The challenge of measurement: statistics for planning human resource development

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Paper presented to *Putting skills at the heart of the economy,* 2011 Skills Australia and Industry Skills Councils joint conference

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About the research

The challenge of measurement: statistics for planning human resource development

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This presentation was made to a breakout session at the 2011 Skills Australia and Industry Skills Councils joint conference, *Putting skills at the heart of economy.* The paper addresses the challenge of measurement in workforce development planning and discusses the role of the various players in the labour and training markets — individuals, employers, providers, regulators, governments and industry bodies — and the information they need to make optimal decisions. One issue is the extent to which markets should be left to operate freely, noting that the data required by central planners to second-guess the market are particularly onerous. It is emphasised, however, that markets need ample information to function effectively.

The presentation's overall assessment is that data in Australia are not too bad, although the lack of a complete collection (covering both private and public) of vocational education and training (VET) activity is an obvious deficiency. There is also lack of data about the VET workforce (which regulators have a particular interest in) and data on job vacancies are limited. Provider-level performance data have also not been published to date.

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The way I am going to approach the topic is first of all to discuss the concept and then look at the roles of the various players involved in some way in human resource development. I will then talk about the statistics each player might need and assess the current range of statistics against this list. My analysis no doubt reflects my neoclassical economics training and a general scepticism of the value of planning for human resource development (manpower planning in another guise?).

The players

I'm not totally sure that I understand what human resource development planning actually means, but I am interpreting it as the process of employers ensuring that their employees have the necessary skills to undertake their jobs. If this is accepted as the definition, I am still unsure how to approach the topic, because talking about 'employees having the necessary skills to undertake their jobs' reflects a very static view of the world. In reality, employers have many choices which impact on skills matching. First, they choose what products and services they wish to produce. They then have a range of technologies available — which typically trade off different types of labour and labour for capital equipment — and within a specific technology there are usually different ways of employing labour and capital equipment. Skills can also be learned on the job. Thus employers are faced with complex decisions related to 'employees having the necessary skills'. For example, if labour is short or expensive, employers will be more likely to invest in equipment which downplays the importance of labour.

However, putting aside my reservations about the difficulty of nailing the workforce development concept, we are essentially talking about two markets: the labour market in which employers and individuals trade work for wages; and the training market in which individuals obtain training (and therefore acquire skills) from training providers. This characterisation indicates three sets of relevant players: employers, individuals, and providers. In addition, one might add the regulators: the relevant industrial bodies that regulate the labour market and the training regulators, which regulate the quality of the training (noting that education and training is the sort of product which is very difficult to assess before it is purchased).

Thus, if we were to believe that markets operated efficiently, then we would let employers, individuals and providers get on with it and not worry too much about planning any overarching workforce development. Instead, we would concentrate on information flows to ensure that individuals understand the quality of the training they are purchasing and the expected pay-off from their investment in skills, and that employers are in a position to judge the skills of potential employees. In the case where employers are training their own employees or paying for their training, then the information requirements are probably a little less onerous. Thus, under this view of the world, wages and conditions, training fees and the like would adjust until we had equilibriums in both the labour market and the training market. To promote these adjustments, we would want data on the costs and quality of training and the likely employment payoff (that is, the probability of getting a job and the wages for particular skills) relating to particular sets of skills. We would also want, ideally, information that would enable individuals to understand the future payoff from education,

particularly when training for occupations with very long lead times. (Medical specialists are an obvious example.) Employers may need additional information, such as their rate of labour turnover, and an understanding of the labour market in which they operate.

Table 1 makes an attempt to look at the information needs for each player operating in the labour and training market. I do not pretend that is comprehensive, but it does give an idea of the range of information that is required to make the labour markets operate efficiently.

Table 1 Information needs to assist labour and training markets

The player	Broad area	Possible indicator	Assessment of information needs
Students/employees	Cost of training	Fees	Available for TAFEs but no central source of fees for private providers
		Government support	Numerous websites
	Availability of jobs	Employment growth	Occupational employment growth from ABS labour force survey
		Job vacancies	ABS survey is high-level.
			Skilled vacancy index from DEEWR (high-level)
			DEEWR research on skills in demand
		Unemployment rates	Occupational unemployment rates (and be qualification level)
		Transitions	NCVER Student Outcomes Survey, Graduate Destination survey
	Quality of training	Provider indicators	Not currently produced for the VET sector
	Quality of job	Extent of permanent employment	ABS Labour Force survey
		Wages	Occupational wages from ABS
		Stability of employment	Broad data from ABS Labour Mobility survey
	Future job prospects	Likely growth in job opportunities and wages	Skills Australia's reports. Skills councils' environmental scans, newspapers, parents
Employers	Availability of labour	Numbers of applications for jobs	Internal records
	Knowledge of labour market	Going wage rate	Occupational wages from ABS plus industry knowledge
		Industry labour market dynamics	ABS mobility survey plus industry knowledge
	Labour turnover		Internal records
Providers	Student demand	Applications for courses	High-level data from ABS Survey of Education and Work; very poor national micro data
	Student outcomes	Proportion in employment	Student Outcomes Survey at state level and or large providers (publicly funded only); similar data for universities
	Student satisfaction	Level of student satisfaction	Student Outcomes Survey at state level and for large providers (publicly funded only)
VET regulators	Provider activity	Knowledge of who is providing what	Only for publicly funded sector
	Completion rates		Only for publicly funded sector
	Student satisfaction		Only for publicly funded sector
	Quality of staff		No national collection for VET sector
	Quality of assessment		No independent verification or moderation

From table 1 it can be seen that the labour and training markets require copious data if they are to function efficiently (and I am not confident I have listed all relevant variables). To the extent that the data are not available, individual players are at risk of making sub-optimal decisions.

I now wish to contrast these data needs with what would be needed if we decide that the market should to be managed by regulating the training market; that is, some central planner decides how many people should be trained in each course. Essentially, the planner has to internalise or make explicit all the knowledge embedded in the decisions of individual market participants. While the planner does not need to know everything that an individual employer needs to know (such as internal job turnover), he or she does need to model the complicated dynamics of individual labour markets. Table 2 gives the flavour of the additional information needs.

Table 2 Additional data needs for a central planner

Broad area	Possible indicator	Assessment of information needs
Dynamics of labour market	Flows in and out of occupational labour markets	ABS Mobility survey
Potential supply	Number of qualified people in workforce	ABS Labour Force survey
	Wage elasticities (how are people attracted back to an occupation)	Good luck
	Potential workforce (how to attract non-qualified people to occupation)	Good luck
Workforce structure	Age structure	ABS Labour Force survey and Census
	Retirement patterns	ABS Mobility survey, synthetic cohort studies
	Factors which affect attrition or retirement	Good luck
Future of workforce	Structural changes	Some patterns are well known; good luck on other changes
	Strength of economy	Good luck; modelling cyclical events for planning purposes is well nigh impossible

As can be seen from table 2, the task facing a central planner is Herculean. While there is good information about labour market dynamics, there is a very large number of unknowns that have to be modelled (hence the good luck).

While it is easy to be very critical of the whole notion of central planning, governments are likely to be an active player (that is, unwilling to allow markets to operate unhindered) for numerous reasons. First, there is the traditional argument of market failure. The two obvious examples are externalities, which mean that there is underinvestment in education and training because not all the benefits are shared by individuals and employees (one example is the importance of the education of parents because of the impact on their children), and capital market constraints, which make it very difficult for individuals to borrow in order to invest in their education and training. To address the first of these, we would need to estimate the size of externalities. However, no one has had much success in actually estimating their size. The second of these issues has been addressed through income-contingent loans (VET fee help is the latest of these) and by heavily subsidising fees, as is done in the publicly funded part of VET. This role for government does not actually impose additional data requirements, except to the extent of needing accurate data on costs of provision and the bad debts associated with income-contingent loans.

However, governments have at least three other roles: as an employer; as a funder of public services such as health, defence and education; and as the body responsible for macroeconomic settings. In all of these roles they have a direct interest in influencing the way the market operates. Take education for example. Governments have a large interest as both a large employer and as a funder. Like any employer, governments prefer to keep the wages of employees as low as possible. However, as a funder (as distinct from the role as employer), any increase in wages for teachers has a very large impact on the government budget. Therefore, governments wish to ensure that there are 'sufficient' teachers at a price they wish to pay. So if there is an imbalance in the teacher market, governments typically are unwilling to let the market sort it out and would prefer to increase the supply of teachers in order to keep wages down. In this context, manpower planning is an attractive idea — by understanding the flows of labour governments can try to anticipate how many teachers they should train in order to keep the system working without any significant wage breakouts. (This constraint can have some undesirable side effects which are realised changes to the quality of teachers.) Health is another example, and in fact there is a very extensive bureaucracy undertaking health and medical workforce planning.

The role of government as a funder has important implications for data collection. While individual employers need to understand the dynamics of their own firm, governments need to understand the dynamics of the industries where they are large funders. They need accurate workforce data, an understanding of attrition rates and so on. This applies particularly to health, education, community services and defence. As an aside, changes in government regulatory policies can have a major impact on the labour markets of industries. For example, making qualifications mandatory in say, child care, will have very significant flow-on effects to the child care market and the child carers' market.

The role of governments as the custodian of the macroeconomy is a little different. Even if governments had no employees in industries such as health and education, they still have an interest in what is going on labour markets. That interest centres around two areas. First, there is always a focus on inflation and unemployment. If general wage inflation increases, then the Reserve Bank (which for convenience I am including as part of government) may well increase interest rates to slow the economy down. The second area governments are particularly interested in is that of structural imbalances. Thus inadequate infrastructure (roads, ports etc.) will limit the growth rate of the economy. Similarly, constraints in the availability of skilled labour may limit the growth rate of the economy. This is what drives the government's interest in the skill requirements of the mining and resources industry. If we are worried about avoiding structural imbalances, then Richardson (2007) and Skills Australia (2011) argue that we only need to be concerned with occupations for which training is very lengthy or are critical for the broader economy. In table 3, I list the major information needs of governments worried about cyclical or structural developments. The variables revolve around common economic indicators and are generally pretty well covered by the ABS Labour Force survey.

To date, I have not discussed the role of 'industry'. I have always had some difficulty understanding the role of 'industry' because industry bodies are made up of individual employers, all of whom have rather different interests (and competition policy generally prohibits collusion). However, industry has played an important role in relation to education and training in two main ways. The first is in influencing the actual training through the content of training packages. The second is in combining to share training facilities — there are good examples in the construction industry but they occur in a range of industries. Group training companies are another example of an industry body which acts as an intermediary between firms and individuals and which makes it easier for small and medium-size firms to take on apprentices or trainees.

Table 3 Labour market data needs for governments as custodians of the economy

Strength of the labour market	Employment growth	ABS Labour Force survey
	Unemployment rate	ABS Labour Force survey
	Job vacancies	ABS Job Vacancies survey
	Overtime usage	ABS Job Vacancies and Overtime survey (until 1999)
	Wage growth	ABS Labour Force survey
Structural mismatch	Persistent low unemployment rates and high wages or wage growth	ABS Labour Force survey
	Persistent underutilisation of labour	ABS Labour Force survey

It is not obvious that industry, in this sense, imposes significant additional data requirements. However, as developers of training packages, industry should ensure that development is effective and efficient, so data on the uptake of training packages and modules are important.

I have almost finished but there are a couple of aspects I wish to discuss. The first is industry as a lobby group for increased government expenditure. The sharing of costs of training between individuals, employers and the government is obviously a contested area. Industry tends to talk about skill shortages or skill deficits and lobbies government to spend more training dollars on their areas of concern. To the extent that they are successful, this obviates the need for the industry itself to spend the money on training. It also keeps wages down. As an employer, I much prefer facing a labour market in which I can readily recruit people with the requisite skills at a modest (but fair of course) wage. As an employer, I am very happy to make use of government-subsidised training for my employees. Of course, industry groups tend to point to 'market failure' as the pretext for request for government funding. But market failure is a slippery concept and is often used inappropriately to refer to a situation which one of the parties does not like; from an economic perspective there is no market failure if the benefits are split between employers and employees.

The final aspect is government as a funder of general education. The discussion above has focused on the labour market, and it would be remiss not to refer to the government's role in funding general education. In fact, one could argue that perhaps the best thing that a government can do for workforce development is to ensure that all of its citizens have a good general education. In times past, this has perhaps been taken to be up to the end of compulsory education. In the modern world, one could argue that the government should ensure that all citizens have the opportunity to obtain general and entry-level training, perhaps up to an initial degree.

Final comment

Data needs do depend on the extent to which central planning is practised. Central planning is demanding on the data, but there is also no denying that markets work better when there is prolific information. Overall, our data are not too bad, although there are some clear gaps, such as the lack of comprehensive data on both public and private VET. There are also poor data on the VET workforce (of particular interest to regulators) and job vacancy data are limited at the occupation level. Provider-level performance data have also not been published to date. Much of the relevant data are provided by the regular Australian Bureau of Statistics and NCVER collections, but it is acknowledged that there are clear limits to how far data can be disaggregated. Thus local knowledge is important and it is unlikely that official data collections can ever obviate the need for them.

It is worth noting that I have been silent on one of the suggestions in the advertising blurb for this session; that is, the possibility of running a National Employer Skills Survey to provide more detailed information on skill shortages and skill gaps.[1] The UK National Employer Skills Survey, now called the UK Employer Perspectives Survey, has been run for some years to obtain 'robust evidence regarding employers' engagement and satisfaction with government support for recruitment and workforce development' (UK Commission for Employment and Skills 2011). The purpose of the survey seems to presuppose that there should be government support for recruitment and workforce development. On this basis, the survey is more a customer satisfaction survey than one necessary for efficient workforce development. Australia does have a similar survey which is conducted every two years, the Survey of Employer Use and Views of the VET System, which provides high-level data on the use of and satisfaction with the Australian VET system. However, my view is that, while this type of survey does give an overall feel for the engagement of Australian industry with education and training, it is not a substitute for hard data on wages, unemployment rates, vacancy rates and the like.

1 See Shah and Burke (2003) for a discussion of the various concepts relating to skills shortages; also Department of Education, Employment and Workplace Relations (2008, 2009).

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