

Speech

## Skills for the Modern Workforce

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It isn't hard to find commentary about the fact that the nature of work is changing, potentially in quite profound ways. This means that the skills young people will need to negotiate the new landscape of work need to change as well. But what does it all mean for students who must decide what subjects to choose in high school or what they should do after school?

It is difficult to answer this question in general, because each young person is different in their skills, preferences and aspirations. The best we can do is to make sure they have good information about the options they have available. Plenty of studies have shown how important parents (and their life experiences) are as sources of information about subject and career choices. Young adults (and their parents) also look to career advisors for information and advice.

Today, I'm going to give you some information about how the skills used in the workforce have been changing over time to help you frame the discussions you have with your students. I'm also going to take a bit of time to advocate for economics as a discipline of study that provides skills that are likely to be valuable in the future workforce.

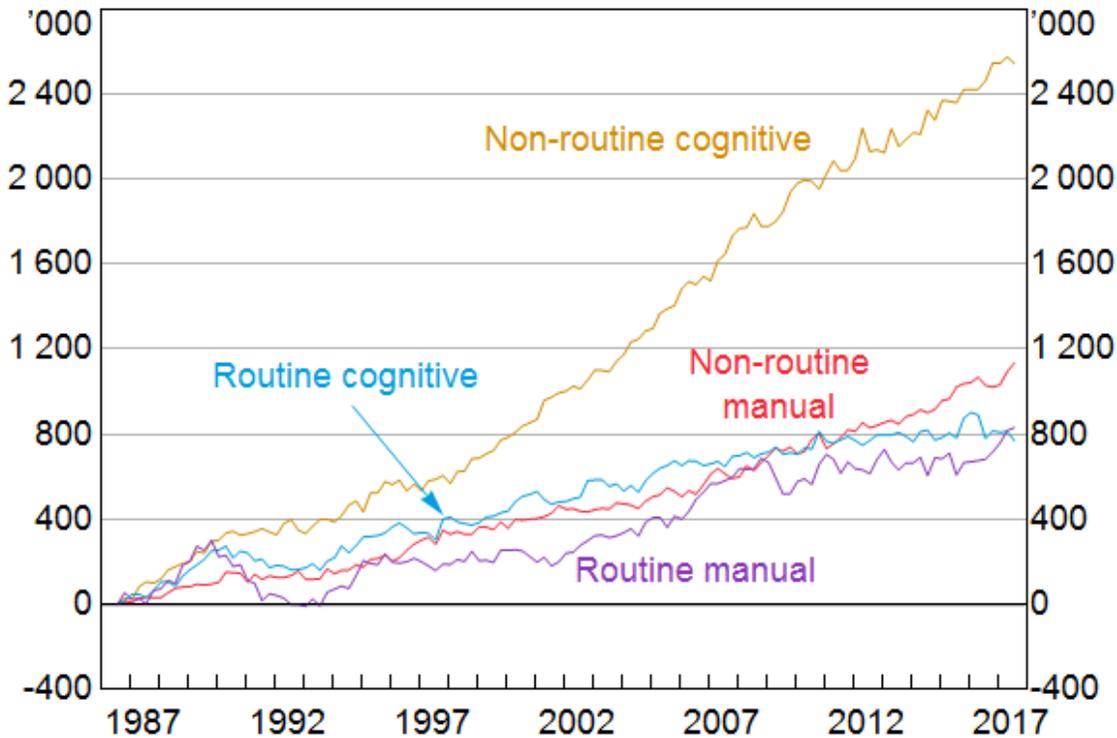
### General Trends

So, let's start with general trends. This graph shows where employment growth has been coming from over the past 30 years or so (Graph 1). It classifies jobs by whether they are cognitive or manual and by whether they are routine or not. [□\[1\]](#)

Graph 1

## Employment by Skill Type

Cumulative change since 1986



Sources: ABS; RBA

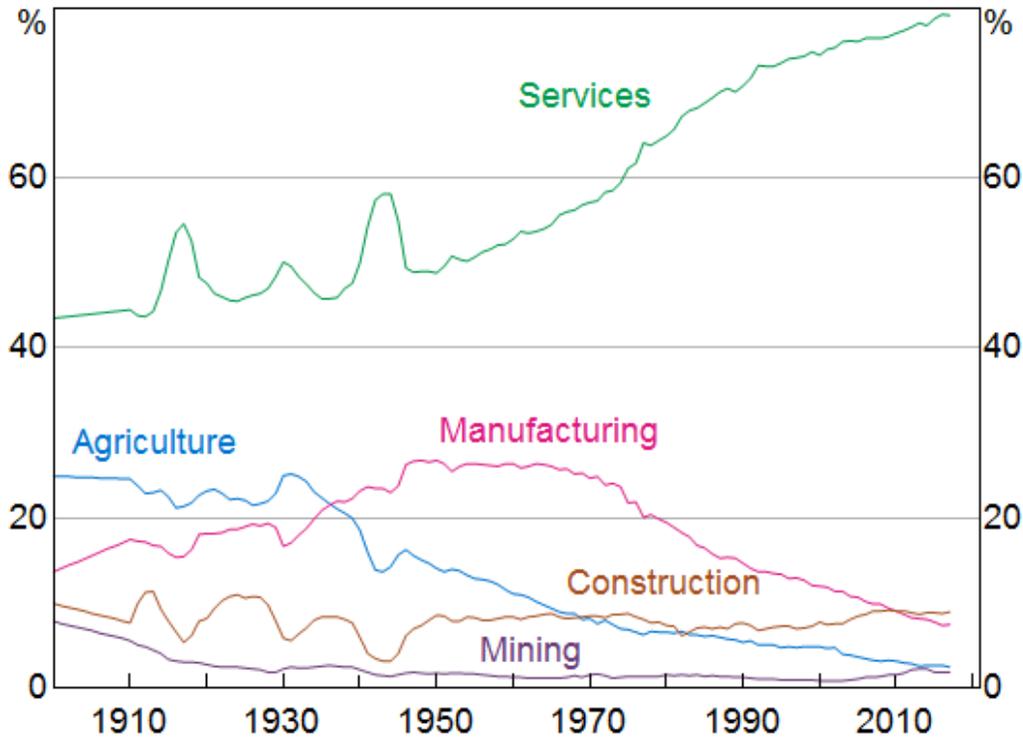
This graph shows that most of the employment over the past 30 years or so has come from non-routine cognitive jobs. These jobs are found across the economy in a range of sectors including health care, education and professional business services, such as IT and consulting. Over the past decade or so, non-routine manual jobs have also made a significant contribution to employment growth. This trend has been particularly apparent in the health care sector and has been much more important for female employment than male employment.

Most of the growth in routine manual work over this 30-year period has been in the construction and mining sectors, while the number of routine manual jobs in manufacturing and agriculture has actually fallen. This trend is not new. The share of employment in manufacturing and agriculture has been falling for a very long time (Graph 2). The big increase has been in the service sector of the economy.

Graph 2

## Employment by Industry

Share of total



Sources: ABS; RBA; Withers, Endres and Perry (1985)

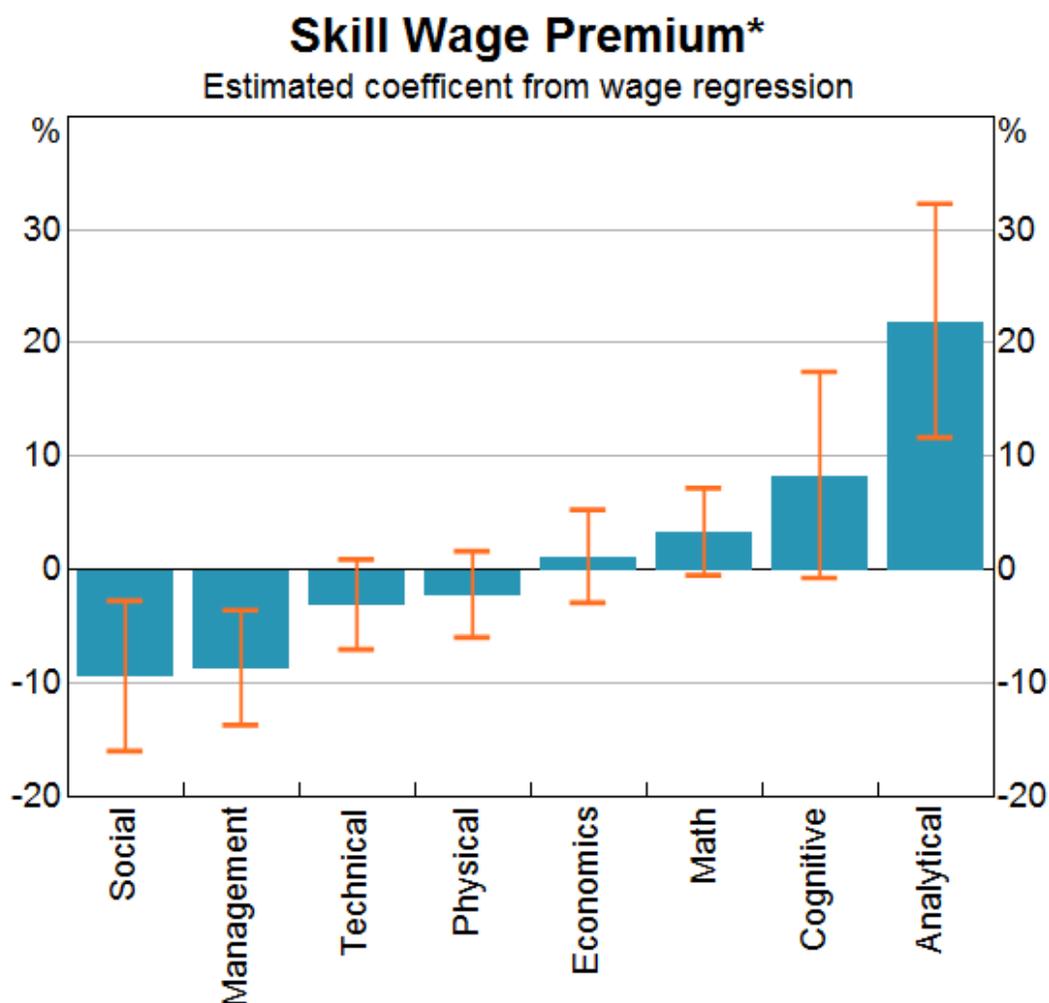
One of the drivers of these trends is technological change. Over time, technological change has led to the automation of many routine tasks and has been associated with improvements in productivity, which is what matters for the prosperity of a society. In recent decades, developments in communications and information technology have made it possible for some more routine services, such as call centres and some back-office functions, to be delivered from other parts of the world where labour costs are lower.

Non-routine jobs tend to be more difficult to automate for a number of reasons. For example, some non-routine occupations, such as architecture, may require creativity and the ability to solve non-routine problems, while others, such as child care work, intrinsically require a physical human presence.

Although technological change has meant that some jobs have become redundant, it is important to remember that a whole new range of non-routine jobs have been created at the same time. Word processing and spreadsheets mean we no longer have typing pools and manual ledgers, but someone needs to design the software and someone is needed to train people in how to use these new technologies. Education is one of the keys to making sure that individuals can adapt to the changes in the workplace.

So, what are some of the skills that are likely to be needed? One way of answering this is to look at how different skills are currently rewarded in terms of hourly wages. As you might expect, hourly wages are generally higher for occupations that require higher skill levels. [\[2\]](#) We can get deeper insights by looking at how the average wages paid to different occupations vary with the abilities, skills and knowledge that each of these occupations require, controlling for other characteristics such as gender and age, which should capture experience. Preliminary results suggest that there is a 20 per cent wage premium for occupations that require analytical skills that are one standard deviation higher than average (Graph 3). To illustrate what this means, real estate agents are expected to require average analytical skills, while actuaries, mathematicians and statisticians are expected to require analytical skills that are two standard deviations above average. There is also a premium for occupations that require higher-than-average cognitive skills, such as originality and active listening, and maths.

Graph 3



\* 95 per cent confidence intervals are shown in orange

Sources: ATO; O\*Net; RBA

## Economics as a Discipline for Modern Times

There are a number of occupations that require higher levels of analytical thinking, maths skills and other cognitive skills. Some of these are obvious, such as engineers, scientists, IT professionals and architects. Others are, perhaps, less obvious. One of these occupations is an economist. According to the data on what skills are required for different occupations, economists require significantly more analytical and complex problems solving skills, maths and programming skills than the average skilled occupation. The ability to communicate is also important. This makes it look like a good candidate for a future-proof occupation.

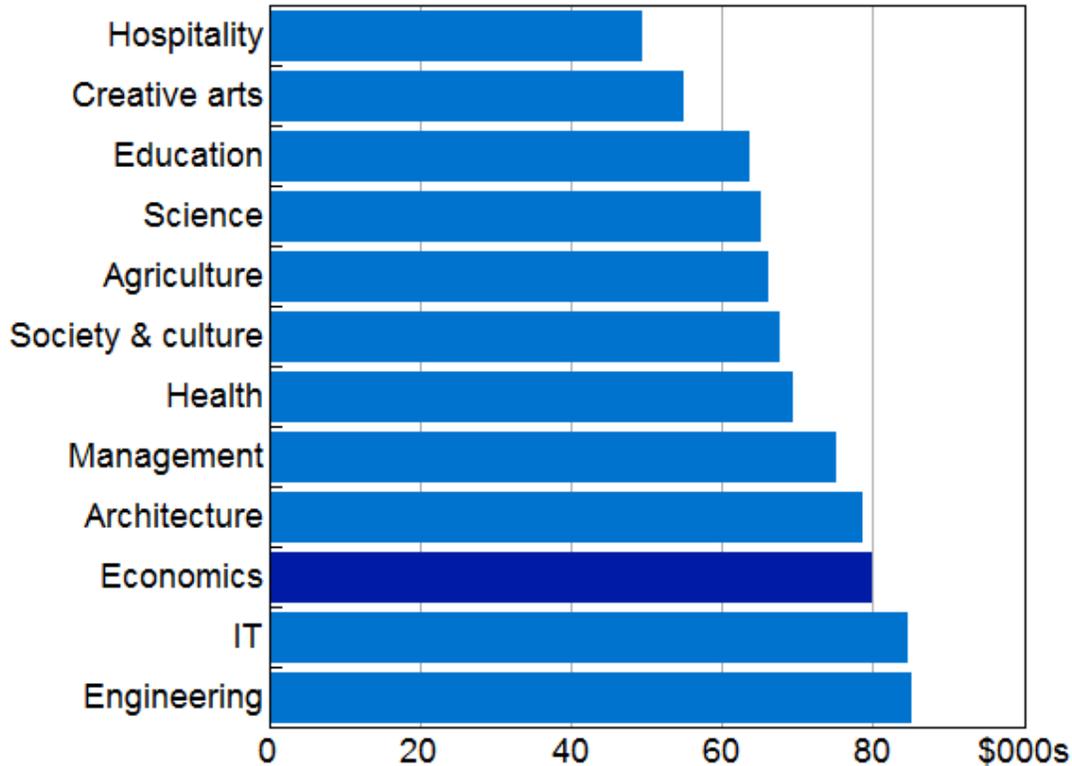
The 2016 Census indicated that there are almost 3,000 people working in Australia who are classified as economists. This number grows a bit if you add in people who teach economics in schools or at university. Most economists have a degree in economics and are generally found in public policy, professional services and financial institutions.

In the context of the Australian labour market, these are not large numbers. Perhaps of more interest is the fact that less than 10 per cent of people who have an economics degree are actually employed as economists or are teaching economics. People with economics degrees can be found in a broad range of occupations from accountants to CEOs and managing directors, many of which are relatively well paid. In fact, this graph shows that people with undergraduate economics degrees have average earnings that are quite similar to people with undergraduate degrees in architecture, and only a little bit below the average earnings of those with IT and engineering degrees (Graph 4).

Graph 4

## Earnings by Field of Bachelor Study

Full-time employees, total income from all sources, 2016



Sources: ABS; RBA

So, doing an economics degree appears to give you a set of skills that are currently rewarded quite well. And doing an economics degree certainly doesn't mean you are destined to become 'an economist', although I can say that this can be a rewarding career. But what is economics? We get this question quite a lot and the answer is that it can be a lot of different things. Instead of talking for longer, I thought the best thing to do would be to play this [short video](#) put together at the RBA. It is designed to give you a feel for what economics is and why it is a subject that can provide students with valuable skills to navigate an ever-changing workforce.

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## Endnotes

- [\*] I would like to thank James Bishop and Rochelle Guttmann for their assistance in putting these remarks together.
- [1] Autor D (2010), 'The Polarization of Job Opportunities in the U.S. Labor Market' *The Hamilton Project* and *The Center for American Progress*, April, pp. 1-40.
- [2] The data on abilities, skills and knowledge required for different occupations come from an exercise that translated this information for US occupations from the Department of Labour's O\*NET database to Australian occupations. There will be some measurement error arising from judgements made in doing this concordance exercise.
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## Related Information

- Education: [What is Economics?](#)
- Video: [What is Economics?](#) What do economists do? This video answers these questions, and more.
- Video: [The Future of Work](#): Watch the Head of Economic Analysis, Alex Heath, talk about the changing nature of the Australian workforce and the skills that will be highly valued in the future.