The Labour Market, Skills Demand and Skills Formation

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Introduction

As part of the Australian Government's 'Skilling Australia for the Future' policy, an independent statutory body, Skills Australia, was established to provide advice on current and future demand for skills and investment in training. In September 2008, Skills Australia joined with the Academy of the Social Sciences in Australia to sponsor a half-day seminar with academics and others to discuss what current research findings (both in Australia and overseas) can tell policy makers and practitioners about the labour market, the formation and use of skills and future skills requirements. The seminar was intended to provide input into Skills Australia's determination of its future research priorities, as well as inform its advice more generally. The dialogue between Skills Australia and the research community will also inform researchers about what policy advisers see as the key policy issues, and assist the research community in directing future research so that it is policy relevant.

This paper, which was commissioned by the Academy of the Social Sciences and Skills Australia, sets out to:

- contextualise the proceedings of the seminar within a broader public policy framework
- record the outcomes of the event and the significance for policy, and
- offer commentary where necessary.

Background to the discussion

Australia has recently experienced a long period of uninterrupted economic growth, with the last three years seeing a particularly exceptional period of growth and prosperity. During this time over 855,000 net new jobs were created nationally and unemployment, at just over four per cent in 2008, fell to its lowest rate since 1975. Despite this, over 1.5 million people of working age rely on social security payments as their major means of income,[1] representing a major potential labour supply source.

Over the last three decades the Australian economy has undergone significant structural change, the pace of which accelerated in the late 1980s and 1990s following the implementation of broad-ranging microeconomic reform policies. These changes continued in the 2000s. While policy has changed, industries have embraced new technologies and become increasingly involved in the global economy.

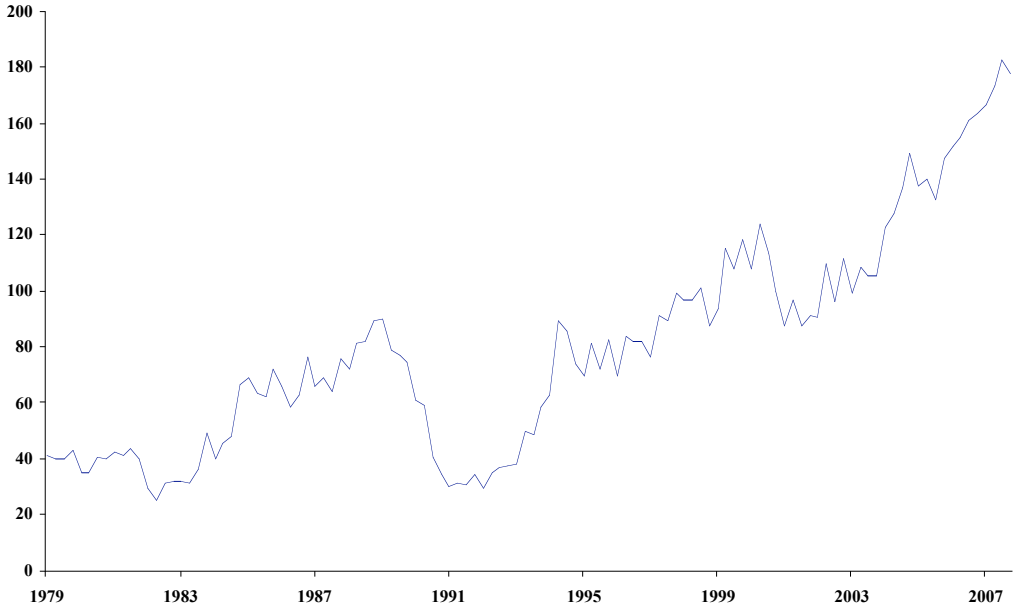
There have also been significant changes in labour demand: the demand for full-time workers, particularly males, has not kept pace with supply; the growth in part-time work has been an important source of jobs growth; and there has been a substitution of females, particularly part-time females, for full-time males.[2] Casualisation is another major feature of the changing Australian labour market. The growth of casual work was an important phenomenon in the 1980s and 1990s but, since 2000, the proportion of the workforce that is casual has reached a plateau of about 27 per cent.[3]

The above developments suggest that many of the considerations that may once have been relevant, such as what constitute 'normal' working hours, are no longer so in today's labour market.

Much of the changing composition of employment can be attributed to changing industry mix. In 1975 services accounted for just over 50 per cent of all jobs, but by 2007 this figure had climbed to over 70 per cent.[4] By contrast, manufacturing's share of total employment almost halved over the same period to about 11 per cent in 2007. There were similar reductions in the relative shares of jobs in the 'industrial' services such as electricity, gas and water. Data from Keating and ABS shows that the percentage of 'blue collar' workers in the workforce has been falling consistently over three decades, while the percentage of the workforce in professional, associate professional and managerial occupations has been rising.[5] The picture that emerges when combined with the industry distribution is that a 'typical' Australian worker today is a 'white collar' employee in the service sector.

Changes in industry composition have combined with technological change to systematically alter the demand for skills.[6] Technological change has been the dominant influence, allowing for, or even driving, a restructuring of occupations within industries. A combination of structural and technological change has also significantly altered the demand for labour with respect to part-time employment, gender and skills. Less skilled workers are more vulnerable, as are younger and older workers. More generic and general skills, rather than firm-specific skills, are required. There is also evidence of growing wage dispersion,[7] although this may be due to changes in the occupational distribution of employment – the shrinking middle – rather than changes in relative wage rates.[8] The overall outcome is a more highly skilled workforce and a more efficient economy.

Figure 1: Vacancies, Australia



Source: Australian Bureau of Statistics (2008), *Job Vacancies, Australia*, Cat No 63540.

In examining the labour market during recent years, one of the biggest issues facing the Australian economy has been shortages of labour. This is reflected in the ABS series for vacancies, see Figure 1 above. Although not a very accurate measure of the number of actual vacancies, it does nevertheless give a clear picture of trends in labour shortages over time. Vacancies have been trending up since the last recession but the trend has been escalating, particularly since 2003.

Shortages arose in both the private and public sectors, ranging from skilled to unskilled labour. Professions affected included medical practitioners, nurses, schoolteachers, pilots, economists, trades and engineers through to agricultural workers and shop assistants. As an economy nears full-employment, bottlenecks in certain parts of the economy are expected, as economic growth and structural change is not evenly spread throughout the economy and some industries can adjust more quickly than others. In an attempt to alleviate this situation the intake of migrants and temporary residents was increased. In 2006 the net inflow of new migrants was 134,600, up 23 per cent from 2003, and there was a net addition of over 200,000 long-stay arrivals over departures.[9]

What is a labour-related shortage?

We can define various types of labour-related shortages.[10]

Skill shortages exist when employers are unable to fill or have considerable difficulty in filling vacancies for an occupation, or specialised skill needs within that occupation, at current levels of remuneration and conditions of employment and reasonably accessible location.

Skill gaps occur where existing employees do not have the required qualifications, experience and/or specialised skills to meet the firm's skill needs for an occupation. Workers may not be adequately trained or qualified to perform tasks, or may not have upskilled to emerging skill requirements.

Labour shortages occur when there are not enough appropriately qualified candidates (employees) to fill needed jobs.

Recruitment difficulties may be due to characteristics of the industry, occupation or employer, such as relatively low remuneration, poor working conditions, poor industry image, unsatisfactory working hours, a location that is hard to commute to, inadequate recruitment or firm-specific and highly specialised skill needs. They can also be due to a lack of appropriately qualified people (ie, labour shortages or skills gaps).

Internal labour markets

It has been recognised for some time that in many ways labour markets are different from other markets. Perhaps the most important difference here is that labour is not usually demanded and supplied on 'spot' markets, like goods, services, capital, currency, etc. Employment relations are instead often long lasting, as there are considerable costs in recruitment and separations. The concept of internal labour markets (ILMs) has been coined to describe employment relationships where workers will not necessarily face competition from outside the firm. Employees progress up job ladders by acquiring on-the-job skills and experience. ILMs provide (limited) protection from the external labour market (with respect to both unemployment and wage flexibility), together with government regulations, union membership and the welfare state (all of which are closely related to ILMs). However, since the 1980s there have been signs worldwide of the destabilisation of ILMs.[11] Several factors are associated with this decline.

ILMs developed in the context of relative labour shortages, as firms were encouraged to develop staff training and firm loyalty in order to retain labour. Increased unemployment, on the other hand, creates greater availability of labour in external labour markets, particularly in 'old economy' firms.[12] Over the 1980s and 1990s growth in employment failed to keep up with the growth in labour supply and this put pressure on ILMs.

Technological change has also been important in reducing the incidence of ILMs, as has the introduction of new capital that both embodies new technologies (for example personal computers) and relates to the way management organises labour and capital within the firm. The effects on skills and employment have been significant. As Caroli explains, the new technologies create the need for 'codified competencies' rather than the individual-based competencies of old technologies.[13] This means that skills are more easily transferable between jobs and places of employment, which allows for greater flexibility and interaction with the external labour market and diminishes the need for ILMs.

Other factors include changes in financial markets, globalisation and falling union density. The basis of ILMs is implicit long-term contracts. High interest rates, increased corporate ownership in the share market (for example pension funds), and greater incidence of takeovers since the early 1980s, have led to firms having a greater emphasis on the short-term as opposed to the long-term, discouraging implicit long-term employment contracts.

Globalisation has increased competition, either domestically or internationally, reducing the ability of workers to bargain and increasing uncertainty for firms. This reduces the incentives for firms to enter into long-term contracts. Falling union density has also been a factor. One of the generally recognised factors associated with ILMs is employer response to union pressure for greater job security. In Australia, union density has fallen from over 50 per cent in the 1970s to 19 per cent in 2007 and less than 14 per cent in the private sector.[14]

With the excess demand for labour currently apparent in Australia we would expect some return to the principles of ILMs, though after a long period of high unemployment it could be that many employers have lost the skills to recruit and retain good workers. This further exacerbates the costs of skill shortages.

The demand for skills

Sue Richardson, of the National Institute of Labour Studies at Flinders University, began the seminar proceedings with a short paper on demand forecasting and its use in planning skills' supply.[15] According to Richardson, when planning for training, excessive emphasis is placed on what employers say they want, whereas more attention should be paid to students' preferences. It is in employers' interests always to have more of any given skill available: their views cannot be expected to take account of the personal and social costs of oversupply of particular skills. Richardson was critical of attempts in the past to forecast the need for training places: she made the point that, at the moment, we can't measure skills (and we may never be able to); instead we measure qualifications. She used an example of her own work on IT professionals — there are plenty of IT professionals who are looking for IT work and yet what employers require is not just people with qualifications but those with experience.

Workforce planning has a history, particularly with respect to computable general equilibrium (CGE) models which have not been particularly successful. Even Australian

Bureau of Statistics (ABS) predictions of the total labour force, which is the measure of total supply, have been found to be quite inaccurate. For instance, in 1999 the ABS forecast the total size of the Australian labour force up to 2016, but already by 2008 the numbers were substantially wrong. As Richardson points out, the forecast was for a participation rate of 62.6 per cent by 2008, compared to the actual figure of 65.4 per cent. This gave a total labour force projection of 10.39 million people, whereas the real figure is much greater — in fact, seven per cent greater, at a figure of 11.14 million people. The forecast was out by 750,000 people. The point Richardson made is that if we can't even forecast the total labour supply with any accuracy, how are we going to project individual occupations within the labour market.

A further problem is that we can't define people or their skills by either their occupations or their qualifications, as in practice there is not a very good match between the two. This problem is illustrated in Table 1 below.

As an example, take the professional row. It shows that of the people classified as professional, only 71 per cent have a university education and nine per cent have no formal qualification past school. In another example, of all professionals employed in IT, nine per cent have no IT qualifications, 13 per cent have TAFE qualifications, 13 per cent have vendor/industry certificates, and only 52 per cent have an IT-related degree.

Employers want to recruit and retrain people who cost as little as possible. When the labour market becomes tighter, employers' recruitment and training costs rise. According to Richardson, the first question to ask employers when they're facing a shortage is 'what are you doing about it?'

Table 1. Qualifications of workers in each occupational group: 2003, per cent

	University	VET	None
Managerial and administration	36	30	32
Professional	71	19	9
Associate professional	24	38	35
Trades and related	3	73	22
Advanced clerical and service	13	36	48
Intermediate clerical, etc	12	36	49
Intermediate production, etc	5	29	64
Elementary clerical, etc	9	28	60
Labourers and related	4	25	68

Note: percentages may not add up to 100 due to rounding or 'not stated'. Source: Richardson, S (2008). 'Forecasting demand and supply for skills', Skills Australia – Academy of the Social Sciences research seminar, 10 September, Sydney.

The demand side of the labour market is also difficult to predict. As Lewis points out, there are many labour markets each with their own supply and demand.[16] An important characteristic of the multitude of labour markets is *substitutability*. Although it is common, particularly in the professions, to think of occupations being rigidly defined, in practice there is a great deal of substitutability between workers.

Lewis uses the example of a hospital.[17] Employment in a hospital will be determined by markets for specialists, doctors, nurses, clerks, cleaners etc, each with different amounts of required skills and characteristics resulting in different wages. Intuitively,

tasks would seem to be quite segmented according to the degree of skill and specialisation of employees. However, at various times, relatively junior doctors can perform specialists' duties and registered nurses duties that are well within the domain of doctors, particularly in rural areas; TAFE-trained enrolled nurses can be substituted for university trained registered nurses; and, increasingly, particularly in aged care, relatively unqualified 'carers' undertake tasks which were once the province of nurses.

Most empirical studies of individual labour markets point to the high degree of substitutability, with respect to demand, between types of labour. There is also strong evidence that, given the degree of substitutability, the demand for labour in these more narrowly defined labour markets is highly responsive to *relative* wages.[18] Also, generally, the lower skilled the worker, the more responsive is demand to relative wages.

If, for many occupations, the labour market adjusts quite rapidly to changes in relative wages, then the change in the relative wage rate to achieve demand supply balance can be quite small. This reflects the high elasticity of supply for many skills, and how they can be readily obtained or substituted. As the point of workforce planning is to mitigate the impact of skill shortages, and especially the fear that they may lead to a wages blow-out, this is less of a concern if the likely impact on relative wages is likely to be small.

The discussion then moved on to whether there was a need to forecast demand and supply in detail for most skills. According to Richardson:

- There is only a modest link between qualifications and occupations.
- When demand for a skill rises, newly qualified people provide only a fraction of the extra employment.
- Many skills taught in the VET system do not need a long period to learn, so we can wait to observe increasing demand, rather than try to forecast it.
- Markets do not work well when both demand and supply are unresponsive to changes in wages or other costs of employment.

An approach might be to undertake separate, bottom-up, high quality studies of expected skills demands for those major skills that take a long time to learn and to gear up to teach — it is for these that the ability to make accurate projections is of most importance. It is a misunderstanding of how the labour market adjusts to think that there is a direct, one-to-one relation between an expansion in output, the associated increase in skills needed to produce that extra output, and a requirement for the VET system to provide those extra skills.

There are many sources of skills, the main ones being family, school, university, VET and on-the-job learning. Each of these builds on the level before. According to Richardson, 'we need the whole system doing its bit well and integrating with the next level'.

Evaluating training success

The seminar then turned to the question of how to evaluate the success of the current training system. It was suggested that such an evaluation is difficult in situations where there is an abundant supply of skills, as surpluses are generally not noticed except by those with the surplus skills. Currently in Australia we have a tight labour market and we notice the imbalances as shortages. Richardson pointed out that we have far more information about labour shortages than we do about labour surpluses, and again she used the example of IT professionals, where it is well known that a lot of people who have been trained in IT aren't working in IT jobs. She also suggested that now is an

excellent time to review our whole skill development system to see what is and is not working well.

When the labour market is tight there are small numbers of applicants for jobs, which means firms often have to settle for lower quality workers. This lower quality could mean less qualified, less experienced people or those with fewer 'soft' skills. It is generally also harder to train to the particular requirements of the firm. We need to be careful not to confuse general symptoms of tight labour market with failure of the skill system. It is instead the case that, for employers, finding just what you want is easier when there is an abundance of workers.

In Richardson's view, the main role of the publicly funded formal education system is to develop the general capacities of the educated person, a good ability to learn, and skills in an area of employment that is valuable to many employers. Private providers and employers assist workers to learn particular vocational skills, especially those peculiar to an individual firm. We will never get the mix of skills exactly right. In fact, it is hard to define what 'getting the mix right' actually means. However, matching does occur through the sorting of the labour market and learning on-the-job as new demands emerge. There is only a modest link between qualifications and occupations in any case, and, when demand for a skill rises, newly qualified people provide only a fraction of the extra employment.

Forecasting demand

Many seminar participants questioned the use of projections in forecasting demand for labour and the subsequent supply of training places. Others thought it was unfair to compare the projections with what happened as a measure of the success of projection methodology. The whole point of projections is to alert the government and other policy professionals to areas where there are likely to be skills shortages. Therefore these policies might actually be regarded as successful if, in fact, policy makers were able to adjust supply such that these projected skills shortages didn't eventuate. In other words, projections should not be regarded as forecasts, but rather as signalling devices to employers, students and policy makers about where we are going to head if nothing is done.

After much debate about the role of forecasting and projections, a consensus began to emerge that some form of projections have to be and will be made whether we like it or not, and therefore it is important to identify the areas where projection methodology might most sensibly be used. Here Richardson was quite clear that such modelling is useful when we have clearly defined occupations for which it takes a long time to train people. On the other hand it does not make sense to make detailed projections of occupations where people can move easily from one to another.

It was emphasised that, in using workforce projections, we need to be continuously updating and changing our assumptions, and introducing knowledge of markets as they arise. We don't need a great deal of planning effort about skills that can be picked up relatively quickly, such as childcare. One participant highlighted that we don't use much of the information we already have: for instance, data from the destination survey carried out by the National Centre for Vocational Education Research (NCVER). However, we still require more evidence on the returns to investment in training places, or, in other words, where should scarce public funding be channelled? When considering training planning we also need to look more carefully at retention and movement between skills instead of focusing exclusively on new entrants into particular occupations.

Balancing competing preferences

One criticism of Richardson's view, that we should take students' (as opposed to employers') preferences into greater account, was that many students may not have the information available to make rational decisions about their career choice or their choice of education or training. Others disagreed, believing that students are quite knowledgeable about the opportunities available, and use this knowledge when they plan their programs of study. If this is the case it is important for planners and providers of places to listen to what students want.

Another participant argued that it is impractical for governments to provide places simply on the basis of students' preferences, and, that, in fact, they attempt to redirect or restrict preferences by limiting the number of places available in particular areas. The question is, how do we balance student preferences against government preferences for where students should be studying? For instance, should we increase the number of business schools, at the expense of other disciplines, simply because people want to do commerce?

One participant agreed that student preferences are imperfect and that we need employers' input into the process. We also need flexibility, because employers' expectations are also imperfect. For instance, at one stage before the mining boom, BHP was laying off apprentices; when the mining boom suddenly hit, the company was faced with having to recruit skilled labour.

The need for career advice was emphasised by some at the seminar, and particularly the requirement for us to examine new scenarios that are likely to emerge, for instance with the growth in new green technologies.

Another suggestion, which had quite an influence on the policy advisors who were present, was that we need to spend time imagining what a better system might look like and how we might get there. At the same time it is important to look at the level of detail that is required and not get bogged down in whether particular people's jobs match up with their specific training — a good degree in any discipline will equip people for many jobs.

Projections are inevitable so it is important to obtain a broad understanding of the trends in supply and demand so as to focus government policy on avoiding potential pressure points.

The demand for training

In their paper, Tom Karmel and Mark Cully, of the National Centre for Vocational Education Research (NCVER), looked in detail at the demand for training places.[19]

At present there is little unmet demand for education and training places. For instance, in 2007, the number of persons unable to gain a place at TAFE was 27,500, compared to 42,800 in 2003.[20] However, we don't know what the unmet demand may be for particular courses.

Student places in the VET system are either publicly funded, where the delivery costs are highly subsidised – up to 100 per cent in many cases – or they are 'fee for service' courses offered by the public providers, in which case it is reasonable to assume the private contribution is 100 per cent. The split of these two types is roughly 75-25. Therefore, between 75 and 90 per cent of the cost of a place is met by the government. But what is the opportunity cost for students? This is the crucial variable when we're talking about students' decisions to study for a VET place. For instance, if you're an intending school dropout, the opportunity cost of attending VET may be very small or even negative, since you would prefer to be in a VET place than at school.

However, for an employed person, attending a VET course full-time would carry a very high opportunity cost, though this would be considerably lower for part-time students (who comprise nine in 10 of all VET students).

Returns on investment

Given the considerable private and individual investment in training, the natural question to ask is, what are the returns? The evidence seems to suggest (see discussion of Andrew Leigh's paper below) that there is very little return or indeed a negative return on investment in Certificates I and II. Certificate III, however, has a relatively high return if you left school at Year 10, but not if you left school at Year 12. Also there is very little evidence on returns to specific courses. One of the major, or at least claimed, aims of VET training is to increase the productivity of the workforce, but there is little evidence of the impact of VET training on productivity.

Karmel and Cully also pointed out that apart from the licensed occupations (particularly the professions and some of the trades), employers rarely require job applicants to hold a non-school qualification — they are much more likely to specify a set of skills and personal attributes.[21] In other words, while all jobs can be assigned to an occupation, the extent of pure occupational labour markets — ones characterised by a required qualification — is limited. This suggests that informal on-the-job training is a very important path for skills acquisition.

The match between training and the labour market is very loose. While someone may train in a particular area, there is no guarantee that they will then work in an occupation that matches that area in a narrow sense. Where they work will depend on the nature of the training (in particular the extent to which the training is narrowly vocational) and the availability of work (the most common occupation for VET graduates in the arts and media is sales assistant[22]).

According to Karmel and Cully the provision of heavily subsidised places in VET (implicit wage subsides can be over 20 per cent) has underpinned the high level of demand in that sector. Incentives for trainees have also been a very important factor. Such subsidies may in fact have led to substitution of work-related courses.

When there is considerable public investment in education, and particularly VET education, two questions naturally arise: what should the role of government be and how much should government invest? In the public domain there is a common view that free education should be available for everybody up to Year 12. After that the waters get rather muddied. For instance, VET places are very highly subsidised; at university, for some undergraduate courses such as law and business, students pay almost the full cost of study, whereas in medicine and science they pay a much smaller amount; at the Master's level, the benefits of education are regarded as completely private and students pay full fees, whereas at the PhD level, it is assumed that all the benefits are public and so the places are provided free.

There is surely a role here for researchers and policy makers to work out an appropriate pricing policy from an economic perspective. Certainly without a price mechanism for many education and training courses, and a paucity of data on prospective students unable to obtain a place in their preferred course, it is difficult to determine the relevant demand.

One participant questioned whether the measured returns to Certificates I and II reflect the true returns, since they could be stepping stones for people to go on to higher level courses. Another participant suggested that Certificates I and II offer so little of the content and level of skills required by employers that they are not a useful investment. This raised a bigger issue: to what extent the education and training system should be

geared to helping those people with the least skills. For instance, approximately 15 per cent of students don't go on to complete Year 12, despite the fact that the strongest indication of an individual's future labour market performance (and indeed presence in the labour market) is the year they leave school.[23]

The issue of whether the school leaving age should be raised, so that all students complete Year 12, was discussed several times during the seminar. A number of participants felt that it is not worthwhile for all students to be made to stay at school, particularly as some disadvantaged youth often face major difficulties, such as family problems or drug dependency, which prevent them from being able to benefit from or acquire skills within the existing schooling system.

VET completion rates

A number of participants remarked upon the low completion rates for VET courses — in some areas less than 20 per cent. However, it was pointed out that many people take only the number of modules sufficient to upgrade their skills — which allows them to get a better job, promotion or a higher salary — and then purposefully abandon the course. This strategy could be regarded as optimising behaviour as far as both the student and the training sector are concerned.

This explanation, however, did not carry weight with others who insisted that completion rates of 20 per cent are unacceptable, particularly for entry level training. In fact, one participant presented figures that show how markedly apprenticeship completions differ across the states: there is a 20 percentage-point difference between the highest and lowest states. This suggests that some states are more successful at delivering programs that apprentices want to complete.

Some participants pointed out that we seem to be treating VET education as though it is mostly for school leavers, whereas in fact many of the students are mature-aged. VET caters to a range of students, including many who are working and studying part-time in order to upgrade their skills, or taking courses for reasons of general interest. To treat the VET student body as a homogeneous group is a mistake, particularly in terms of formulating policy towards the sector. It is also the case that VET doesn't just cater for students who cannot get into university; there are many students with the ability to get into university who have chosen instead to take the vocational route through VET.

The reasons for non-completion are many. For instance, it could be that students can't cope, or that when they start studying they find the modules are not a worthwhile investment in terms of getting a better job. Some students also achieve the skills they require before they complete their course, and so it makes sense to leave the VET system. Nevertheless, many seminar participants saw a greater need for research into what determines completions and how the completion rate could be improved. For instance, would shorter courses be more appropriate?

Some participants called for more data to allow us to more readily target populations on the basis of who is or is not likely to complete their VET course. Karmel pointed out that the NCVER destination survey does provide some input on this question. He also emphasised that it is important not to confuse non-completion with failure, since many of the students picked up useful skills which could earn them better money or better jobs. Others however still regard non-completions as a waste of public money. Given the diversity of the VET population, clearly there are groups for whom the sector has been highly successful, and others for whom the rates of non-completion are sufficiently concerning as to suggest the need for more research.

One radical proposal from the floor was that perhaps we should change to a funding mechanism for VET institutions that is based on completions rather than enrolments.

In summary, most seminar participants agreed that the area of completions and success rates is very important and is therefore in need of more research. The seminar was particularly useful in highlighting gaps in our knowledge that should be addressed.

Workforce development and the use of skills

John Buchanan, of the Workplace Research Centre, University of Sydney, presented a very interesting paper on workplace development and the use of skills.[24] According to Buchanan:

> Workforce development is a term with several meanings. At its most basic it refers to structures and practices involved with giving people the capacities required to perform competently in paid employment. It can, however, have a more specific meaning. In this paper it refers to those arrangements where people, through the course of paid employment, gain new competencies necessary to become economically productive beings.

The site of work and the site of training have long been equated with each other, and this perception follows from a general view among labour economists that labour markets are different to other markets. When a firm hires a worker it is not simply purchasing a commodity, since labour services cannot be separated from the worker. Labour is the only input that cannot be separated from its contributor or owner. The worker has control over the quality of the delivery, whether they work hard or not, co-operatively or not, show initiative or not, and so on.[25]

According to Buchanan, the primary emphasis in the training debate should be on the political and economic forces determining skill formation and use. He argued that there has instead been a preoccupation with 'second and third order issues' such as measuring the competence or otherwise of particular units and the targeting of traineeships and apprenticeships. The worker's underlying competence sets limits on their potential to perform on the job. This underlying competence can be acquired by formal training, off-the-job or on-the-job, both formally and informally. This Buchanan referred to as the *development* aspects of labour activity. The *deployment* aspect of labour productivity relates to how the employer applies the potential of the worker in the workplace.

Skill eco-systems

A key concept here is that of *skill eco-systems.* A skill eco-system is comprised of:

- business settings (ie, relevant product and capital markets)
- institutional and policy frameworks
- pre-dominant mode of engaging labour (eg, 'casual' employment)
- the structure of jobs, including job design and work organisation
- the level and type of skill formation (eg, apprenticeships).

Buchanan argued that the key, when looking at skills issues, is the balance between the development and deployment of labour on the job. This balance is determined by the skill eco-system in which work and skill formation is embedded. In a sustainable skill eco-system the development and deployment of labour are in balance. An unsustainable one is usually characterised by a pre-occupation with deploying labour rather than developing labour, there being few resources available 'for the orderly,

systematic rounding out of skills on the job'. Alternatively, under-utilisation of skills on the job results in 'under-employment' or 'wasted skills'.

Another key concept is that of *transitional labour markets and vocational streams.* According to this view the flow of people through the labour market is the other key dynamic shaping their development as productive agents. Buchanan is a supporter of Schmid's view that, in making sense of modern working life, it is essential that consideration is given to the key transition between work on the one hand and education, family formation, unemployment and retirement on the other.[26] Allied to this is the way people move between particular jobs.

In analysing labour flows it is important to move beyond the categories traditionally used to make sense of different jobs, ie, competency standards and tightly defined occupations. Instead clusters of competence, often cohering in various vocational streams, appear to be more important for making sense of how people deepen their skills over time. A good example of this is modern logistics (management of the flow of resources from the beginning to the end of the production process). It now often involves production work on *kanban* systems (inventory control systems for tracking the flows through the various stages of a just-in-time production process) as well as those in warehouses, trucks/trains and those taking delivery of the ultimate good or service.

According to Buchanan there are a number of empirical studies supporting his basic arguments regarding skills formation. From these studies he identified certain key issues. First, there is a need to link industry and economic development with skills development. Second, he emphasised the importance of 'quiet time'— defined as time which is non-working but nevertheless productive. Third, he argued that businesses have become 'welfare dependent' on government for training.

So what would these skills eco-systems look like? Their form would vary from sector to sector. This is no universal solution or short cut to improving the current situation. What is needed are careful, collaborative analyses of problems among key players and then formulation of joint solutions that overcome the common property problem associated with the development of skills.

A number of key issues arise from the above in relation to training policy:

(a) Building strong links between business and workforce development.

Stressing that skills formation is good for firms is not enough — they have to see the value in it for them. The better group training companies, for example, guarantee a 25 per cent rate of return for apprentices they hire out. Understandably employers queue up to be involved in such arrangements. Such situations are, however, rare.

(b) Getting employers to become self-reliant

Australian employers are developing a dependence on government in the area of skills. This is also evident in the UK. There are few examples where employers have successfully coordinated their activities to overcome a common skill problem. Employers are happier criticising others (eg, TAFE) than figuring out how they can share in the burden and make a positive difference themselves in upskilling the workforce in transferable skills that will reduce recruitment and retention problems.

(c) Getting the space (ie, quiet time) for innovation and skilling

Deregulation, globalisation and prolonged labour market tightness in recent years have seen pressure placed on systems of on-the-job training. According to Buchanan,

> for reasons that vary by sector, the pre-occupation with deploying labour leaves little time for coherent, systematic development on the job. A concern with this does not mean every workplace should be the site of advanced learning. Some

> planned quiet time is, however, necessary if more experienced workers are to have the space to pass on skills to their new colleagues. The problem is now profound in parts of the public health system. It is also behind many of the problems in mining, construction and manufacturing. Such space is also vital for people to have the space to think about their daily practices — ie, the space necessary for innovation.

(d) Identifying, developing and keeping intermediaries

Successful reform of skill eco-systems requires, first, diagnosis of the key problem, and second, the capacity to mobilise resources and parties to address the problem. People with either type of skill are rare — those with both are even harder to find. Policy and public support is needed to nurture a network of such people who can help others jointly solve their common problems.

(e) Getting policy to engage with reality

VET policy has dealt with a limited range of often second-order issues as noted earlier. It is now vital that VET policy place engagement with real workforce development challenges at the top of the mainstream agenda.

In conclusion, Buchanan maintained that:

> improving the connection between work and learning is important for workers and business alike. It goes to the quality of life as well as the depth of innovation and competitiveness of the economy. In recent years there has been some interest in a "workforce development" approach to thinking about skills matters in Australia. This remains, however, marginal to the main pre-occupations of training places and VET funding arrangements. While policy remains pre-occupied with these issues, problems with recruitment, retention and skill shortages will continue to be misdiagnosed, if analysed directly at all. The challenge is to move a concern with workforce development from the margins to the centre of policy concerning skills and economic development. The rapidly growing interest in innovation and sustainability provide[s] a major opportunity for this to occur.

Other participants also stressed the need to address the employers' role, and the interaction of publicly funded institutions with employers. The nature of employment contracts has to a large extent reduced the amount of training employers do, for instance witness the extension of casualisation and contracting-out in the workforce. The nature of employees is also changing, with the length of tenure of people in particular jobs being reduced and younger workers in particular changing their jobs more often. On the other hand, it was also pointed out that many of the labour hire companies now have permanent employees and carry out employee training.

One of the problems identified with the thrust of Buchanan's paper is that it relies on a return to a system of regulation, when in fact the whole Australian system has moved more towards deregulation of the labour market. Also, as in other countries, we have seen a decline in internal labour markets in Australia, a situation which Buchanan's analysis seems to want to overturn. Buchanan noted, however, that ILMs have been in secular decline for some time and the core of the skill eco-system idea is about ensuring a better balance between practices within and beyond workplaces to improve processes of skill development and deployment.

One participant commented that recognition by VET institutions of prior skills is fairly poor, with recognition of prior learning (RPL) often failing to include all the skills that people have attained on the job with an employer. Another participant argued that there is not the capacity in many industries, for instance public hospitals, to undertake on-the-job training due to the high utilisation of labour.

Mention was also made of a scheme in Wales (the Workforce Development Program), aimed at improving the productivity of firms, which involves firms being subsidised for carrying out training on the job. Unfortunately, in this case employers are being paid for activities they would have carried out anyway. This opened a brief debate on whether governments should be giving employers subsidies in general. Another participant suggested that perhaps a workforce development scheme could be piloted in Australia.

On another issue, British studies have found that Anglo-Saxon countries are less disposed to workforce development than the Germanic nations such as Germany and Holland. There is some evidence that in the Germanic countries workers are more skilled and multi-skilled than they are in Anglo-Saxon countries. There was also some discussion of whether the nature of work training has changed. For instance, apprenticeships were once seen as a form of training for the rest of your life, whereas now there is a greater need for people to undertake more lifelong learning.

Measuring training and skills

Other participants pointed out that there is a significant amount of training taking place which is not measured in official statistics: probably only 20 per cent of all training is recorded. This point was taken up by others who argued that employees and employers often do not recognise that some of the activities that take place in their normal working arrangements could be classified as training. It was thought that employers and employees only record as training those activities which are formal, whereas in fact people are learning from doing most of their working day. As others noted, however, this has always been the case.

A lively debate ensued about how we might measure training, since it was agreed that only formal training is captured in the official statistics. One suggestion was that we could estimate the amount of training garnered through job experience rather than formal training, by looking at the age–earnings profile. We know that earnings tend to rise over time, which suggests that there is a correlation between experience and labour force productivity. However, many participants thought that the age–earnings relationship is far from being a measure of increased productivity. In fact, one commentator expressed the belief that many of the older people in the workforce are being paid more than their productivity warrants.

The internal labour market model suggests that there is little relationship between productivity and an employee's earnings over time. Under this hypothesis, workers are paid above their marginal product at the beginning of their careers while they are undertaking training, and in their later years when their productivity is in decline. In order to compensate for this, employees are paid less than their marginal productivity during their peak earning years.

Some participants argued the need for more leadership on behalf of employers to develop new systems, particularly the portability of eco-systems. Some studies have shown, for instance for nurses, that wages are not as important as other factors in recruiting and retaining workers. This suggests that employers could use much more imaginative ways of retaining labour.

One innovative suggestion was for the qualification for long service leave to be reduced to keep employees with their employer for longer, given the relatively short job tenure observable in recent years, particularly among the so-called Generation Y. There is also a need to introduce multi-skilling, which became part of award restructuring in the 1980s but has since fallen by the wayside.

Skills training returns

Andrew Leigh presented a paper that summarised some research on rates of return to education and particularly VET education – see Table 2 below.

Table 2. Per-year returns to education

All results are percentage effects, assuming 10% upwards ability bias			
Dependant variable:	(1) Hourly wage	(2) Annual earnings	(3) Indicator of positive earnings
Panel A: High school and earnings **Sample is respondents with no post-school qualifications**			
Grade 10	9%	20%	5%
Grade 11	0% (ns)	7% (ns)	8%
Grade 12	11%	30%	6%
Panel B: Vocational training and earnings **Sample is respondents with 11 or fewer years of high school**			
Certificate Level I or II	1% (ns)	-12% (ns)	31%
Certificate Level II or IV	7%	19%	5%
Diploma or Advanced Diploma	6%	10%	4%
Panel C: Post-school qualifications and earnings **Sample is respondents with 12 years of high school**			
Certificate III or IV	-3% (ns)	-3% (ns)	0% (ns)
Diploma or Advanced Diploma	6%	8%	2%
Bachelor degree	11%	15%	3%
Graduate Diploma or Graduate Certificate	9%	10%	3%
Masters or Doctorate	8%	13%	2%

Note: results are based on percentage effects, divided by the number of years of full-time study assumed for each qualification (0.5 years for Certificate I/II, 1 year for Certificate III/IV, 2 years for a Diploma or Advanced Diploma, 3 years for a Bachelor Degree, 4 years for a Graduate Diploma or Graduate Certificate, and 5 years for a Masters or Doctorate). ns = not statistically significant. Source: Leigh, A (2008). 'Returns to education in Australia', *Economic Papers*, 27(3): 233-249.

The table can be interpreted as follows. Column (1) shows the increase in hourly earnings attained by one extra year of education: for instance if a student completes Year 10 then they receive an increase in hourly wages of nine per cent over and above a student who has not completed Year 10. Column (2) shows that for this same additional education, annual earnings are 20 per cent higher than for someone who does not complete Year 10.

On the other hand, moving from Year 11 to Year 12 earns you an extra 11 per cent in hourly wages. Column (2) shows a combination of productivity, participation and hours

worked effects, while Column (3) shows only participation effects. A few conclusions flow from the table:

- There are no significant annual earnings returns to Certificate I/II qualifications.
- There are no significant annual earnings returns to Certificate III/IV qualifications for those who have finished Year 12.
- The productivity returns are greatest for school and university.
- The participation benefits are greatest for school and VET (though the latter may be subject to selection bias).

The results for Certificate I/II are similar to those revealed in the Karmel and Cully paper discussed earlier.

There is also significant evidence of the positive impact, on earnings and economic returns in general, of raising cognitive skills such as numeracy and literacy. For instance, in the USA, Hanushek and Raymond found that a one standard deviation increase in mathematics scores raises annual earnings by around 12 per cent.[27] For Australia, Marks and Fleming found that a one standard deviation increase in literacy and numeracy scores increases hourly wages by four to seven per cent and decreases the unemployment incidence by one to three per cent.[28] Note that the data covers a period when the labour market was relatively slack. The obvious implication of these studies is that any reforms that can increase literary and numeracy skills will have substantial payoffs.

Attention then focused on how easily governments can predict labour market needs in order to invest public funding in the most appropriate areas. Here the work of Richard Freeman in the USA is useful. Freeman shows that there is a poor correlation between actual labour market outcomes and predictions of labour market outcomes.[29] He argues that 'the employment and earnings of young workers depends more on macro-economic conditions, wage setting institutions, and technological developments than on demography'. To this list of factors that make forecasts imprecise should now be added the effects of globalisation.

In an exercise of his own, Leigh correlated DEST predictions[30] of industry growth in demand for labour with the actual growth in demand by 2003. The exercise yielded an R^2 of 0.002, again illustrating the imprecision of labour demand forecasting.

The evidence for Australia, along with that cited by Richardson, implies that future workforce predictions will not be particularly useful in forecasting demand by particular occupations or industries.

Leigh's paper concluded that there are substantial returns to a general education, and this should be the focus of public funding.

In the general discussion that followed it was pointed out there is a considerable degree of variation between the returns to education, depending on individual circumstance. For instance, the successful rate of return on qualifications depends on the previous attainment. Certificate III gets a very high payoff, but not so Certificates I and II. However, it is probably necessary to get the skills from Certificates I and II in order to be able to do Certificate III. In other words, the payoff from education, particularly VET education, depends heavily on who is actually undertaking the education.[31] The main point that arises from all the research on VET training is that if you only do Certificate I and Certificate II, there is basically no payoff. This has been recognised by government policy, which is putting most of its traineeships into Certificate III and above.

Migration and labour shortages

It was suggested by one participant that we should consider how workforce planning and determining training places fits in with our migration program. The economy is currently facing shortages of skilled people, and indeed, unskilled people, but, it was argued, it would not be appropriate to base our planning of education and training on a situation of excess demand; it is far better in this situation to actually fill the gaps by bringing in people from overseas.

On the other hand, there was some concern about why we should be allowing high levels of immigration of unskilled workers to fulfil labour market gaps when in fact there is still a significant domestic population of unemployed people, and even more jobless (as measured by the number of people who are currently receiving social security payments as their main form of income). Others argued that immigration has reduced the pressure on employers to change the way they organise their education and training in their workforce generally.

Another participant pointed out that the world as a whole is running out of labour, and particularly skilled labour, so that shuffling skilled labour between countries only provides, at best, a temporary solution. We also need to be aware of what is happening to economic development in our region, since this will have an impact on the total availability of labour.

It was also pointed out that migration is a two-way street, as at any time there are both hundreds of thousands of Australians working overseas and foreign workers working in Australia. Business is increasingly global, and therefore to regard labour markets as national is short-sighted.

The discussion to that point had centred on training of new recruits into the labour market, whereas, it is important to recognise that many of the problems employers face involve replacement demand.

Conclusion

In summing up the major outcomes of the seminar, Mike Keating acknowledged that, while there are limitations to workforce planning, some form of planning will always be part of the education and training agenda. The seminar was extremely valuable for the information it imparted to participants and for its identification of areas where more information is required.

It is clear that a lot of skills development occurs in the workplace, yet this is an area for which we do not have sufficient evidence; we need to focus on an ageing population and replacement demand; we need to look at skills rather than training; and the evidence of returns to education and training is useful in determining where we get the biggest bang for our buck.

Some key features of any system of planning

- Job vacancies, unemployment rates and wage rates are good sources of information.
- We need to build early warning into the system of planning.
- We need to ensure adaptive capacity in the system.
- We need to consider the role of immigration and how we use it.
- We need to consider how to encourage retention of workers—is there a role for government?

- When planning we need to make projections that focus on the areas of greatest payoff.
- We can learn from what we get wrong and thus evaluating projections can lead to learning/good insights.
- We need to consider VET's role in meeting the educational needs of the most disadvantaged and those with poor foundation skills who need a range of support to enable them to participate in education before they are ready to participate in employment. Certificate I and II training would appear to be an inadequate end point — we need to be cautious about the focus on this level of training, given the outcomes towards which it is leading — these certificates do not drive the job market.
- We need to better recognise individuals' skill levels (recognition of prior learning, recognition of current competence).

Key messages regarding provision of information

- Information about growth of jobs, pathways and rates of return is important for employers and individuals and needs to be provided by government and institutions.
- Young people are making decisions about where the jobs are — we need to listen to them as well as to employers.

Research to be undertaken

Questions to be considered

- Does Skills Australia want to give advice on the type of research it expects those who fund research to commission, as this would be helpful to the work of Skills Australia?
- Unmet demand — how many people miss out on training places in specific areas of VET?
- Is non-completion an issue (bearing in mind that 88 per cent of students in VET study part-time and many people go to VET to gain skills, not necessarily qualifications), and, if it is, who are the individuals who do not complete, why do they not complete, who is accountable and what do people who don't complete go on to do?
- What about training in 'Green' skills and what is governments' response?
- People need solid foundation skills — are these provided by Certificate I and II courses? These courses are being used as foundation courses but they may not be delivering these skills.
- Understanding drivers for training for employers — both accredited and non-accredited training.
- Gain a better understanding of the various segments of the VET population (both younger and older cohorts) and their training choices, whether they complete or not and what they do after VET.
- Gain a better understanding of employers' role in skilling — so much work has been done to understand employer's role in training but the issue is broader.
- What are the implications for the education and training system of bringing in skilled labour from overseas?

Seminar discussion participants

Michael Keating, Gerald Burke, Marie Persson, Phillip Bullock, Sharan Burrow, Keith Spence, Heather Ridout, Sue Beitz, Jennifer Gibb and Stephen Norman - Skills Australia; Patricia Neden - Innovation and Business Skills Australia; Megan Lilly - Australian Industry Group; Michael Manthorpe - Department of Education, Employment and Workplace Relations; Hector Thompson and Dr Andrew Leigh - Department of Treasury; Professor Bruce Chapman - The Australian National University; Dr Tom Karmel and Mark Cully - National Centre for Vocational Education Research; Professor Sue Richardson - National Institute of Labour Studies, Flinders University; Dr John Buchanan - Workplace Research Centre, University of Sydney/Macquarie University; Dr Chandra Shah - Centre for the Economics of Education and Training, Monash University; Professor Phil Lewis - Centre for Labour Market Research, University of Canberra; Professor Bob Gregory - The Australian National University; Dr Glenn Withers - Universities Australia.

***Phil Lewis** is the Canberra Director of the Centre for Labour Market Research (CLMR) and Professor of Economics at the University of Canberra. He is among the best-known economists in the area of the economics of employment, education and training in Australia and is the author of over 100 journal articles, books and book chapters. Apart from a distinguished academic career he has worked in government and produced a number of major reports for the private and public sectors. Phil is a member of the editorial board of the* Australian Journal of Labour Economics*. He is Past National President of the Economic Society of Australia and Past President of the Western Australian and Canberra branches of the Society. In 2008 he was awarded the Honorary Fellow Award by the Economic Society for his outstanding contribution to the economics profession.*

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