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# The future of work: is it something completely different?

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**Karen Chester, Deputy Chair, Productivity Commission**

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Jobs matter. For almost all of us, they are a source of income. But they are also a source of self-esteem, of social interaction, a feeling of purpose and even of community. And the skills embedded in jobs remain principal drivers of increasing productivity and ultimately wages.

So when one opines on the future of work, people tend to listen.

But perhaps when one is opining on the future of work today, expectations of the listener are more akin to the BBC announcer of Monty Python's Flying Circus — “and now for something completely different”.

When perhaps it's simply not so different. And I guess that may well prove the 'damp squib' hashtag for my talk today.

We know from history that soothsayers abound when it comes to opining on the future of work. Indeed history is littered with the foretelling of a dystopia of jobless woe ... or a utopia of little need to work at all. And the only universal truth seems to be that they were all wrong – both happily and unhappily so.

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The 20<sup>th</sup> century father of the fiscal stimulus, John Maynard Keynes foretold in 1930 that “In the 21st century a 15-hour work week will suffice, as we turn instead to how to use freedom from pressing economic cares”. And yet despite significant productivity gains since the Keynes’ 1930 treatise, we still all work on average around 40 hours a week.

In the late 1970s, the historian Ian Turner, presided over a major symposium on what new technologies would mean for the worker. He predicted an imminent period of change as significant as the Neolithic or Industrial Revolutions. To quote “By 1988, at least a quarter of the Australian workforce would be made redundant by technological change ...”

And a similar adage we heard in 1982 from Barry Jones in his book *Sleepers Awake: technology and the future of work*.

We all know that the late 1980s did see an exponential uptick in the common use of computers in workplaces (and even more so in the 90s as the price of the humble computer plummeted). But the foretelling of widespread redundancies of the Australian workforce were not seen.

For throughout the past 100 years it’s been more a case of technology remaining the loyal friend not foe of the worker — continuing to remove jobs that are often unpleasant, physically tiring, downright dangerous or just tedious (think toll booth operator).

More recently we’ve seen a plethora of papers and reports produced by think tanks, academics, consultants and platform giants touting analyses of jobs that could be lost as a result of the latest wave of technological change. And that latest wave being the digital age and both the resultant automation and artificial intelligence.

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Some of these reports seem to have settled on a nice big round figure of about 40 per cent of today's jobs now being at risk of automation over the next 10 to 20 years.

Now most of these reports stem from a seminal 2013 paper by Frey and Osborne where US data was used to predict job losses in the future. But their approach left out a few things. It did not take into account that new technologies can create new jobs. Nor did it contemplate that not all tasks within an occupation can be automated or should be automated. And we know that the rate of technological adoption will also depend a lot on consumer preferences (do you want a robot cutting your hair?) and the actual cost (or put crudely the business case) of adoption.

Others in taking these factors into account suggest 9% of Australian workers are exposed to the risk of automation. So a much smaller but not insignificant number. And here I'll mention the 'must read' paper by Melbourne University economists Jeff Borland and Michael Coelli: *Are the Robots Taking Our Jobs?* Their work lines up with the more considered studies in the US and Europe.

So let's look at the evidence — a common sense thing to do when in the midst of a chorus of "now for something completely different". To test whether we have strayed into a world of lies, lies and damned statistics?

And in looking at the evidence I've drawn on some of the Commission's recent endeavour, such as our *Digital Disruption* report (2016) and *Shifting the Dial* (2017), as well as the work of Jeff Borland and Michael Coelli and that of Bart van Ark of The Conference Board.

Overall, the evidence suggests that labour markets have been pretty well resilient to 'shocks' posed by new technologies of the past century and even the most recent, modern bit.

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Occupations, skills and jobs come ... and they go. No matter how transformative the technology (be it the telephone, electricity, indoor plumbing, refrigeration, air transport, the personal computer, and today's digital). No technology has removed people's capacity to work. And in productivity terms, all have been more transformative than the digital revolution *so far* (with emphasis being on the so far).

And a bunch of measures suggest that technology is not having as large of an effect as expected — at least not in our current modern times.

The rise of the New Digital Economy (which encompasses mobile technology, ubiquitous access to the internet and the world of the cloud) is unquestionably changing lots of things. But to date productivity is not one. So much so that this has become known as the 'Productivity Paradox'.

So whilst our low rate of (multi factor) productivity growth observed recently is not unique to Australia — it has been observed across other countries too — it represents something of a puzzle. This is because it suggests that, at least in aggregate, our economies have not become any more efficient in producing things. And we know the policy reasons why productivity may have slowed in Australia, but this is notwithstanding our purported better ability to exploit information technologies.

One explanation for this is that there has been a change in the nature of technological progress. That recent technologies, characterised by some as dramatic, have been minor compared to those in the previous century.

The other explanation (one offered by Bart van Ark) and perhaps one of intuitive appeal — is that whilst we still see rapidly declining ICT prices, along with a shift from ICT investment to ICT services; perhaps the new digital economy is still in its "installation phase".

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And we shouldn't expect to see the productivity dividend until it truly enters the "deployment phase".

This makes sense when you see that in the US the contribution of the most ICT intensive industries to productivity growth has dropped markedly from 46% to 26% in the past decade (2007-16). And for the US and the UK it has even at times registered negative productivity growth in these sectors. Which could suggest that the dividend only makes its way into the "deployment (and hopefully productivity dividend) phase" once users fully grapple with how to absorb technology effectively.

So returning to the evidence on the impact on jobs. And we do know that there has been automation of many tasks in the workplace. But arguably if technology was both disruptive and displacing — replacing existing jobs without creating new ones — we would expect to see a persistent upward trend in the unemployment rate. And we don't.

Whilst routine manual and routine cognitive jobs have fallen as a proportion of jobs from 50% to 37%; non-routine manual and non-routine cognitive jobs have increased from 42% to 53%. Think child care, aged care, nursing, office managers, designers and engineers using software.

Most importantly, the aggregate amount of work available to the Australian population on a per capita basis has not seen a decline since the 1980s, when computers became common in the workplace. The amount of work available has actually increased by about 14% since the early 1980s.

But that's not to say there hasn't been a lot of change in our workforce and the nature of work since the 1980s.

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Since the 1980s the workforce participation rate for females has increased a lot (by some 15 percentage points to now be just over 60%). Marriage and even children are placing much less of a brake on economic participation of women. Which is both a good thing for the economy and for women.

There has also been an increase in the incidence of part-time jobs — by some 25 percentage points since the late 1960s, to now account for nearly one-third of total employment (around 35%) in Australia.

And despite what some have suggested, the pace at which workers are changing between jobs in the Australian labour market is not getting quicker. Not only is there no evidence that more workers are being forced to work in short duration jobs, but what is apparent is that the opposite has happened. The proportion of workers in very long duration jobs (more than 10 years) has increased from just under 20 per cent in 1982 to around 27 per cent in 2016. Which is perhaps unsurprising when you also take into account the participation rate of older Australians (65+ in age) has risen steeply — having nearly doubled in the past 30 years to now represent 12% of our workforce. Also a good thing with our ageing population.

We do know that more workers today have multiple jobs (now around 7% of workers). And perhaps of much greater significance, when workers do change jobs today more are changing occupations (some 40%) and industries (over 50%). And it was this modern day workforce reality that informed much of our thinking around the Commission's proposed changes to superannuation default arrangements in our current superannuation Inquiry. And our thinking on what is needed from our tertiary education system (which I'll return to later).

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And whilst the ‘gig’ economy is still in its infancy, this has not translated yet to any increase in the proportion of the workforce being independent contractors. Indeed this has not changed significantly since 2001, it’s actually fallen a few percentage points from 20 per cent of employed persons in 2001 to around 18 per cent in 2014.

So what does any of this mean or matter for public policy? And perhaps here our focus should be two fold. First, on making sure there are no road blocks to our economy reaching the “deployment phase” of the digital or any technological age. And second, making sure we avoid a workforce of “have and have nots” in the benefits from the changes in the economy and ultimately jobs. A sense of equality in the ultimate job, productivity and wage dividend. So let me pose a few policy questions.

Are we getting better at assisting transitioning workers?

We know that structural change whatever its source can result in considerable work and thus life disruption for the workers impacted unless we get the consequential skill adjustment right. So have we gotten better in assisting displaced workers get the right skills to transition into new occupations and industries?

Recent work by the Commission on transitioning regional economies found that effectiveness of government in doing this is at best unclear. Some programs found to be not well targeted (automotive industry) or create conflicting incentives (Tasmanian forestry industry).

And why unclear – use of data (to simply track the impacted workers) and decent evaluation of transitional assistance are largely missing in action. Put simply we can and should be doing better.

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Further, it's a tad perverse that if the digital economy ultimately disrupts more jobs we do not use the data fuelling that economic activity to assist those disrupted. We know of such endeavour in Germany – using data to track the worker and the resultant human capital modelling which in turn better informs what requalification programs will deliver a better job transition to a displaced worker.

Are the right incentives in place to get the workers to the new jobs?

We know that jobs at least risk of automation — jobs that require 'soft skills' such as good old fashioned empathy — account for the largest and growing part of our workforce. And the latest metrics from the ABS' brand new quarterly labour account (experimental estimates) reveal health care and social assistance as the largest employment sectors accounting for over 1.6 million jobs (or 12.2% of all filled jobs). This is largely a function of our demographic changes – an ageing population, women working more, along with the NDIS (arguably our single biggest social reform since Medicare).

The Commission's recent review of NDIS costs, found that the NDIS workforce was not growing fast enough — most regions require between a 50 per cent and 150 per cent increase in the disability services workforce. Put simply, for the foreseeable future 1 in 5 new jobs in Australia are projected to be for services for the NDIS.

Thus care is needed to ensure that the demand for these skills and workers is not frustrated by poor incentives. The most notable, as highlighted in our NDIS review, being the need to ensure the pricing of these services allows this massive labour force response to occur. Lest we have a program delivering disappointment and not services to the 475,000 Australians with eligible disabilities.



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Is our education and training system fit for purpose for the workers of today and tomorrow?

Perhaps this is our biggest public policy “must have” when thinking of ensuring innovation and technology delivers not just more jobs but jobs for most. That sense of equality in who shares in the ultimate job, productivity and wage dividend. And this was a question the Commission sought to ask and answer last year in our inaugural 5 yearly productivity review – *Shifting the Dial*. A policy roadmap for Australian Governments on what is needed to deliver on economic participation and productivity – two of the three Ps (population, participation and productivity) that matter most for economic growth and ultimately jobs and their real wages.

And we identified some fundamental fractures in our current education and training system.

First, deteriorating results in subjects that matter for future work (think science, maths and reading – the cognitive trifecta at school).

Second, the VET system is a mess, struggling to deliver relevant competency based qualifications. Employers today are more satisfied with non-accredited training courses (90%) than VET (76%).

Third, universities need to improve student employment outcomes – delivering qualifications relevant to labour market needs and at a time relevant to the worker’s needs. Our key educational institutions seem more focused on research than student employment outcomes; which is unsurprising given the notable absence of their “skin in the game”. As manifest in 26% of students today not completing their undergraduate studies in less than 9 years. Whilst undergraduate underemployment has more than doubled in the last decade to now reach just over 20%.

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Currently, the tertiary education system is set up against becoming a chef at age 40, or a dementia care worker at age 50. Retraining is currently inconvenient and expensive, and the approach of educational institutions remains outdated and outmoded – still emphasising a one-career-for-life approach. Which is not the modern day reality for many workers from the metrics cited earlier.

Taken collectively, this unfortunate troika can only put at risk our capacity to deal with future labour market changes in an efficient and equitable way. So we've proposed a few things change: for schools - evidence and evaluation of what works with teaching; for universities - incentives be redressed around student employment outcomes; and for work skills - government to develop two things. First tools for proficiency based assessment for skills, rather than simply competency based assessment (whether they can perform it at all). And second, a framework to facilitate independent accreditation of skills obtained agnostic of learning method.

Do current policy settings constrain us getting to and through the “installation phase” and on to realising benefits in the “deployment phase” of the digital economy?

Today's market power arguably resides in data and content. The growth of the digital economy, automation and artificial intelligence coupled with greater availability of data and algorithm advances will be key drivers of new business activity, research endeavour, products, skills and jobs. In short, access and use of data and content will be the determining force in realising the economic benefits of the digital economy and artificial intelligence.

On data, the Commission's report last year on *Data Use and Availability* proposed fundamental (and novel) changes to data availability and access policy to ensure it generates new economic opportunities – and business opportunities driven by consumer needs and preferences. A pro-consumer and thus pro-competition stimulus, with the consumer in the drivers' seat for their data held

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with business and government today. And the good news is the Government's response to this inquiry has been one of "can and will do". The Government has committed to support the two most structurally significant recommendations. First, the passage of national legislation to remove barriers to data sharing and integration across major public interest data sets, and create trusted user access. And second, the complementary legislated concept of a new general Right for Consumers to exercise joint control in the sharing and use of their data. So it's now all down to getting the implementation right.

On content, the Commission's Inquiry in 2016 on *Intellectual Property Arrangements* examined whether those arrangements meet the needs of the Australian economy. And the short answer was no for copyright. Currently, Australia's copyright exceptions are too narrow and prescriptive, do not reflect the way people today consume and use content, and do not readily accommodate new legitimate uses of copyright material. We found ourselves mired in the wrong debate – of publishers clamouring for well protected profit for the purported benefit of local authors.

For access to content (be it snippets of images, maps, pixels, words, song, sounds) is needed alongside data to actually do artificial intelligence. But our arrangements (unlike those in countries like the US, South Korea and Israel) pose a seemingly impenetrable barrier to AI being alive and well in our economy. For in the absence of meaningful reform to copyright, Australia will inevitably and demonstrably be a net importer of AI services and products.

And fair access to content also matters for education. Now more than ever workers need flexible access to ongoing learning. MOOCs are a key component of providing low cost and flexible access to ongoing learning. And in consulting with the states on *Shifting the Dial* we were implored to think of the transitioning worker in NW Tasmania in our approach to ongoing skills acquisition, especially for

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mature age workers. Yet Australia's current system of copyright usage heavily constrain Universities, TAFEs and schools from offering MOOCs.

So on a final note, I've failed dismally to foretell a future of dystopia or utopia, and happily so ... but that doesn't mean that the "deployment phase" of the digital economy may yet still surprise us.

And in reflecting on the Inquiries that formed much of the Commission's endeavour over the last five years or so, nearly all have dealt in some way, shape or form with the 'now of work' and thus the 'future of work'. And in doing so tried to view it through the lens of the needs of workers and students. And through that lens it affords a sense of what policies (new or tweaked) will see our economy able to access the "installation phase" and realise the benefits of the "deployment phase" of any technological change.

And perhaps most importantly, ensuring those phases see the benefits of jobs, productivity and higher wages shared across the workforce. Avoiding a world of technology driven haves and have nots. Because that's what matters most for the future of work.