

Labour Market Outcomes of Graduates in Economics in Australia*

Ian Li,^{1,2}  Andrew Williams³ and Ken Clements³ 

The discipline of economics encompasses broad skillsets with diverse applications in employment markets and industries. Studies of labour market prospects for economics graduates are relatively dated particularly in the light of developments such as declining interest in economics in high school and university. This study examines the labour market outcomes of Australian economics graduates, at the bachelor and postgraduate levels, using a national dataset. We observe strong employment prospects for graduates in economics after graduation, in terms of full-time employment and salaries. Obtaining a postgraduate qualification appears to pay off, with master's and PhD graduates experiencing more favourable employment outcomes than bachelor's graduates. Substantial proportions report being overqualified for their jobs although this proportion is comparable to those reported for the broader Australian graduate labour market. Reassuringly, those initially overqualified transition out and overqualification reduces in the longer term. Most economics graduates become economists, but many others enter a wide array of other occupations. Of those who start out in non-economist professions, there is a 42 per cent chance that they transition to economist roles after 2.5 years. In summary, an economics degree leads to favourable employment and earnings and should still be considered an attractive choice for prospective students.

Keywords: earnings, economics graduate outcomes, economics labour market, economics professionals, economist occupation, overqualification.

1. Introduction

The discipline of economics, by its very nature, encompasses a broad and varied set of skills and knowledge that can be applied across a diverse range of occupations, in both the private and public sectors, across industries from health to finance, and most things in between.

Just as lawyers are fixated on the judicial system, doctors on prescribing medicine and engineers on building big structures, economists focus on markets. They analyse how markets work by

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¹School of Population and Global Health, The University of Western Australia Perth, WA, Australia.

²IZA Institute of Labor, University of Bonn Bonn, Germany.

³Business School, The University of Western Australia Perth, WA, Australia.

Correspondence: Ian Li, School of Population and Global Health, The University of Western Australia, Perth, M431, 35 Stirling Highway, Crawley, WA 6009, Australia. Email: ian.li@uwa.edu.au

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classifying the underlying determinants into the demand for and the supply of the item in question. A natural topic for economists is the functioning of the market for economists themselves. This is not simply self-indulgent introspection; in view of the importance of economics in public policy, business decisions and for that matter, everyday life, the labour market outcomes for graduates trained as economists is one worthy of study. It is not surprising therefore that there is already considerable prior research on the market for economists.

The first generation of studies addressed supply-side issues of the Australian market for economists and highlighted in particular the fall in the number of students taking economics at the secondary and tertiary levels. Leading examples of this research are Lewis and Norris (1997), Alauddin and Valadkhani (2003), Maxwell (2003), Millmow (2006), Round and Shanahan (2010) and Marangos *et al.* (2013). A common explanation for the decline is the increased availability of close substitute courses in finance and accounting in particular that are perceived to offer better employment prospects. This argument is not completely satisfactory, as no compelling reason is offered for the sudden increased popularity of the substitute courses or even the sudden surge in their availability. Alauddin and Valadkhani (2003) make a gallant attempt to apply the theory of consumer choice to the problem of selection of economics vis-a-vis other business units. They emphasise the role of a change in perceptions:

The income effect could be conceived as the students' perception of economics being less real world oriented than courses in business and related discipline(s) that seemingly enhance job prospects. The substitution effect results from the students' perception of a 'user-friendly' learning process of the rival degree programs. In other words, the relatively expensive learning process in economics implies a substitution away from it.

This can be interpreted in terms of information economics – it took time and effort for students to learn of the existence of the “user-friendly” courses that substitute for economics. While admirable, one can question the basis for the diminished perceptions of employment prospects for economics graduates. Do these perceptions reflect reality or misinformation?

Another explanation of lower enrolments is organisational defects within universities leading to failure to adapt to the changed external environment. Thus, Round and Shanahan (2010) declare:

Economics, in effect, committed academic suicide. Rather than reacting to the new competition, economists remained inert. Instead of responding by producing a better teaching and learning product and marketing the degree as vocationally useful, they blamed students' poor choices. As a case study on how not to respond to the market, economists became their own best example. . .

Theory suggests that firms that fail to read market trends, that fail to respond to competition, and that are laggards in technology or that use inefficient resource mixes, or that cannot offer the price-product-service packages that appeal to consumers, will fail. Rival offerings to the economics degree have emerged, and buyers have indicated they prefer the new packages. By standing still, economists have run the risk of being seen collectively as a failing firm.

Other first-generation papers related to the Australian market for economists and the employment prospects for graduates include Petridis (1981), Abelson and Valentine (1985), Millmow (1995), Lodewijks (2002), Lewis *et al.* (2004) and Daly and Lewis (2009), which cover similar ground to that discussed above.

A second generation of research emanated from the Reserve Bank of Australia with a series of studies of economics enrolment patterns and related matters (Dwyer, 2017, 2018; Bishop & Guttmann, 2018; Livermore & Major, 2020, 2021; Lovicu, 2021). Dwyer (2018), for instance, notes that enrolments in economics at university have declined since the 1990s. More students taking economics courses at all levels promote greater economic literacy, something that is no doubt in the interests of society as a whole. For the RBA in particular, enhanced community understanding of the objectives and functioning of monetary policy helps the Bank manage the economy. The Bank itself

is a major employer of economists in Australia, so more students taking economics also widens the pool of their potential recruits.

A third generation of papers on the market for economists involves researchers at the University of Western Australia. Clements (2012) reported on the careers of 83 of the 400+ economics honours graduates from UWA over 1980–2010. Most have found fulfilling employment in a number of sectors—academia, the RBA, other arms of the public service, consultancies, financial institutions and the private sector. Clements (2012) also contains detailed information from some graduates regarding the great value of their university training for their subsequent careers. A second study in this vein by Clements and Si (2019) examined the labour market prospects of PhD graduates from UWA. They estimate about 100 economics PhD students graduate annually from Australian universities, and the Go8 is the dominant producer with a market share of about 70 per cent. Clements and Si (2019) report on the subsequent careers of the 42 economics PhD graduates from UWA during the period 2001–2015. All are employed, and those graduates who provided detailed commentary do not appear overqualified as they are in jobs using their PhD training. While the majority of PhD students might initially aspire to a career in which they can continue with independent research, ultimately only about 60 per cent are employed in academia. The others are in a variety of jobs in government and the private sector. This paper points to the value of PhD studies and the career opportunities it offers.

Another recent paper from UWA studies labour market outcomes for more than 600 economics and finance PhD graduates from Australian universities (Lan *et al.*, 2023). About 60 per cent are in now academia and the others work for government, international agencies and the private sector. Over the last 20 years, the annual production of these PhDs has approximately doubled (a growth rate of about 3.5 per cent p.a.) and recently peaked at around 150 p.a. Their analysis includes the determinants of earnings and measures of overqualification and unemployment.

Our paper contributes to this third-generation research by analysing in detail the employment patterns of economics graduates. For those contemplating studying economics, our work can provide a sound factual basis for forming expectations regarding future career prospects by investigating recent employment patterns and characteristics of economics graduates in Australia.

2. Data

We used the 2019 to 2021 waves of the Graduate Outcomes Survey-Longitudinal (GOS-L). The GOS-L survey is an annual national survey that forms part of the Quality Indicators for Learning and Teaching suite of government-endorsed surveys assessing higher education students' outcomes (QILT, 2022). The respondents to the GOS-L were graduates of all Australian universities from 2016, 2017 and 2018. These graduates participated in the survey at six months after their graduation, with a three-year follow-up survey component in 2019, 2020 and 2021. The national response rates to the GOS-L survey were 56 per cent, 50 per cent and 49 per cent for 2019, 2020 and 2021, respectively.

The study cohort was restricted to domestic graduates (i.e. those with citizenship or permanent residency), who had completed a bachelor's pass or honours degree, a masters by coursework degree, or a doctorate by research degree, and majoring in economics.¹ This resulted in a total study sample of 771 economics graduates, of whom 565 completed a bachelor's degree (90 of these graduates completed an honours degree), 122 completed a master's degree, and 23 completed doctoral studies. The study also included graduates from the fields of accounting and finance in order to serve as a point of comparison for the labour market outcomes of economics graduates. Hence, the study included 2379 accounting and finance graduates consisting of 1771 who completed a bachelor's degree (32 completed an honours degree), 583 who completed a master's degree and 25 who completed a PhD.

¹There were 240 (24 per cent) economics graduates who did not have permanent residency or citizenship status. These graduates were excluded from this study.

3. Results

3.1. Broad Employment Indicators

Descriptive statistics of the sample by degree type are provided in Table 1.

Looking at Table 1, we can point to several key observations. First, we can see that females are underrepresented across the undergraduate and masters by coursework degree types in economics,

Table 1. Descriptive Statistics of the Sample by Degree Type

Variable	Economics			Accounting and Finance		
	Bachelor's	Master's	Doctorate	Bachelor's	Master's	Doctorate
Female	0.349 (0.477)	0.344 (0.477)	0.478 (0.511)	0.519 (0.500)	0.429 (0.495)	0.400 (0.500)
Age	25.489 (5.411)	33.410 (7.800)	43.391 (12.276)	28.696 (9.042)	35.904 (9.532)	43.040 (9.334)
Indigenous	0.004 (0.059)	0.000 (0.000)	0.000 (0.000)	0.007 (0.082)	0.000 (0.000)	0.000 (0.000)
Honours	0.161 (0.368)	–	–	0.018 (0.133)	0.000 (0.000)	0.000 (0.000)
Studied off-campus	0.045 (0.217)	0.115 (0.320)	0.044 (0.209)	0.187 (0.390)	0.283 (0.451)	0.000 (0.000)
Studied mixed mode	0.120 (0.326)	0.008 (0.091)	0.044 (0.209)	0.140 (0.347)	0.060 (0.238)	0.000 (0.000)
Part-time study	0.223 (0.417)	0.516 (0.502)	0.391 (0.499)	0.343 (0.475)	0.585 (0.493)	0.520 (0.510)
NESB	0.027 (0.161)	0.041 (0.199)	0.217 (0.422)	0.052 (0.222)	0.124 (0.329)	0.200 (0.408)
Disability	0.050 (0.217)	0.033 (0.179)	0.044 (0.209)	0.053 (0.223)	0.038 (0.191)	0.000 (0.000)
Low SES	0.103 (0.304)	0.107 (0.310)	0.044 (0.209)	0.165 (0.372)	0.101 (0.302)	0.120 (0.332)
Employed at 6 months	0.795 (0.404)	0.910 (0.288)	0.826 (0.388)	0.847 (0.360)	0.877 (0.329)	0.960 (0.200)
Employed at 3 years	0.901 (0.299)	0.943 (0.234)	0.870 (0.344)	0.910 (0.286)	0.933 (0.250)	0.880 (0.332)
Unavailable for work at 6 months	0.069 (0.254)	0.033 (0.179)	0.087 (0.288)	0.036 (0.185)	0.021 (0.142)	0.000 (0.000)
Unavailable for work at 3 years	0.055 (0.228)	0.016 (0.128)	0.130 (0.344)	0.034 (0.182)	0.026 (0.159)	0.040 (0.200)
Unemployed at 6 months	0.136 (0.343)	0.057 (0.234)	0.087 (0.288)	0.117 (0.322)	0.103 (0.304)	0.040 (0.200)
Unemployed at 3 years	0.044 (0.206)	0.041 (0.1991)	0.000 (0.000)	0.055 (0.229)	0.041 (0.199)	0.080 (0.277)
Further study at 6 months	0.262 (0.4401)	0.082 (0.2754)	(a) (a)	0.173 (0.379)	0.103 (0.304)	(a) (a)
Further study at 3 years	0.204 (0.403)	0.156 (0.364)	0.000 (0.000)	0.217 (0.413)	0.165 (0.371)	0.080 (0.277)
Observations	565	122	23	1771	583	25

Notes: Standard deviations are presented in parentheses. (a) Denotes suppression of results due to low cell count (<5 observations).

an issue of gender imbalance that has been widely reported previously (Hopkins, 2004; Rask & Tiefenthaler, 2008; Beneito *et al.*, 2021). However, at the doctorate level, there is more balance, with nearly 50 per cent of females, albeit with a smaller sample to draw from. Female representation for accounting and finance graduates was more positive for the undergraduate level, but remained an issue for master by coursework and PhD degree levels. Note that underrepresentation is likely to be sharper in reality, as females are usually more likely to respond to surveys (Smith, 2008).

With respect to other socio-economic characteristics, graduates from NESB appear to be strongly represented in doctoral degrees.² Graduates from low SES backgrounds are underrepresented across all three degree types, with this underrepresentation particularly stark in doctoral degrees.³

In terms of the broad employment indicators, the employment rates for undergraduates, master's and doctoral graduates in economics at six months after graduation were 80 per cent, 91 per cent and 83 per cent, respectively, as compared to employment rates of 85 per cent, 88 per cent and 96 per cent for the comparison group of accounting and finance graduates. Hence, employment rates of economics graduates were lower than those for accounting and finance graduates for the undergraduate and doctoral levels, but higher for those with a master's degree. By three years out from graduation, employment rates for economics graduates in these three degree levels have increased to 90 per cent, 94 per cent and 87 per cent by degree type, respectively, with very similar employment rates for accounting and finance graduates at 91 per cent, 93 per cent and 88 per cent, respectively.

Note that our employment indicators here include the category of "unavailable for work," so it is also informative to look at the unemployment rates too. For undergraduates, the unemployment rate at six months was high at 14 per cent for economics graduates and 12 per cent for accounting and finance graduates. The unemployment rates at six months for master's and doctoral degree students in economics were lower compared with bachelor's degree students, at 6 per cent and 9 per cent, respectively, in comparison with the rates of 10 per cent and 4 per cent for master's and doctoral graduates in accounting and finance. At three years, the unemployment rates for economics graduates had declined, dropping to 4 per cent for both bachelor's and master's degree graduates, and with no doctoral graduate unemployed. In comparison, accounting and finance graduates had unemployment rates of 6 per cent for those with bachelor's degrees (higher than economics graduates), 4 per cent for master's graduates (identical to economics graduates) and 8 per cent for doctoral graduates (higher than economics graduates).

To explore the issue of unemployment further, estimates of chronic unemployment, that is unemployment across both time points, were derived (not in Table 1). Chronic unemployment does not seem to be a major issue for economics graduates, with rates less than 1 per cent for bachelor's and master's graduates, and does not impact doctoral graduates at all. Likewise, chronic unemployment was low for accounting and finance graduates at 2 per cent for bachelor's and master's degree graduates, albeit higher than economics graduates.

Finally, 26 per cent and 8 per cent of the bachelor's and master's degree graduates in economics were engaged in further study at six months in comparison with 17 per cent and 10 per cent for bachelor's and master's degree graduates in accounting and finance. At three years, the further study rates had declined to 20 per cent and 16 per cent for bachelor's and master's graduates in economics and 22 per cent and 17 per cent for accounting and finance graduates.

²NESB is defined as "a domestic student who arrived in Australia less than 10 years prior to the year in which the data was collected, and who comes from a home where a language other than English is spoken," following the Australian Government (Tertiary Collection of Student Information, 2023b).

³Students from a low SES background are defined as those with a first reported residential address in a postcode in the bottom 25 per cent SES, with SES being determined by the Socio-Economic Indexes for Areas published by the Australian Bureau of Statistics (Tertiary Collection of Student Information, 2023a).

3.2. Detailed Employment Outcomes, Including Overqualification and Underemployment

In order to focus more specifically on employment issues, we restricted the sample only to those in employment at 6 months and at three years after graduation. Descriptive statistics of employment outcomes are presented in Table 2.

Among these employed graduates, the majority were in full-time work at six months after graduation. Specifically, 71 per cent, 86 per cent and 89 per cent of bachelor's, master's and doctoral graduates in economics were in full-time work at six months. These employment rates were comparable for accounting and finance graduates, at 80 per cent, 85 per cent and 83 per cent for bachelor's, master's and doctoral graduates, respectively, although bachelor's degree graduates in accounting and finance had a marked advantage over economics graduates here. These proportions of full-time employment for economics and accounting and finance graduates were, however, substantially higher than the 50 per cent full-time employment reported at the same time points for graduates from all fields of education, as reported by Jackson and Li (2021). Larger proportion of bachelor's degree graduates were in full-time work at three years at 85 per cent for economics graduates and 86 per cent for accounting and finance graduates and again much higher than 68 per cent for all Australian university graduates (Jackson & Li, 2021). Master's degree graduates in accounting and finance were observed to have increases in full-time employment at three years, while no change was observed for doctoral graduates. However, a reverse pattern was found for master's and doctoral graduates in economics, with full-time work proportions at three years after graduation declining to 78 per cent and 68 per cent, respectively.

The average weekly hours of work were also estimated for the three degree-type samples, separately for full-time and part-time employment status. At six months, the mean weekly hours worked was similar for bachelor's and master's degree graduates, at around 41 hours per week. Doctoral graduates worked considerably longer hours though, at nearly 46 hours per week for economics graduates and 49 hours for accounting and finance graduates. In the longer term, both bachelor's and master's degree graduates in economics had increased their working hours to around 43 hours, while the weekly hours for doctoral graduates in economics had declined to 39 hours. In contrast, bachelor's, master's and doctoral graduates in accounting and finance kept roughly the same hours of weekly employment at three years, at 42, 43 and 50 hours, respectively.

There were contrasting differences in the sector of employment by degree type. The main employer of bachelor's degree graduates in economics was the private sector, at 67 per cent. The governmental sector employed 27 per cent of bachelor's degree economics graduates, and the not-for-profit sector employed the remaining 6 per cent. Master's degree economics graduates were found to be almost evenly split between government and industry at 45 per cent and 46 per cent, respectively, with the remaining 8 per cent in the NFP sector. In contrast, doctoral graduates in economics were predominantly employed in government at 68 per cent and a substantial 26 per cent in the NFP sector, while a small 5 per cent were in the private industry. Similar patterns of employment by industry can be observed for accounting and finance graduates, albeit with an even greater skew towards the private industry. At three years, these patterns were unchanged for bachelor's and master's degree graduates, and for doctoral graduates in accounting and finance. For doctoral graduates in economics, however, the proportion employed in government had declined to 45 per cent, while those in the private and NFP sectors had increased to 20 per cent and 30 per cent, respectively.

Although the propensity of graduates to gain employment is important, it is also important to look at the degree to which the graduates were employed in positions commensurate with their skills and knowledge, or whether they were overqualified for their employed position.⁴ Strikingly, high proportions of graduates were mismatched at six months after graduation. The proportions overqualified were 37 per cent, 40 per cent and 37 per cent for bachelor's, master's and doctoral degree graduates

⁴Overqualification (or overeducation, as it is also called) is where an individual possesses qualifications that are surplus to the requirements of the job. A detailed explanation of how overqualification is measured can be found in Hartog (2000). The Graduate Outcomes Survey uses an eight-item Scale of Perceived Overqualification to measure graduate overqualification. This scale was developed and validated by Maynard *et al.* (2006).

Table 2. Descriptive Statistics of Employment Outcomes by Degree Type and Field

Variable	Bachelor's		Master's		Doctoral	
	Six months	Three years	Six months	Three years	Six months	Three years
<i>Economics</i>						
Full-time work	0.715 (0.450)	0.851 (0.357)	0.856 (0.353)	0.784 (0.414)	0.895 (0.315)	0.684 (0.478)
Part-time work	0.285 (0.452)	0.069 (0.254)	0.144 (0.353)	0.171 (0.378)	0.105 (0.315)	0.263 (0.452)
Weekly hours for full-time workers	40.601 (10.057)	43.349 (9.376)	41.192 (11.288)	43.106 (11.300)	45.824 (10.490)	39.219 (12.167)
Weekly hours for part-time workers	23.833 (14.618)	19.048 (8.626)	17.733 (9.153)	19.618 (9.522)	(a) (a)	(a) (a)
Government sector	0.265 (0.442)	0.344 (0.475)	0.451 (0.500)	0.504 (0.502)	0.684 (0.478)	0.450 (0.510)
Private sector	0.670 (0.471)	0.585 (0.493)	0.460 (0.501)	0.417 (0.495)	0.053 (0.229)	0.200 (0.410)
Not-for-profit sector	0.059 (0.216)	0.039 (0.194)	0.081 (0.274)	0.078 (0.270)	0.263 (0.452)	0.300 (0.470)
Overqualified	0.370 (0.483)	0.227 (0.420)	0.396 (0.491)	0.243 (0.431)	0.368 (0.496)	0.158 (0.375)
Underemployed	0.118 (0.323)	0.007 (0.082)	0.036 (0.187)	0.027 (0.163)	0.105 (0.315)	0.158 (0.375)
Annual salary (AUD)	53,764 (26,333)	84,036 (31,249)	89,134 (43,636)	111,482 (47,346)	89,312 (48,980)	103,283 (43,113)
Annual salary, full-time workers (AUD)	63,786 (21,846)	89,445 (23,931)	93,369 (40,457)	117,549 (44,225)	97,918 (46,749)	99,191 (38,979)
Observations	449	449	111	111	19	19
<i>Accounting and Finance</i>						
Full-time work	0.801 (0.400)	0.861 (0.346)	0.851 (0.356)	0.889 (0.315)	0.833 (0.381)	0.833 (0.381)
Part-time work	0.199 (0.400)	0.073 (0.260)	0.149 (0.356)	0.072 (0.259)	0.167 (0.381)	0.042 (0.204)
Weekly hours for full-time workers	41.268 (6.533)	41.741 (8.834)	42.813 (7.500)	42.677 (10.329)	49.550 (13.512)	49.750 (10.000)
Weekly hours for part-time workers	19.343 (8.960)	21.345 (8.373)	21.039 (8.662)	23.120 (7.989)	23.250 (5.686)	(a) (a)
Government sector	0.178 (0.383)	0.217 (0.412)	0.202 (0.402)	0.232 (0.422)	0.708 (0.464)	0.682 (0.477)
Private sector	0.759 (0.428)	0.699 (0.459)	0.708 (0.455)	0.658 (0.475)	0.208 (0.415)	0.227 (0.429)
Not-for-profit sector	0.037 (0.190)	0.045 (0.207)	0.072 (0.259)	0.066 (0.249)	0.083 (0.282)	0.091 (0.213)
Overqualified	0.302 (0.459)	0.169 (0.375)	0.397 (0.490)	0.264 (0.441)	0.042 (0.204)	0.000 (0.000)
Underemployed	0.105 (0.307)	0.019 (0.135)	0.082 (0.275)	0.014 (0.116)	0.125 (0.338)	0.042 (0.204)

Table 2. (Continued)

Variable	Bachelor's		Master's		Doctoral	
	Six months	Three years	Six months	Three years	Six months	Three years
Annual salary in AUD	54,839 (24,542)	78,653 (30,642)	84,790 (55,243)	106,223 (51,038)	107,132 (19,742)	121,507 (31,253)
Annual salary for full-time workers in AUD	60,781 (22,241)	80,347 (28,944)	91,310 (54,607)	107,395 (48,482)	106,713 (20,747)	126,412 (36,011)
Observations	1500	1500	511	511	24	24

Notes: Standard deviations are presented in parentheses. (a) Denotes suppression of results due to low cell count (<5 observations).

in economics, respectively. Corresponding estimates were 30 per cent, 40 per cent and 4 per cent for bachelor's, master's and doctoral graduates in accounting and finance. In particular, the proportion of overqualified bachelor's degree graduates in economics far exceeds the proportions reported in earlier studies of bachelor's degree graduates in Australia by Li and Miller (2015) or Li *et al.* (2018), but is comparable to more recent Australian estimates (Jackson & Li, 2021). The proportions overqualified fell over the longer term at three years, but remained high at 23 per cent, 24 per cent and 16 per cent, respectively, for economics graduates and 17 per cent, 26 per cent and 0 per cent for accounting and finance graduates. Underemployment affected relatively fewer economics graduates with 12 per cent, 4 per cent and 11 per cent of bachelor's degree, master's degree and doctoral degree graduates seeking more work at six months. The proportion underemployed was rather similar for accounting and finance graduates. These proportions were sharply reduced at three years for bachelor's and master's degree graduates, irrespective of whether they studied economics or accounting and finance, and for doctoral graduates in accounting and finance. Underemployment, however, rose to 16 per cent for doctoral graduates in economics at three years after graduation.

Finally, we examined graduate earnings. Two sets of earnings are presented. First, we look at annual salary at six-month and three-year post-graduation across all employed graduates, before narrowing down to annual salary to only those employed full time. For bachelor's degree graduates, the average annual salary was almost \$54,000 at six months after graduation, increasing to \$84,000 for economics graduates and to \$79,000 for accounting and finance graduates at three years. Master's degree graduates earned considerably more than bachelor's degree graduates, starting at \$89,000 for economics graduates and \$85,000 for accounting and finance graduates at six months, increasing to nearly \$111,500 and \$106,000, respectively, at three years. Doctoral graduates in economics and accounting and finance earned \$89,000 and \$107,000, respectively, at six months, increasing to \$103,000 and \$121,000, respectively, at three years.

The annual salary figures for graduates employed full-time paint a similar picture. Bachelor's degree graduates in economics and accounting and finance earn \$64,000 and \$61,000, respectively, at six months, increasing to almost \$89,500 and \$80,000, respectively, at three years. Master's degree graduates earn around \$92,000 at six months, increasing to \$107,000 for accounting and finance graduates and to \$118,000 for economics graduates at three years. Doctoral graduates had the highest earnings in the short term after graduation at almost \$98,000 for economics graduates and \$107,000 for accounting and finance graduates. However, earnings growth for economics PhDs was flatter than master's degree graduates, at \$99,000 at three years after graduation while accounting and finance PhDs experienced considerable earnings growth to \$126,000. In comparison with published median full-time salaries at six months for graduates from all fields (QILT, 2021a), bachelor's and doctoral degree graduates in economics had comparable earnings to their peers, while those with master qualifications in economics had higher annual salaries. In three-year time, however, economics graduates



Figure 1. Occupational Titles of Economics Graduates, Six Months after Graduation. Note: This figure is based on responses from 164 observations. [Colour figure can be viewed at wileyonlinelibrary.com]

at the bachelor's and master's degree levels had substantially higher annual salaries in comparison with their peers in the same degree levels, while doctoral graduates' salaries were comparable across fields (QILT, 2021b).⁵

3.3. What Are Economics Graduates Employed as?

To gain some insight into what economics graduates actually do in the workplace, we use their occupational titles. These were generated at the six-digit level of the Australian and New Zealand Standard Classification of Occupations and presented as word clouds. Figure 1 below presents the occupational titles for all graduates at six months after graduation.

The size of the occupational titles in the word cloud corresponds to the relative frequencies of graduates employed in these occupations. "Economist" was the most common occupation, as to be expected. Other prominent occupations include "policy analyst," "university tutor," "management consultant," "professionals not further defined," "statistician," "actuary" and the broad category of "business, human resource and marketing professionals." Occupations such as "sales assistant" and "waiter" were also relatively large, although this likely reflects the short time period elapsed since graduation, with the graduate job search process in train.

Figure 2 presents the word clouds of occupations for graduates at three years after graduation. To further explore the variety of occupations economics graduates are employed in, separate word clouds are presented by overqualification status, and responses exclude those in the occupation of "economist."

The results in Figure 2 indicate that "management consultant" and "policy analyst" remain common occupations at three years. However, "management consultants" appear to be approximately proportionally equally represented in both overqualification groups, while "policy analyst" tend to be less prominent in the overqualified group. "Bank worker" was prominent in the overqualified group. "University tutor" was highly represented in the not overqualified group and was not apparent in the

⁵The earnings difference can be rather substantial at three years after graduation. Bachelor's degree graduates in economics earned \$12,500 per annum more, while master's degree graduates in economics earned \$17,500 more, compared with graduates in those degree levels (all fields).

Table 4. *Employment Transition Probabilities*

Status 6 months out	Status 3 years out	
	Economist	Non-economist
(1)	(2)	(3)
Economist	0.909	0.091
Non-economist	0.424	0.576

Status 6 months out	Status 3 years out	
	Not overqualified	Overqualified
(1)	(2)	(3)
Not overqualified	0.832	0.168
Overqualified	0.618	0.382

From the last column and “total” row of the above table, there are 576 individuals, and 6 months out from graduation, 484 were an Economist and 92 a Non-economist, while after 3 years, 479 were Economists and 97 Non-economists. Of the 484 who were initially an Economist, 440 remain in that category after 3 years, with $484 - 440 = 44$ a Non-economist. Thus, there is a $\frac{440}{484} = 0.909$ probability of staying as an Economist over this horizon, and the probability of changing status is $1 - 0.909 = 0.091$, which is recorded in the top panel, first row of Table 4. The second row of the table (top panel), for the Non-economists, is similarly interpreted. Interestingly, there is a 42 per cent probability of transitioning from Non-economist to Economist over the two-and-a-half years.

These transition probabilities are the basis for a two-state Markov chain, which can be used to analyse the dynamics of employment. Panel A of Table 5 reveals that for graduates who were non-economists initially, the probability of being an economist after the first step in the adjustment process (2.5 years) was 42.4 per cent (as in the second element of column 2 of Table 4). This increased to 63 per cent by the second step, 72.9 per cent by the third and converges to 82.3 per cent over the longer term, which is similar to the initial share of economists of 84 per cent.

Panel C of Table 5 deals with those who started out as economists initially. The probability of remaining an economist at the first step was 90.9 per cent, declining to 86.5 per cent by the second and to 84.4 per cent by the third. In other words, graduates who start out as economists tend to stay as economists, while graduates who commence in non-economist occupations have a less than an even chance of becoming an economist 2.5 years after graduation, but the odds of being an economist are substantially higher at over 70 per cent by 7.5 years. The steady-state probability of being an economist in the long run is 82.3 per cent, the same as in panel A (this invariance to the initial state is a property of the Markov chain). It can also be noted that the rate of convergence to the steady state is faster for the economist group.

The right panel of Table 5 reports the results from the Markov model for overqualification. There were 63.2 per cent and 36.8 per cent of graduates who were not overqualified and overqualified, respectively, at six months out. The results indicate that graduates who were initially overqualified have a substantial chance of remaining overqualified at 38.2 per cent by the first step in the process. After three steps, or 7.5 years, the odds of being overqualified reduced to 22.1 per cent, indicating that one-in-five initially overqualified graduates were still overqualified. Conversely, graduates who were not overqualified initially tend to remain not overqualified. By the first step period, 83.2 per cent remained not overqualified. The probability of remaining not overqualified reduces modestly over the next two steps and was 78.8 per cent by the third step. The estimated steady-state share of overqualified (not overqualified) individuals is 21.4 per cent (78.6 per cent).

Table 5. *Distribution of Economist and Non-economist and Not Overqualified and Overqualified Occupations*

Step	Economist	Non-economist	Not overqualified	Overqualified
A. Initial state = Non-economist			B. Initial state = Overqualified	
0	0	1	0	1
1	0.424	0.576	0.618	0.382
2	0.630	0.370	0.750	0.250
3	0.729	0.271	0.779	0.221
⋮	⋮	⋮	⋮	⋮
Steady-state	0.823	0.177	0.786	0.214
C. Initial state = Economist			D. Initial state = Not overqualified	
0	1	0	1	0
1	0.909	0.091	0.832	0.168
2	0.865	0.135	0.796	0.204
3	0.844	0.157	0.788	0.212
⋮	⋮	⋮	⋮	⋮
Steady-state	0.823	0.177	0.786	0.214

Note: Step size is 2.5 years. The observed 6-month and 3-year distributions for economists and non-economists are [0.840 0.160] and [0.832 0.168], respectively, while the observed 6-month and 3-year distributions for overqualified and not overqualified are [0.632 0.368] and [0.618 0.382], respectively.

3.5. Factors Associated with Earnings

We next turn to an analysis of graduate characteristics and their influence on graduate earnings. We developed Ordinary Least Squares models based on the standard Mincerian specification. Our dependent variable in these models is the natural log of annual salary. The models were separately estimated at six months and three years. Further, two model specifications were undertaken. The first model included information about graduates' characteristics such as gender, age and degree level (i.e. honours, master's and PhD, with bachelor's degree as the reference category). The first model also included a variable denoting overqualification status. The second model excluded information about degree levels and overqualification status, but included information about occupations and industry of employment.⁷ Specifically, information about whether the graduates were in a managerial occupation, professional occupation (except economists) or working as an economist were entered into model 2, with non-professional occupations as the benchmark category. These occupational classifications were based on the categories in the Australian and New Zealand Standard Classification of Occupations. In addition to the above, both model specifications included information on gender, age, university study characteristics (mode of enrolment, part-time study and engagement in further study) and weekly hours worked.

The results from the models of graduate earnings are presented in Table 6. Attention is first drawn to the variables on degree level and field. Relative to the benchmark group of bachelor's in economics graduates, it can be seen that bachelor's graduates in accounting and finance earned 7 per cent less at six months and 8 per cent less at three years after graduation. Graduates who undertook honours received an earnings premia at six months, amounting to 14 per cent for economics honours graduates and 22 per cent for accounting and finance honours graduates. The honours premia for economics graduates, however, dissipated at three years after graduation while accounting and finance honours graduates still retained an honours premia of around 20 per cent, relative to economics graduates.⁸ Master's degree graduates in economics and accounting and finance earned 22 per cent and

⁷Importantly, overqualification status is expected to be collinear with occupations and hence are not entered together into the same model specification.

⁸Given that the earnings of accounting and finance bachelor's graduates are even lower than economics bachelor's graduates, the honours premia for accounting and finance honours graduates is even higher than 20 per cent.

17 per cent more than bachelor's graduates in economics at six months, but had statistically indistinguishable earnings against the same reference group at three years. Doctoral graduates in economics earned 7 per cent more than bachelor's graduates in economics at six months, and this earnings advantage widened slightly to 10 per cent at three years. Doctoral graduates in accounting and finance earned 18 per cent more than bachelor's graduates in economics at six months, but were not estimated to have statistically different earnings at three years.⁹

There appeared to be a persistent gender gap of around 7 per cent in both the short and the longer term. Our proxy variable for work experience, age, appeared to influence earnings relatively strongly at six months, with reduced effects (model 2) or no statistical significance (model 1) at three years. The coefficients for the quadratic term for age were negative in sign, concurring with earlier literature on the diminishing effect of experience on earnings as proxied by age.

Non-English-speaking background (NESB) was associated with substantial earnings disadvantage. Graduates from NESB earned 11 per cent to 12 per cent less than their ESB peers at six months. At three years, the earnings disadvantage persisted and was still substantial at 12–14 per cent.

Overqualification status was associated with earnings disadvantages, as expected. At six months, overqualified graduates earned 9 per cent less than graduates matched to their jobs, and this earnings penalty increased to 14 per cent at three years after graduation. Underemployment was associated with large earnings deficits at six months of 22–26 per cent and remained an adverse relationship with earnings of 27–29 per cent at three years. It should be noted that this underemployment effect was net of controlling for weekly hours worked, which was associated with a 2–3 per cent increase in earnings for each additional hour worked.

Graduates employed in the private sector earned less than those in the public sector. In the short term, this earnings difference between private and public sectors was 14 per cent, reducing to around 7 per cent in the longer term at three years. Graduates in the not-for-profit sector had earnings statistically indistinguishable from those in the public sector.

Graduates working in managerial positions earned around 27 per cent more at both six months and three years, relative to graduates in non-professional occupations. Graduates working in professional occupations earned 12–13 per cent more than graduates in non-professional occupations across both time points. Graduates working as economists, however, had the largest earnings boon, earning 21 per cent more than graduates in non-professional occupations at both time periods.

Graduates from the Group of Eight (Go8) university grouping did not have statistically distinguishable earnings from graduates from non-Go8 universities in model 1, but did have an earnings advantage of 4 per cent at six months and 6 per cent at three years, based on the model 2 results.

4. Discussion

Given the analysis from the previous section, it is worthwhile to now bring this all together into three key themes surrounding the labour market outcomes for economics graduates: (i) employment; (ii) occupations; and (iii) earnings.

With respect to employment, one point of interest from the results is that the proportion in full-time employment for Master's and doctoral graduates in economics actually declined after three years, relative to 6 months out from graduation. Despite digging further into the data, it is still not entirely clear why this might be the case.¹⁰ In terms of where economics graduates are employed, it is

⁹Bear in mind, however, that the sample for doctoral graduates in this study is very small, and therefore, these estimates need to be interpreted with caution.

¹⁰It is possible this was caused by a change in family conditions, such as having children, which would line up with typical childbearing age for masters and PhD graduates' age at three years. However, the data do not back this up. Running means for each of the three samples by gender indicates that proportions in full-time work by gender were 86 per cent (males) versus 83 per cent (females) for undergrads, 78 per cent (males) versus (79 per cent) for masters, and 73 per cent (males) versus (63 per cent) for PhD. We also ran a logistic regression model looking at the likelihood of full-time work, and female was insignificant. Indeed, most variables were insignificant. The ones that were significant were age (associated with lower odds), NESB (associated with lower odds) and employment in the private sector (associated with higher odds, versus govt sector).

Table 6. Results from the OLS Models of Economics Graduates Earnings

Variables	Six months— Model 1	Six months— Model 2	Three Years— Model 1	Three Years— Model 2
A&F bachelor	−0.073*** (0.021)		−0.082** (0.032)	
Econ honours	0.135*** (0.048)		0.041 (0.075)	
A&F honours	0.214*** (0.045)		0.202*** (0.068)	
Econ masters	0.215** (0.100)		0.214 (0.143)	
A&F masters	0.168* (0.099)		0.136 (0.125)	
Econ PhD	0.074*** (0.027)		0.097** (0.040)	
A&F PhD	0.178* (0.091)		0.135 (0.148)	
Female	−0.061*** (0.016)	−0.070*** (0.016)	−0.075*** (0.025)	−0.079*** (0.024)
Age	0.042*** (0.006)	0.048*** (0.006)	0.014 (0.009)	0.024*** (0.009)
Age-squared/1000	−0.371*** (0.076)	−0.459*** (0.073)	−0.112 (0.119)	−0.220* (0.116)
NESB	−0.116*** (0.038)	−0.101*** (0.038)	−0.142** (0.060)	−0.117** (0.059)
Overqualified	−0.092*** (0.017)		−0.137*** (0.029)	
Underemployed	−0.257*** (0.033)	−0.229*** (0.033)	−0.273*** (0.106)	−0.295*** (0.105)
Private sector		−0.141*** (0.019)		−0.072** (0.028)
NFP sector		−0.016 (0.039)		−0.043 (0.056)
Weekly hours worked	0.028*** (0.001)	0.029*** (0.001)	0.022*** (0.001)	0.021*** (0.001)
Managerial occupation		0.271*** (0.030)		0.281*** (0.046)
Professional occupation		0.122*** (0.019)		0.131*** (0.034)
Economist		0.208*** (0.042)		0.219*** (0.064)
Go8	0.019 (0.019)	0.040** (0.019)	0.031 (0.030)	0.055* (0.029)
Constant	9.040*** (0.108)	8.876*** (0.103)	10.149*** (0.169)	9.844*** (0.165)
University study characteristics	Yes	Yes	Yes	Yes
Observations	2328	2327	2110	2107
Adjusted R^2	0.594	0.602	0.208	0.204

Notes: ***, ** and * indicate statistical significance at the 1 per cent, 5 per cent and 10 per cent levels, respectively. A&F refers to graduates from the fields of accounting and finance, while econ refers to graduates in economics.

interesting to note that those with the higher qualifications (Masters and PhD) are much more likely to be employed in the public sector than students with a Bachelor's degree, particularly immediately after graduation. While it may be tempting to think this is simply because more Bachelor-level students go into jobs immediately upon graduation for which they are overqualified (and which may be disproportionately in the private sector), subsequent evidence does not bear this out, because a high proportion of all economics graduates are in jobs for which they are overqualified within 6 months of graduation (37 per cent for Bachelor's students, 40 per cent for Master's and 37 per cent for doctoral students). Regardless of the reason, these differences persist in the longer term, with only 34 per cent of Bachelor graduates being employed in the public sector, compared to 50 per cent of students with a Master's degree (and 45 per cent with a doctoral degree, albeit from a much smaller sample).

Economics as a discipline is by its very nature broad in scope and therefore similarly broad in terms of potential occupations. Part of the original intention of this research was to examine how many economics graduates went on to actually become "economists," relative to how many used the knowledge and skills from their degree to inform their eventual occupation, but were not employed specifically as professional economists. Using a word cloud analysis as a visual representation of this, we can see that "economist" is far and away the occupation most associated with economics graduates (83 per cent) – but it is certainly not the only one. An important (and related) occupation was policy analyst, which is often associated with public sector occupations, and management consultants, often associated with private sector occupations.¹¹

Given that around 17 per cent of economics graduates actually appear to start out their careers as non-economists, a salient question is whether this is likely to persist over time, or whether most eventually find their way into employment as economists. To that end, we looked at the transitional probabilities of graduates moving from an initial non-economist role to an economics-focused role over time. For those who started their careers in a non-economist role (equating to 92 people in our sample), there was a 42 per cent chance they would transition to an economist role within the first 2.5 years, with that probability increasing further over time. Conversely, those that began their careers as economists tended to stay in that occupation (91 per cent remained as economists after 2.5 years, declining only to 82 per cent in the long run steady state).

Looking at the issue of overqualification (as opposed to the binary "economist vs non-economist" approach above), the evidence suggests that around 38 per cent of graduates begin their careers in a job for which they are overqualified and that even in the long run, around one in five of these graduates remain in overqualified positions. Those that begin their career in a job for which they are qualified tend to remain so (83 per cent remain in jobs they are qualified to perform after three years, declining only marginally to 79 per cent in the long run). Perhaps one takeaway from this analysis then is that the "first job" for a graduate matters.

Having established the occupational and employment characteristics of economics graduates, the final outcome we addressed was the important issue of the determinants of earnings. Using a standard Mincerian OLS analysis, we looked at two models. In the first, we separated out the three graduate levels (bachelor's, master's and doctoral) by field (economics and accounting and finance), as well as including an overqualification term. In the second, the focus was not on the graduate level, but on the occupation of the graduates.

Looking at the graduate levels, a clear short-run premia appears to exist for both Honours and Master's cohorts, but interestingly that premia no longer held in the longer term for those in economics while persisting only for honours graduates in accounting and finance. We have less confidence in the earnings for doctoral students, given the small sample we have available here. A quick back-of-the-envelope calculation based on these results and the average reported earnings for the different levels suggests that despite this salary premia, the additional implicit and explicit costs of a Master's

¹¹This was reinforced by the data. Of those working as policy analyst, 9 per cent are working in the private sector and 82 per cent in government. For those in management consultant roles, 80 per cent are in the private sector 12 per cent in government.

degree would take approximately 13 years to pay off relative to starting work two years earlier with only a bachelor's degree.¹²

Another notable outcome from the analysis was the relatively poor earnings outcomes for those graduates from a non-English-speaking background, particularly as this seemed to persist in the longer term, as well as the existence of a gender pay gap in the economics profession, similar to that experienced in other professional occupations. Finally, there is some evidence for an institutional premia for graduates from the fields of economics, accounting and finance, of 4 per cent at six months, increasing slightly to 6 per cent at three years. This stands in contrast with earlier work by Li and Miller (2013) and Koshy *et al.* (2016), although these two studies evaluated the broader graduate labour market rather than focussing on selected fields, as has been done in the present study.

5. Concluding Comments

In this market for economists, we have formulated a number of important conclusions. For the graduates themselves, perhaps the main finding is that over 80 per cent of those graduating with an undergraduate or postgraduate degree in economics are actually employed as economists across both the public and private sector within three years of graduation, with average earnings increasing by around 55 per cent within three years for undergraduates, and 25 per cent for Master's graduates. Moreover, for those graduates who initially find themselves employed as non-economists upon graduation, the probability of them eventually moving into a role as an economist is relatively high. Longer-term chronic unemployment is also not much of an issue for economics graduates, being less than 1 per cent across the graduate levels after three years.

Despite these positive aspects though, challenges for graduates remain. The proportion of graduates who report being in a job for which they are overqualified is relatively high (though does decline over the subsequent three-year period), and there is still both a gender pay gap and disadvantages for those from non-English-speaking backgrounds.

As with all studies, potential limitations exist. One particular limitation of this study lies in potential bias from study attrition or survey non-response. While the response rates to the national GOS-L survey used in this study were relatively sizable at around 50 per cent, there was no available information around non-response to the survey, to the best of the authors' knowledge. Therefore, it was not possible to formally assess whether the results from the study were biased. It is possible, for instance, that graduates who are relatively well-remunerated are in demanding jobs and more likely to not respond to the survey. As a result, the estimated earnings in the study might be biased downward. Alternatively, those who are (chronically) unemployed might drop out of the survey due to being less motivated, and therefore, measurements of unemployment might be lower than actual unemployment. Of course, it is also possible that study attrition is entirely random, in which case it is just measurement error that generates noise in the estimated outcomes, but the estimates are unbiased. Our results need to be interpreted with this caveat in mind.

All things considered, it seems an economics degree is attractive to students, offering rewards at least as attractive as many other alternatives and broadly comparable to fields such as accounting and finance. The outcomes of economics graduates in terms of employment and pay are favourable, especially in comparison with the outcomes of other graduates. In part, this is the reason for the healthy state of economics in many Go8 universities (and elsewhere in the world). A further possible explanation might be the inherent attraction of bright students to an area dealing with many of the most pressing problems faced by societies around the world and their economic solution.

¹²Based on the opportunity cost of two-year average salary foregone by studying for a Master's degree (\$80,347 per annum) with no other earnings over that period of study, and a \$60,000 explicit cost of the degree itself, with an earnings premium of 21.5 per cent relative to the Bachelor's degree.

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Data Availability Statement

The data that support the findings of this study are available from data offices of participating institutions from Universities Australia. Restrictions apply to the availability of these data, which were used under license for this study.

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