change in occupation & sector
	Coef.	Coef.	Coef.	Coef.
Management and commerce And below certificate III (ref.)	-	0.082***	0.128***	0.074***
Certificate III/IV	0.110***	0.070***	-0.009	0.034***
Diploma or above	0.187***	0.060***	-0.054***	-0.046***
Natural and physical sciences	-0.151***	-0.088	-0.171*	0.028
Information technology	-0.155***	0.014	-0.147***	-0.043*
Engineering and related technologies	0.113***	-0.055***	-0.098***	-0.024**
Architecture and building	0.075***	0.005	-0.107***	-0.051***
Agriculture, environmental and related studies	-0.065***	0.011	-0.083***	-0.083***
Health	0.035***	-0.136***	-0.122***	-0.146***
Education	0.074***	-0.102***	-0.251***	-0.359***
Society and culture	-0.099***	-0.086***	-0.112***	-0.108***
Creative arts	-0.410***	-0.001	-0.078**	0.082***
Food, hospitality and personal services	-0.189***	0.045**	-0.049**	0.058***
Mixed field programs	-0.053***	-0.131***	-0.129***	-0.173***
Subject-only enrolment	0.059***	-0.078	-0.226***	-0.274***
No. of observations			224 851	
R ²			0.32	

Note: Data from the Student Outcomes Survey 2003–11 only. We use nominal wages. The estimation equation contains variables on age, gender, disability, pre-VET course qualifications and skill level at work, module completion, whether further study was attempted after completion, the presence of employment reasons for studying vocational education and training, and satisfaction with VET. The Ordinary Least Squares model is used for estimation. *** p<0.01, ** p<0.05, * p<0.1

Table A22 The joint impact of mobility, level and field of education on ANU index after training

	No change (ref.)	Change in occupation only	Change in sector only	Change in Occupation & sector
	Coef.	Coef.	Coef.	Coef.
Management and Commerce and below certificate III (ref.)		1.003**	0.063	0.604**
Certificate III/IV	-0.980***	3.619***	1.964***	2.255***
Diploma or above	4.245***	4.428***	1.106**	3.683***
Natural and physical sciences	-4.763***	5.045***	-3.281	9.212***
Information technology	1.564***	3.471***	-1.634*	8.041***
Engineering and related technologies	-8.158***	3.670***	-4.013***	5.495***
Architecture and building	-6.901***	5.356***	-2.415***	7.233***
Agriculture, environmental and related studies	-10.093***	2.591***	-2.873***	0.885**
Health	1.187***	7.526***	-1.828***	1.851***
Education	7.858***	-3.555***	-4.596***	-3.652***
Society and culture	0.587***	2.018***	-2.420***	-2.967***
Creative arts	-2.188***	-2.334**	-1.406	2.893***
Food, hospitality and personal services	-8.209***	-1.647***	0.356	2.560***
Mixed field programs	-2.000***	0.906	-1.884**	-1.271**
Subject-only enrolment	-3.138***	1.251	-3.956***	-4.550***
No. of observations			227 775	
R ²			0.40	

Note: Data from the Student Outcomes Survey 2003–11 only. The estimation equation contains variables on age, gender, disability, pre-VET course qualifications and skill level at work, module completion, whether further study was attempted after completion, the presence of employment reasons for studying vocational education and training, and satisfaction with VET. The Ordinary Least Squares model is used for estimation. *** p<0.01, ** p<0.05, * p<0.1

NVETR Program funding

This work has been produced by NCVET under the National Vocational Education and Training Research (NVETR) Program, which is coordinated and managed by NCVET on behalf of the Australian Government and state and territory governments. Funding is provided through the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education.

The NVETR Program is based on national research priorities approved by ministers with responsibility for vocational education and training.

The authors/project team were funded to undertake this research via a grant under the NVETR Program. The research grants are awarded to organisations through a competitive process, in which NCVET does not participate. To ensure the quality and relevance of the research, projects are selected using an independent and transparent process and research reports are peer-reviewed.

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