LONGITUDINAL SURVEYS OF AUSTRALIAN YOUTH

RESEARCH REPORT 64

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About the research

Starting out in low-skill jobs

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Many young people start their working lives in low-skill jobs. This report examines whether, for those who have left full-time education, a low-skill job provides them with a good start to their working lives, or whether starting out in a low-skill job can have a 'scarring' effect on the individual. Here we define low-skill jobs using levels 4 and 5 of the skill levels allocated by the Australian Bureau of Statistics (ABS) to each occupation.

Key messages

- As expected, starting out in a low-skill job yields lower wages than starting out in a higher-skilled job. Five years after leaving full-time education, the wage penalty (conditioning on education and other characteristics) still exists, but this scarring diminishes over time. However, any job is better than no job, given that the wage penalty after five years of having no job a year after leaving full-time education is worse than taking a low-skill job.
- Not surprisingly, young people who possess high human capital (education, ability, and experience) have more opportunities to move to a high-skill job. Males are more likely to make the transition to high-skill jobs than females. Young people who are part-time workers are likely to remain in low-skill jobs, although part-time or casual low-skill jobs can be a positive pathway for young people to progress into full-time or permanent positions.
- There is no evidence to suggest that young people choose to stay in low-skill jobs for positive reasons such as high job satisfaction or relatively high wages.

The research underlines the importance of good career guidance, by recognition of labour market opportunities, for young people as they make their way through senior schooling and post-school education and training.

Rod Camm
Managing Director, NCVER

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Executive summary

While governments have initiated policies to encourage higher educational attainment and enhanced skills in young people to enable labour demand to be met, low-skill jobs are not disappearing. Working in low-skill jobs is a fact of life for many young people after leaving full-time education, with many of their jobs not matching their career aspirations or qualifications. The purpose of this research is to explore the characteristics of young people starting out in low-skill jobs after leaving full-time education, examine the short- and long-run impact of starting out in low-skill jobs on wage level, and study the factors that influence young people's decisions to remain in low-skill jobs or move to high-skill jobs. The primary issue is whether a low-skill job for a young person is a 'stepping stone' or a 'low-skill trap'.

The definitions of low-skill jobs and high-skill jobs used in this paper are based on the five skill levels allocated for each occupation in the Australian and New Zealand Standard Classification of Occupations (ANZSCO). Occupations at skill levels 1, 2 and 3 are classified as high-skill jobs, whereas those at skill levels 4 and 5 do not typically require post-school qualifications and are categorised as low-skill jobs. In addition, the term 'not working' is used here in the broad sense to refer to young people who are unemployed or not in the labour force. This study used data from the 1998 base year cohort of the Longitudinal Surveys of Australian Youth (LSAY Y98) to address the research questions. The sample used for this analysis is restricted to 5228 young people who completed their full-time education, who continued to contribute information to the survey, and who had their employment status known up to five years after leaving full-time education.

The majority of young people who choose low-skill jobs as their career starting point have no post-school qualifications. There is little evidence of 'churning' between low-skill jobs and not working. Those who transition from low-skill employment to not working are mainly young respondents who are aged 20 years and under, or those with no post-school qualification. Across five years after leaving full-time education, many young people starting out in low-skill jobs experience increases in wages and occupational status and a shift from part-time to full-time employment and from casual to permanent jobs. After five years around one-third have moved to a high-skill job.

Regression methods are applied to determine the association between starting out in low-skill jobs and their hourly earnings from one to five years after leaving full-time education. The focus is on the wage differential in the earnings of young people starting out in low-skill jobs or not working in the year after leaving full-time education compared with those starting out in high-skill jobs in each of the five years after leaving full-time education. Importantly, panel estimation techniques are used to account for individuals having different, but unobserved, attributes that might affect wages (such as low motivation).

It was found that starting out in low-skill jobs does produce a significantly negative impact on wage levels and results in a long-term penalty, although the negative impact diminishes over time. However, the findings also indicate that starting out in low-skill jobs gives better wage outcomes than having no job at all. Thus there is evidence of scarring, but having a low-skill job is better than no job at all. This puts a young person facing the offer of a low-skill job in a quandary: take it or wait in hope for a better offer?

Taking a job involves a choice, and there is the possibility that young people choose or remain in a low-skill job for good reasons. For example, despite it being a low-skill job, some young people may

achieve high satisfaction from it or a relatively high wage. To understand the extent to which young people choose to remain in low-skill jobs or move to high-skill jobs, logit models (again accounting for unobserved attributes) are fitted.

It was found that males in general have a higher probability of leaving a low-skill job for a high-skill job than females. Young people who have high human capital such as high qualifications, high ability, more experience, or work in low-skill jobs with high occupational status are more likely to move to high-skill jobs. Young people who are part-time workers are likely to remain in low-skill jobs. No evidence was found to suggest that young people stay in low-skill jobs because of the positive features of those jobs such as high job satisfaction or high wages.

Introduction

Governments have adopted policies to increase the qualification levels of young people, in particular, to better equip them for a workforce characterised by less demand for low-skill workers. The government push for skills implicitly assumes that qualified individuals will end up in jobs where their skills will be used and is consistent with long-term trends, where employment growth is favouring the more highly skilled occupations (Aungles et al. 1993; Cully 1999; Bradley et al. 2008, p. 15). However, low-skill jobs are not disappearing (Cully 2002) and are a natural starting point for many young people. The primary issue we are interested in is whether low-skill jobs are a useful component of labour market transitions or whether they can be a low-skill trap for those whose qualifications should equip them for a more skilled job.

The paper sets out to answer three questions:

- Do low-skill jobs provide a stable employment pathway?
- What is the impact of starting out in low-skill jobs on earnings? That is, is there a long-lasting wage penalty for taking a low-skill job?
- What factors may influence young people to remain in low-skill employment or progress into high-skill jobs? Is it possible that some young people stay in low-skill jobs because of positive job attributes such as relatively high wages or job satisfaction?

Our approach is to focus on young people who have completed their education and who begin their post-school working lives in a low-skill job. We are not looking here at students with part-time jobs (see Polidano & Zakirova 2011 for an examination of that issue). To answer these questions, we use data from the 1998 cohort of the Longitudinal Surveys of Australian Youth (LSAY).

Following this introduction, we provide some background: we define low-skill jobs and identify the LSAY sample used for this report. The analysis then examines the characteristics of young people who start out in low-skill jobs after completing their full-time education. The next section considers whether low-skill jobs provide a stable employment pathway for young people. The issue is addressed by looking at how young people starting out in these jobs make transitions to other pathways in the labour market, including progressing into high-skill jobs, returning to full-time education, remaining in low-skill employment, or exiting the labour market. Starting out in low-skill jobs as a part-time or casual worker could be an entry point for young people who seek full-time jobs or permanent positions in the long term. There is little evidence of 'churning' between low-skill jobs and not working, with those moving from low-skill employment to not working being mainly young respondents who are aged 20 years and under, or those with no post-school qualifications.

The third section of the report examines the relationship between the hourly wages and initial employment status (after young people complete their full-time study). The main interest is to determine whether young people who begin in low-skill jobs suffer a wage penalty over time. Panel estimation methods are employed in this section to address this relationship. The results from wage equations show that young people starting out in low-skill jobs suffer lower payoffs than those starting out in high-skill jobs in the first year after leaving full-time education. Five years after leaving full-time education, the scarring effect still exists but the penalty has diminished. Not working in any job also impacts negatively on wages and results in a vastly inferior wage outcome than starting out in a

low-skill job. It indicates that working in any job as a starting point after leaving full-time education is still a better option than having no job.

The fourth section investigates the impacts of individual characteristics and job attributes on young people's choices of staying in low-skill jobs or moving to high-skill jobs. Our interest is whether young people stay in low-skill jobs for 'good' reasons, such as high job satisfaction or better than expected wages. Panel estimation methods are again used to measure these influences.

We find no evidence to support the idea that there are positive reasons for staying in a low-skill job. Rather, those who are more likely to leave a low-skill job are those who are older than 20 years, have high academic ability, or hold a university qualification.

The final part contains some comments on the findings of the study.

Background

This chapter begins with a definition of low-skill jobs and a description of the LSAY data used in the report. It then examines the characteristics of young people who start out in low-skill jobs after leaving full-time education.

What is meant by low-skill jobs?

We have defined low-skill jobs using the skill levels as defined in the Australian and New Zealand Standard Classification of Occupations (ANZSCO). The Australian Bureau of Statistics (ABS) has allocated each occupation, down to the unit group (4-digit) level of detail, to one of five skill levels. The ABS is careful to emphasise that this reflects the typical skill level required for an occupation rather than being a measure of the skills held by people working in an occupation:

> ANZSCO does not measure the skill level of an individual, rather it refers to the level of skill that is typically required to competently perform the tasks of a particular occupation. Skill level is an attribute of occupations, not of individuals in the labour force or of particular jobs (2006, p.14).

We have chosen to divide occupations into high-skill (those at skill levels 1, 2 and 3) and low-skill (4 and 5). The logic behind this division is that high-skill jobs are those occupations typically requiring some kind of post-school qualification (at least a certificate IV or a certificate III accompanied by at least two years of on-the-job training). The high-skill category comprises all managers, professionals, technical occupations and trades; some community and personal service occupations; and a few clerical and sales occupations. Among the low-skill occupations are labourers and machinery operators and drivers, most sales workers and remaining clerical and community and personal service occupations. The skill levels are summarised in table 1.

Table 1 ABS skill level descriptions

Skill level	Brief descriptions
1	Level of skill commensurate with a bachelor degree or higher qualification. At least five years of relevant experience may substitute for the formal qualification. In some instances relevant experience and/or on-the-job training may be required in addition to the formal qualification.
2	Level of skill commensurate with AQF associate degree, advanced diploma or diploma. At least three years of relevant experience may substitute for the formal qualifications. In some instances relevant experience and/or on-the-job training may be required in addition to the formal qualification.
3	Level of skill commensurate with AQF certificate IV or AQF certificate III including at least two years of on-the-job training. At least three years of relevant experience may substitute for the formal qualifications. In some instances relevant experience and/or on-the-job training may be required in addition to the formal qualification.
4	Level of skill commensurate with AQF certificate II or AQF certificate III. At least one year of relevant experience may substitute for the formal qualifications. In some instances relevant experience may be required in addition to the formal qualification.
5	Level of skill commensurate with AQF certificate I or compulsory secondary education.

Source: ABS (2006, p.14).

Our interest lies in examining skills and qualifications and we do not equate low-skill jobs with bad jobs. Jobs that require few formal qualifications can be well paid, secure and provide access to career opportunities; likewise, higher qualifications are no guarantee against low pay or insecure employment (Lloyd & Mayhew 2010).

Our division into 'low-skill' and 'high-skill' is not without issue, as pointed out by Esposto (2008, p.110). The approach is highly reliant on education, training and years of experience as an appropriate indicator of skill. The categorisation of many occupations predominantly held by females, such as childcare workers, dental assistants and library aides, as 'low-skill' has been challenged (such as through pay equity cases) by those who argue that traditional conceptions of skill ignore or undervalue the 'softer' and caring skills required in these roles (Whitehouse & Rooney 2007; Smith 2009). Even formal conceptions of skill can change markedly over a relatively short period of time; for instance, changes being introduced will increase the qualification levels of child care workers (currently classified as skill level 4) to certificate III and diploma level (Australian Children's Education and Care Quality Authority 2011). Over time, this should result in a given skill required for a job remaining the same but being reclassified, or a given occupation changing in terms of the complexity of the skills and tasks required to perform in the job. For consistency and transparency our analysis will observe the current classification in all instances.

Another difficult issue is how to treat tradespeople and other mid-skilled workers (Cully 2002). We have allocated them to the high-skill category, along with other jobs usually requiring a certificate III (where completed as part of an apprenticeship) or higher qualification.

The Longitudinal Surveys of Australian Youth

The analysis is based on data from the Longitudinal Surveys of Australian Youth and takes advantage of its longitudinal nature to track the experience of young people over time. We use the most recent complete cohort, which began in 1998 (when the students were in Year 9) and concluded after 12 waves in 2009. The complete LSAY Y98 comprises of 14 117 observations.

In our analysis, we concentrate on the LSAY Y98 respondents who are in low-skill employment after leaving full-time education. The skill level of jobs held by students who are in full-time education is not of concern, since part-time work for students is more about income than long-term engagement with the labour market (Polidano & Zakirova 2011). We therefore exclude 6866 respondents who leave the survey before exiting full-time education.

We also exclude from the dataset anyone who returns to full-time education in the following wave. We do this to overcome the issue of young people taking gap years. Employment taken during a gap year is not a good indicator of young people's long-term intentions of working in the labour market. To lengthen the condition to exclude anyone who returned to full-time education within two years would exclude too many respondents because of attrition; it would also draw in young people who may have made a genuine decision to return to study. As a result, we remove an additional number of 2023 persons who have spent one wave away from formal education. As table 2 shows, this leaves 5228 respondents, for whom there are data on their employment status after leaving full-time education. Of 5228 respondents, 1682 persons are in high-skill employment, 2646 respondents work in low-skill jobs, 826 persons are unemployed or out of the labour force, and 74 respondents have missing occupational detail.

Table 2 Records in the LSAY 1998 dataset

Steps	Observations
Complete LSAY Y98 dataset	14 117
Left survey (attrition) before leaving full-time education for the first time	6866
Censored (did not spend at least two waves after leaving full-time education before survey ends)	2023
Remaining observations	5228
Labour market status in the first wave after leaving full-time education:	
High-skill employment	1682
Low-skill employment	2646
Not working	826
Missing occupational detail	74

Notes: Five respondents who were in full-time education for all 12 waves of the survey are excluded.
Source: LSAY 1998 cohort.

The focus of the analysis is the years after young people left full-time education. Depending on the wave during which a respondent left full-time education, there are potentially up to 11 periods to examine.

The use of longitudinal data has some drawbacks. For the LSAY, data are collected through a telephone interview with respondents selected from the cohort and therefore the information is self-reported. The second issue is survey attrition, which occurs when some respondents fail to answer the survey in subsequent years of interviewing. In addition, very few respondents left full-time education in the second wave of the survey and most respondents had left full-time education by the fifth, sixth or seventh wave of the survey. This means that in most instances data can only be available up to five, six or seven periods after leaving full-time education. Values for subsequent periods are therefore not available. Table 3 shows the attrition and censored effects on the available sample. Up to the sixth year, fewer than half of the respondents have their information available for analysis and the number of observations in the study scope drops substantially in succeeding years.

Table 3 Impact of attrition and censored values

	Years after leaving full-time education										
	1	2	3	4	5	6	7	8	9	10	11
Total in scope (n)	5228	5228	4333	3589	2762	2118	1454	977	229	81	5
Attrition	-	-	739	1199	1509	1633	1519	1328	523	301	29
Censored	-	-	156	440	957	1477	2255	2923	4476	4846	5194
Total	**5228**	**5228**	**5228**	**5228**	**5228**	**5228**	**5228**	**5228**	**5228**	**5228**	**5228**

Source: LSAY 1998 cohort.

This paper focuses on analysing only the first five years after respondents completed their full-time education, of which more than half of the sample is still retained in the fifth year. Thus the sample of 5228 observations used in this paper is restricted to young people who completed their full-time education, continued to contribute information to the survey, and had their employment status known up to five years after leaving full-time education. Weights have been utilised in the regression models

to attempt to account for the impact of differential attrition.[1] Further details on how weights are created in the LSAY dataset can be found in Lim (2011).

Attributes of low-skill employment

Table 4 shows that the weighted sample of respondents starting out in low-skill jobs is predominately made up of females (58.0%). The majority of low-skill workers have no post-school qualifications (61.3%). Around one in four completed a vocational education and training (VET) qualification, and around one in ten completed an apprenticeship or traineeship. The percentage of respondents who hold university degrees and start out in low-skill jobs is approximately half of those holding VET qualifications.

Table 4 Characteristics of respondents starting out in low-skill jobs after leaving full-time education

	Low-skill employment	
	Observations	%
Sex*		
Male	1100	41.7
Female	1529	58.0
Age		
Over 20 years	620	23.5
18 to 20 years	1712	64.9
Under 18 years	306	11.6
Highest school level		
Year 12	2037	77.3
Year 11	243	9.2
Year 10 or below	357	13.5
Highest post-school qualification		
University	356	13.5
VET	666	25.2
No post-school qualifications	1616	61.3
Apprentice/trainee status		
Completed an apprenticeship or traineeship	269	10.2
Did not complete an apprenticeship or traineeship**	2369	89.8
Total	**2638*** **	**100.0**

Notes: Data are weighted. Sum of observations in each category does not equal total due to rounding.
* Persons and percentages by gender do not sum to total due to missing gender information.
** Includes training status unknown, currently undertaking, commenced but did not complete, and never commenced.
*** Total does not equal 2646 due to the application of weights.

Source: LSAY 1998 cohort.

[1] There may be an issue of selection bias. The technique of propensity scores could be used to help reduce this. However, the regression equations include a range of background variables likely to help explain differential attrition. When these are included in combination with the longitudinal weights, selection bias becomes less of an issue.

Low-skill employment transition

We now look at the labour market mobility of young people across the five years following their starting point as low-skill workers. Table 5 shows the percentage of transitions between years after leaving full-time education. The percentage of flows from low-skill employment in the previous year to the next year is: 37.9% remain in low-skill jobs; 12.9% move to high-skill jobs; 4.3% are not working; and 3.3% return to full-time education. Flows between years demonstrate that there is little evidence of churning between low-skill employment and not working. Transitions from low-skill to high-skill (12.9%) are close to three times the transitions from low-skill to not working (4.3%). More importantly, flows from not working to low-skill employment (1.7%) are almost as large as the proportion remaining out of the workforce between years (2.0%).

Table 6 shows how young people's employment and study status settle in each year after they start out in low-skill jobs. By the second year, almost a quarter (22.2%) move into high-skill employment and another one in ten (9.8%) is no longer working. In the third year, 52.4% remain in low-skill employment, while 11.1% return to full-time education. The proportion of young people in high-skill employment steadily increases from the second year to the fifth year. By contrast, the proportions of young people working in low-skill jobs and not working fall across the same period. By the fifth year, around a third of respondents who begin in low-skill jobs after leaving full-time education work in high-skill jobs, while 44.0% remain in low-skill jobs. The proportion of young people returning to full-time education is 13.5%, while a smaller proportion (7.5%) is not working.

Table 5 Transition between employment and study status of those starting out in low-skill jobs after leaving full-time education

Status	**Period t**							
Period t-1	High-skill		Low-skill		Return to full-time education		Not working	
	Observations	*%*	*Observations*	*%*	*Observations*	*%*	*Observations*	*%*
High-skill	1222	10.9	484	4.3	94	0.8	83	0.7
Low-skill	1437	12.9	4238	37.9	368	3.3	476	4.3
Full-time education	105	0.9	157	1.4	346	3.1	29	0.3
Not working	82	0.7	192	1.7	68	0.6	221	2.0
Total	**11 182**							

Notes: Data are weighted. Unit of observation is person years. Observations of all transitions do not sum to total, as the number of attrition and censoring is not displayed.
Source: LSAY 1998 cohort.

Table 6 Employment and study status of those starting out in low-skill jobs in each year of five years after leaving full-time education

Status	**Years since leaving full-time education**									
	First year		Second year		Third year		Fourth year		Fifth year	
	Observations	*%*	*Observations*	*%*	*Observations*	*%*	*Observations*	*%*	*Observations*	*%*
High-skill	-	-	593	22.2	614	27.2	619	31.6	568	34.5
Low-skill	2638	100.0	1797	67.2	1184	52.4	940	48.0	725	44.0
Missing occupational detail	-	-	23	0.8	21	0.9	15	0.8	10	0.6
Not working	-	-	263	9.8	190	8.4	140	7.2	123	7.5
Returned to full-time education	-	-	-	-	251	11.1	245	12.5	222	13.5
Total	**2638***	**100.0**	**2677**	**100.0**	**2260**	**100.0**	**1960**	**100.0**	**1648**	**100.0**

Notes: Data are weighted. Sum of observations does not equal total due to rounding.
* Total does not equal 2646 due to the application of weights.
Source: LSAY Y98 cohort.

Transitions from low-skill employment to not working or to full-time education broadly follow the characteristics of those starting out in low-skill jobs, with some exceptions (table 7). The main exceptions are: older individuals, who are more likely to return to full-time education; and university graduates, who are less likely to return to full-time education or leave employment.

Table 7 Transitions from low-skill employment to return to full-time education or to not working

	Not working		Returning to full-time education		Characteristics of those starting out in low-skill jobs
	Observations	%	Observations	%	%
Sex*					
Male	200	42.1	149	40.6	41.7
Female	275	57.6	217	58.8	58.0
Age leaving low-skill jobs					
Over 20 years	145	30.4	210	57.0	23.5
20 years and under	332	69.6	158	43.0	76.5
Previous highest school level					
Year 12	303	63.7	289	78.4	77.3
Year 11	63	13.3	40	10.9	9.2
Year 10 or below	110	23.0	39	10.7	13.5
Previous highest post-school qualification					
University	30	6.3	19	5.1	13.5
VET	117	24.6	98	26.6	25.2
No post-school qualifications	329	69.1	251	68.3	61.3
Total	**476**	**100.0**	**368**	**100.0**	**100.0**

Notes: Data are weighted. Unit of observation is person years. Sum of observations does not equal total due to rounding.
* Observations and percentages by gender do not sum to total due to missing gender information.

Source: LSAY 1998 cohort.

Part of the popular characterisation of low-skill jobs is that they are dominated by those who are part-time or casual. From tables 8 and 9 we see a clear tendency for those starting in a part-time or casual job to move to a full-time or permanent job, respectively.

Table 8 Transition between working hours of those in low-skill employment

Working hours			**Period t**	
Period t-1	Full-time		Part-time	
	Observations	*%*	*Observations*	*%*
Full-time	2812	49.5	415	7.3
Part-time	1095	19.3	1259	22.2
Total			**5676**	

Notes: Data are weighted. Unit of observation is person years. Observations of all transitions do not sum to total, as persons working but time unknown are excluded.

Source: LSAY 1998 cohort.

Table 9 Transition between employment status of those in low-skill employment

Status	Period t			
Period t-1	Permanent		Casual	
	Observations	*%*	*Observations*	*%*
Permanent	2560	45.1	365	6.4
Casual	1033	18.2	1497	26.4
Total	**5676**			

Notes: Data are weighted. Unit of observation is person years. Observations do not sum to total, as persons working but employment status unknown are excluded.

Source: LSAY 1998 cohort.

Data on wages and occupational status provide further evidence of a gradual improvement in employment conditions for young people who begin to work in low-skill jobs after finishing their full-time education (table 10). The derived hourly wage rate is based on the average weekly earnings and the number of reported hours worked per week. It is noted that take-home pay is recorded at waves 1 and 2, while gross weekly pay is recorded for all remaining waves (NCVER 2012). The gross weekly pay includes those who are working for wages or salary or who are self-employed in their own business and excludes those who are working in some 'other way'. The hourly wage is deflated into 1998 values, such that respondents' earnings across five years after leaving full-time education are comparable. To create the occupational status variable, the Australian Socioeconomic Index 2006 (AUSEI06) and the measure of socioeconomic status (ANU4) are used to assign occupational status scores for data coded in accordance with ANZSCO and ASCO (Australian Standard Classification of Occupations) respectively. The occupational status variable is a continuous measure and ranges from 0 (low status) to 100 (high status). Table 10 shows that respondents starting out in low-skill jobs experience an increase in wages and move into jobs with higher occupational status over time.

Table 10 Wage and occupational status of those starting out in low-skill jobs across five years after leaving full-time education

	Years since leaving full-time education				
	1	2	3	4	5
Median average hourly wage (1998 dollars)	10.5	11.9	12.8	13.7	14.4
Median occupational status	27.4	30.7	34.9	36.1	37.3

Notes: Data are weighted.

Source: LSAY 1998 cohort.

We complete our descriptive analysis by looking at the characteristics of those starting out in low-skill jobs and working in low-skill jobs in the fifth year after leaving full-time education. Table 11 shows that low-skill employment continued to be biased toward females in the fifth year. Early school leavers and year 12 completers who did not hold any post-school qualifications or attained at most certificate II accounted for 63.3% of those working in low-skill jobs in the fifth year. In addition, around two-thirds of those working in low-skill jobs in the fifth year were in full-time positions, with a similar proportion in permanent jobs.

Table 11 Selective characteristics of those starting out in low-skill jobs and working in low-skill jobs in the fifth year after leaving full-time education

Selective characteristics	Per cent
Female	56.7
Bachelor degree and above	5.4
Diploma or advanced diploma	11.3
Certificate III and IV	20.0
Year 12 and at most certificate II*	39.8
Early school leavers and at most certificate II*	23.5
Full-time employment	69.1
Permanent employment	65.1
Total observations (n)	**725**

Notes: Data are weighted.
* Includes certificate level unknown.
Source: LSAY 1998 cohort.

Overall, the descriptive data present a positive picture for young people starting out in low-skill jobs in the five-year period after completing full-time education. There is little evidence of 'churning' between low-skill jobs and unemployment or out of the labour force. The two most popular transitions these young people undertake are: progressing from low-skill jobs to high-skill jobs or remaining in low-skill jobs (tables 5 and 6). Some young people starting out in low-skill jobs with part-time or casual positions would eventually move into full-time or permanent work (19.3% of transitions are from part-time to full-time work, and 18.2% are from casual to permanent positions). Over the five-year period, young people starting out in low-skill jobs also experience an increase in real wages and occupational status (table 10).

A further question, which is explored in the next section, is whether or not young people who start out in low-skill jobs experience a wage penalty relative to those who begin their post-education career in high-skill jobs.

Impact of starting out in low-skill jobs on wages

Our goal is to investigate how the labour market rewards young respondents who begin their post-school education career in low-skill jobs (once we control for their individual characteristics). The issue is whether they suffer a wage penalty relative to those who start out in high-skill jobs or, conversely, to those not working. In other words, do young people continue to earn less than they could expect to, once they have had more time to find a job that is a better fit for their ability and qualifications?

Model

We first estimate the association between a respondent's hourly wages (deflated to 1998 levels) with a range of individual characteristics by using the pooled OLS (ordinary least squares) method. The model is specified as follows:

$$\log(wage)_{it} = \boldsymbol{\beta X}_{it} + \boldsymbol{\theta Z}_{i} + \mathbf{v}_{it} \quad \textbf{(1)}$$

where $\log(wage)_{it}$ is the log of hourly wage for individual *i* in time period *t*. $\boldsymbol{X}_{it}$ is a matrix of time varying characteristics for individual *i* in time period *t*. The variables include educational attainment, apprenticeship or traineeship status, and time interacted with the status of the first job after leaving full-time education.

$\mathbf{Z}_{i}$ represents the time-invariant variables that do not vary over the five-year periods such as gender, initial employment status after leaving full-time education, and an individual's academic ability measured in Year 9. The coefficients of the interaction term and the initial employment status allow us to determine whether there is a scarring effect from beginning in a low-skill job. The academic ability is the average score of mathematics and reading scores. $\mathbf{v}_{it}$ is the composite error, which is assumed to be uncorrelated with the explanatory variables in all time periods.

One of the issues that bedevil this type of analysis is that of the unobserved variables that impact on wages. For example, an individual with good educational qualifications who ends up in a low-skill job might have an unobserved attribute such as low motivation. The panel nature of the dataset allows us to control for this 'unobserved heterogeneity' through the use of a random effects model, specified as follows:

$$\log(wage)_{it} = \boldsymbol{\beta X}_{it} + \boldsymbol{\theta Z}_{i} + \boldsymbol{\alpha}_{i} + \boldsymbol{\epsilon}_{it} \quad \textbf{(2)}$$

$\boldsymbol{\alpha}_{i}$ is a random variable and an unobserved heterogeneity that represents the unobserved characteristics of individuals that are stable over time and do not account for $\mathbf{Z}_{i}$. $\boldsymbol{\epsilon}_{it}$ is the time-varying error that represents unobserved factors that change over time. It is assumed that $\boldsymbol{\alpha}_{i}$ is uncorrelated with each explanatory variable in all time periods.

Details of all variables included in the regression are summarised in appendix (table A1).[2]

Results

Table 12 presents the overall effects of initial employment status on the hourly wage from one to five years after leaving full-time education using the pooled OLS and the conventional random effects models. Complete results can be found in detail in the appendix (tables A2 and A3).

Table 12 Overall impacts of starting out in low-skill jobs or not working on the log hourly wage in each of five years after leaving full-time education, relative to starting out in high-skill jobs

Variable	1 year	2 years	3 years	4 years	5 years
Pooled OLS					
Not working in the first year after leaving full-time education	-	-0.161*	-0.145*	-0.130*	-0.114*
	-	(0.016)	(0.011)	(0.013)	(0.019)
Employed in low-skill jobs in the first year after leaving full-time education	-0.148*	-0.132*	-0.116*	-0.100*	-0.084*
	(0.011)	(0.008)	(0.007)	(0.010)	(0.014)
Random effects					
Not working in the first year after leaving full-time education	-	-0.179*	-0.162*	-0.144*	-0.127*
	-	(0.018)	(0.015)	(0.016)	(0.021)
Employed in low-skill jobs in the first year after leaving full-time education	-0.148*	-0.136*	-0.125*	-0.114*	-0.102*
	(0.012)	(0.010)	(0.010)	(0.012)	(0.015)

Notes: Figures in parentheses are standard errors.
* denotes significance at the 1% level.
- denotes undetermined coefficients as people not working earned zero wages in the first year after leaving full-time education.

The two models give similar and significant estimates of the relationship between the initial post-school employment status and hourly wages. In the first year after leaving full-time education, not surprisingly, young respondents who start out in low-skill jobs are paid less (hourly), on average, than those who start out in high-skill jobs. The wage penalty for starting out in a low-skill job is around 15% lower relative to starting out in a high-skill job. Five years after leaving full-time education, the wage penalty still exists but it has diminished to 8%—10%. This implies that job selection is important as there is a long-term wage penalty for taking a job which may not match young people's skills and career aspirations. However, any job is better than no job, given that the wage penalty after five years of having no job a year after leaving full-time education is 11%—13%, compared with 8%—10% for taking a low-skill job.

[2] The random effects model has some limitations. The model only controls for time-invariant predictors that have been measured and included in the regression, not *all* possible time-invariant variables. Therefore, under the key assumption that $\boldsymbol{\alpha}_{\mathbf{i}}$ is uncorrelated with $\boldsymbol{X}_{\mathrm{it}}$ and $\mathbf{Z}_{\mathbf{i}}$, the conventional random effects model does not take account of the potential relationship between the unobserved heterogeneity and the time-varying predictors. Mundlak (1978) suggests that the potential relationship between the individual heterogeneity and the time-varying variables can be controlled through the use of time averages of all predictors. Model (2) is modified as follows:

$$\log(wage)_{\mathrm{it}} = \boldsymbol{\beta X}_{\mathrm{it}} + \boldsymbol{\lambda}\overline{\boldsymbol{X}}_{\boldsymbol{i}} + \boldsymbol{\theta Z}_{\mathbf{i}} + \mathbf{v}_{\mathbf{it}} \quad \textbf{(3)}$$

where $\overline{\boldsymbol{X}}_{\boldsymbol{i}}$ is the mean over time of each time-varying variable for person i, $\boldsymbol{\lambda}$ is the coefficient of $\overline{\boldsymbol{X}}_{\boldsymbol{i}}$, and $\mathbf{v}_{\mathbf{it}}$ is the composite error term which is defined as $\mathbf{v}_{\mathbf{it}} = \boldsymbol{\alpha}_{\mathbf{i}} + \boldsymbol{\epsilon}_{\mathbf{it}}$. The analysis of the estimates from this model is not included in the main text because it gives consistent findings with pooled OLS and the conventional random effects models. Details of the estimates obtained from the random effects model with Mundlak corrections can be found in appendix (table A4).

Leaving low-skill jobs

Taking a job involves a choice, and there is a possibility that young people choose to stay in a low-skill job for good reasons. For example, they may get high satisfaction from it or the wage is relatively high. Preferences for part-time employment may work either way: young people may want to remain in part-time employment and therefore choose to stay in their low-skill job or they may seek full-time employment and find this is best achieved by initially taking a part-time job. Our goal is to determine the factors that influence young people's decisions to remain in a low-skill job or make that transition to a high-skill job. We are specifically interested in whether wages or job satisfaction play a role.

Models

The best way to estimate this relationship is to include in the model a set of control variables relating to the characteristics of low-skill jobs and individual attributes in the previous period *t*. In determining the likelihood of leaving a low-skill job for a high-skill job in the period *t+1*, a logistic model is fitted. The model is specified as follows:

$$\text{logit}\,(y)_{\text{it+1}} = \boldsymbol{\mu}_t + \boldsymbol{\gamma W}_{\text{it}} + \boldsymbol{\theta Z}_{\mathbf{i}} + \boldsymbol{\alpha}_{\mathbf{i}} + \boldsymbol{\epsilon}_{\mathbf{it}} \quad \textbf{(4)}$$

The outcome variable y_{it+1} is represented by a binary variable (progressing from low-skill jobs to high-skill jobs or remaining in low-skill jobs in year *t+1*). Our sample is respondents who start out in low-skill jobs in the first year after leaving full-time education. $\boldsymbol{W}_{\text{it}}$ includes the characteristics of individuals and low-skill jobs that vary with time, while $\mathbf{Z}_{\mathbf{i}}$ represents individual and job characteristics that are time-invariant. Table A5 in the appendix summarises all the independent variables that will be included in the model.

We run three different models and continue the same approach as used in the wage model. That is, within each model, we apply both pooled logit and random effects logit estimations. Firstly, we run a standard model that examines the likelihood of moving from low-skill jobs to high-skill jobs on the foundation of individual characteristics and several attributes of low-skill jobs. The characteristics of these jobs are occupational status, full-time or part-time employment, permanent or casual employment, and job satisfaction.

LSAY asks how satisfied or dissatisfied individuals are with different aspects of their jobs. Responses are recorded on a 6-point scale: 1 for very satisfied, 2 for satisfied, 3 for dissatisfied, 4 for very dissatisfied, 5 for cannot say or do not know, and 6 for not applicable. A factor analysis is applied to obtain an underlying latent variable that relates to job satisfaction, constructed according to the observable level of satisfaction on a number of variables. These measured variables include: the nature of work itself; opportunities to use skills and experiences; work with colleagues and supervisors; payment; opportunities for training promotion; the assigned tasks; and recognition of good performance. These items are coded such that a higher score in the job satisfaction variable reflects higher satisfaction. The job satisfaction variable is normalised.

An additional explanatory variable is then added to the second model: the log wage residual obtained from the wage model in the previous section. The residual wage variable is a measure of how the actual wages of an individual differ from their modelled expected wages. That is, if an individual is doing better than their background characteristics suggest, then they will have a positive residual.

The hypothesis is that individuals are more likely to stay in their low-skill jobs if they are doing better than expected.

In the third model, the log wage residual is replaced by log (wage) in order to test whether young people who receive high wages in their low-skill jobs will have more chances of progressing into high-skill jobs.[3]

Results

Tables 13 and 14 summarise the results, in terms of individual and low-skill job characteristics, from the pooled logit and random effects logit models. Complete results, including coefficients and standard errors, are shown in the appendix (tables A6, A7, A8).

The pooled logit and random effects logit estimation methods on the whole give consistent findings across the three models. As expected, having relatively high human capital (education and experience) makes it more likely that a young person will move to a high-skill job: holding a university qualification is the biggest factor that leads young people to make the transition from low-skill jobs to high-skill jobs; young people who are more than 20 years old are more likely to progress into high-skill jobs compared with those belonging to less mature age groups. Higher academic ability increases the probability of leaving a low-skill job for a high-skill job. Gender also plays a role, with males tending to progress into high-skill jobs more than females. The probability of moving from a low-skill job to a high-skill job in the pooled model declines over time (although the standard errors are high), providing a suggestion of a 'low-skill trap'. However, in the random effects model this pattern disappears.

In relation to job characteristics, working in low-skill jobs with higher occupational status will give young people more opportunity to progress into high-skill jobs. In other words, these low-skill jobs are jobs at the boundary of the high-skill and low-skill divide. It was also found that working in a part-time job makes it more likely that a person will stay in a low-skill job. This may suggest that those seeking part-time work have limited opportunities to get a high-skill job.

The hypothesis that some young people choose to stay in low-skill jobs if they earn more than they expect to receive (given their other characteristics) is rejected, as the coefficients of the wage residual have an unexpected positive sign. The positive coefficients of log (wage) indicate that young people who work in low-skill jobs at the higher end, in terms of hourly earnings, will have a higher chance to move to high-skill jobs, although the estimates are not statistically significant. Finally, the estimate of the job satisfaction variable is not statistically significant.

Thus, any hypothesis that young people choose to stay in low-skill jobs because of the positive attributes of those jobs, such as relatively high pay or high job satisfaction, is rejected. Rather, those with lower human capital are more likely to remain in low-skill jobs, and those with higher human capital or who work in low-skill jobs with high occupational status are more likely to move to high-skill jobs.

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[3] We go on to add Mundlak corrections to resolve the issue of potential correlation between the unobserved heterogeneity and the explanatory variables by assuming a relationship between the means of the time-varying variables and the unobserved heterogeneity for each individual i. The model (3) is modified as follows:

$$\text{logit}\,(y)_{\text{it+1}} = \boldsymbol{\mu}_t + \boldsymbol{\gamma W}_{\text{it}} + \boldsymbol{\rho}\overline{\boldsymbol{W}}_{\boldsymbol{i}} + \boldsymbol{\theta Z}_{\mathbf{i}} + \mathbf{v}_{\mathbf{it}} \quad (4)$$

where $\overline{\boldsymbol{W}}_{\boldsymbol{i}}$ is the means of $\boldsymbol{W}_{\text{it}}$ for individual i, and $\boldsymbol{\rho}$ is the coefficients of $\overline{\boldsymbol{W}}_{\boldsymbol{i}}$. The random effects model with Mundlak corrections, however, did not converge.

Table 13 Likelihood of leaving a low-skill job for a high-skill job: pooled logit and random effects logit models

Variable	Pooled logit			Random effects logit		
	Base model	With log (wage) residual	With log (wage)	Base model	With log (wage) residual	With log (wage)
Highest post-school qualification						
Completed a university qualification	1.101*	1.128*	1.077*	1.354*	1.297*	1.273*
Completed diploma or advanced diploma	0.266	0.318***	0.287	0.387***	0.382***	0.369
Completed certificate III or IV	-0.079	0.007	-0.012	0.025	0.057	0.055
Completed certificate I or II	0.503*	0.506**	0.494**	0.574**	0.510**	0.506**
Completed Year 12	0.061	0.137	0.115	0.167	0.192	0.179
Completed an apprenticeship or traineeship	-0.049	0.035	0.001	0.062	0.091	0.075
Age						
More than 20 years old	0.774*	0.592**	0.592**	0.667**	0.536***	0.469
20 years old	0.733*	0.512**	0.512**	0.578**	0.423	0.367
19 years old	0.494**	0.285	0.285	0.383	0.218	0.178
18 years old	0.363	0.234	0.234	0.251	0.157	0.129
Ability	0.026*	0.024**	0.023**	0.027**	0.025**	0.025**
Gender						
Male	0.206*	0.220*	0.212*	0.256*	0.256*	0.244**
Time						
First year after leaving full-time education	0.165	0.132	0.159	-0.116	-0.107	-0.090
Second year after leaving full-time education	0.014	-0.006	0.012	-0.017	-0.026	-0.014
Third year after leaving full-time education	-0.021	-0.059	-0.050	-0.089	-0.094	-0.090

Notes: *, **, *** denote significance at the 1%, 5% and 10% level respectively.

Table 14 Likelihood of leaving a low-skill job for a high-skill job: pooled logit and random effects logit models

Variable	Pooled logit			Random effects logit		
	Base model	With log (wage) residual	With log (wage)	Base model	With log (wage) residual	With log (wage)
Log (wage)	-	-	0.112	-	-	0.155
Log (wage) residual	-	0.112		-	0.042	
Occupational status	0.017*	0.014*	0.014*	0.016*	0.014*	0.014*
Job satisfaction	-0.016	-0.010	-0.010	-0.030	-0.021	-0.022
Part-time employment	-0.261*	-0.219**	-0.219**	-0.255*	-0.200**	-0.204**
Casual employment	0.076	0.030	0.030	0.085	0.033	0.027

Notes: *, ** denote significance at the 1% and 5% level respectively.
- denotes an excluded variable.

Final comments

The motivation behind this paper was to see whether the low-skill jobs taken by young people on completion of their full-time education should be seen as a stepping stone on one hand or a low-skill trap on the other. On the positive side, those starting in a low-skill job see, on average, improvements in wages and occupational status and a shift from part-time to full-time, or from casual to permanent jobs. There is also a clear shift from low-skill to higher-skill jobs for a significant proportion of individuals. A sizeable proportion of individuals in low-skill jobs return to education.

While this is all positive — a 'stepping stone' view of the world — starting out in a low-skill job has a negative impact on wages, even after five years. This indicates scarring and shows the importance of beginning work in a job commensurate with qualifications. On the other hand, the scarring associated with starting work in a low-skill job is not as severe as not working in the year after leaving education full-time. This poses a quandary for young people: when is any job better than none? A young person must balance an offer of a low-skill job against an unknown probability of a better job coming along.

Another aspect of starting out in low-skill jobs is that the structure of the labour market does matter. Being a male makes it more likely that the person will move to a high-skill job. In addition, young people who work in low-skill jobs but who have high qualifications, high ability, or experience are more likely to move to high-skill jobs. By contrast, some young people are more likely to stay in a low-skill job if they work in a part-time job, which could alternatively suggest that high-skill jobs offer limited opportunities for young people who only seek part-time work. Finally, there is no evidence to show that people choose to stay in low-skill jobs because of positive job attributes such as relatively high wages or high job satisfaction or to suggest that young people get trapped in low-skill jobs.

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Appendix

Table A1 Variables included in the wage models

Variable
Log (wage) (dependent variable)
Highest post-school qualification
Completed a university qualification
Completed diploma or advanced diploma (including associate degrees)
Completed certificate III or IV
Completed certificate I or II*
Completed Year 12
Completed an apprenticeship or traineeship**
Did not complete school and post-school qualification (reference category)
Job status in first year after leaving full-time education
Not working in the first year after leaving full-time education
Employed in low-skill jobs in the first year after leaving full-time education
Employed in high-skill jobs in the first year after leaving full-time education (reference category)
Academic ability
Gender
Male
Female (reference category)
Time

Note: * Includes those who have certificate level unknown as their highest post-school qualification and the apprentice and traineeship status as not complete.

** Includes those who have certificate level unknown as their highest post-school qualification and the apprentice and traineeship status as complete.

Table A2 The impact of starting out in low-skill jobs on the hourly wage: pooled OLS

Variable	Pooled OLS		
	Estimate	Standard error	t
Intercept	2.123*	0.017	125.89
Highest post-school qualification			
Completed a university qualification	0.455*	0.012	38.62
Completed diploma or advanced diploma	0.280*	0.014	19.5
Completed certificate III or IV	0.164*	0.015	11.01
Completed certificate I or II	0.107*	0.017	6.15
Completed Year 12	0.196*	0.010	18.68
Completed an apprenticeship or traineeship	0.300*	0.012	24.44
Did not complete school and post-school qualification	.	.	.
Job status in first year after leaving full-time education			
Not working in the first year after leaving full-time education	-0.193*	0.031	-6.16
Employed in low-skill jobs in the first year after leaving full-time education	-0.164*	0.015	-10.89
Employed in high-skill jobs in the first year after leaving full-time education	.	.	.
Academic ability	0.006*	0.001	7.7
Gender			
Male	0.072*	0.006	11.42
Female	.	.	.
Time	0.066*	0.004	16.33
Job status in first year after leaving full-time education x time			
Not working in the first year after leaving full-time education x time	0.016***	0.009	1.74
Employed in low-skill jobs in the first year after leaving full-time education x time	0.016*	0.005	3.19
Employed in high-skill jobs in the first year after leaving full-time education x time	.	.	.

Notes: *, *** denote significance at the 1% and 10% level respectively.
. denotes the reference category.

Table A3 The impact of starting out in low-skill jobs on the hourly wage: random effects model

Variable	Random effects		
	Estimate	Standard error	t
Intercept	2.093*	0.021	101.82
Highest post-school qualification			
Completed a university qualification	0.450*	0.016	27.84
Completed diploma or advanced diploma	0.266*	0.020	13.47
Completed certificate III or IV	0.166*	0.020	8.34
Completed certificate I or II	0.121*	0.023	5.32
Completed Year 12	0.214*	0.015	14.75
Completed an apprenticeship or traineeship	0.303*	0.017	17.92
Did not complete school and post-school qualification	.	.	.
Job status in first year after leaving full-time education			
Not working in the first year after leaving full-time education	-0.215*	0.029	-7.35
Employed in low-skill jobs in the first year after leaving full-time education	-0.159*	0.015	-10.74
Employed in high-skill jobs in the first year after leaving full-time education	.	.	.
Academic ability	0.008*	0.001	6.8
Gender			
Male	0.061*	0.009	6.78
Female	.	.	.
Time	0.071*	0.003	20.45
Job status in first year after leaving full-time education x time			
Not working in the first year after leaving full-time education x time	0.018**	0.008	2.22
Employed in low-skill jobs in the first year after leaving full-time education x time	0.011*	0.004	2.69
Employed in high-skill jobs in the first year after leaving full-time education x time	.	.	.

Notes: *, ** denote significance at the 1% and 5% level respectively.
. denotes the reference category.

Table A4 The impact of starting out in low-skill jobs on the hourly wage: random effects model with Mundlak corrections

Variable	Random effects model with Mundlak corrections		
	Estimate	Standard error	t
Intercept	2.018*	0.022	90.31
Highest post-school qualification			
Completed a university qualification	0.206*	0.033	6.23
Completed diploma or advanced diploma	0.080*	0.030	2.7
Completed certificate III or IV	0.020	0.026	0.76
Completed certificate I or II	0.014	0.026	0.54
Completed Year 12	0.122*	0.018	6.7
Completed an apprenticeship or traineeship	0.256*	0.018	14.41
Did not complete school and post-school qualification	.	.	.
Job status in first year after leaving full-time education			
Not working in the first year after leaving full-time education	-0.200*	0.029	-6.85
Employed in low-skill jobs in the first year after leaving full-time education	-0.150*	0.015	-10.13
Employed in high-skill jobs in the first year after leaving full-time education	.	.	.
Academic ability	0.007*	0.001	6.31
Gender			
Male	0.066*	0.009	7.4
Female	.	.	.
Time	0.075*	0.004	21.55
Job status in first year after leaving full-time education x time			
Not working in the first year after leaving full-time education x time	0.014***	0.008	1.8
Employed in low-skill jobs in the first year after leaving full-time education x time	0.010**	0.004	2.41
Employed in high-skill jobs in the first year after leaving full-time education x time	.	.	.

Notes: *, **, *** denote significance at the 1%, 5% and 10% level respectively.
. denotes the reference category.

Table A5 Variables included in the logit model estimating the probability of working in low-skill jobs

Variable
Low-skill job characteristics
Wage residual
Log (wage)
Occupational status
Job satisfaction
Working hours
Part-time
Full-time (reference category)
Employment status
Casual employment
Permanent employment (reference category)
Highest post-school qualification
Completed a university qualification
Completed diploma or advanced diploma (including associate degrees)
Completed certificate III or IV
Completed certificate I or II*
Completed Year 12
Completed an apprenticeship or traineeship**
Did not complete school and post-school qualification (reference category)
Age
More than 20 years old
20 years old
19 years old
18 years old
Under 18 years old (reference category)
Gender
Male
Female (reference category)
Time
First year after leaving full-time education
Second year after leaving full-time education
Third year after leaving full-time education
Fourth year after leaving full-time education

Note: * includes those who have certificate level unknown as their highest post-school qualification and the apprentice and traineeship status as not complete.

** includes those who have certificate level unknown as their highest post-school qualification and the apprentice and traineeship status as complete.

Table A6 The likelihood of working in low-skill jobs by pooled logit and random effects logit models

Variable	Pooled logit			Random effects logit		
	Estimate	Standard error	Chi-square	Estimate	Standard error	t
Intercept	-2.773*	0.274	102.171	-2.596*	0.311	-8.35
Jobs characteristics						
Occupational status	0.017*	0.004	16.049	0.016*	0.005	3.32
Job satisfaction	-0.016	0.039	0.170	-0.030	0.045	-0.66
Part-time employment	-0.261*	0.085	9.351	-0.255*	0.097	-2.62
Full-time employment	.	.	.	.	.	.
Casual employment	0.076	0.083	0.842	0.085	0.096	0.89
Permanent employment	.	.	.	.	.	.
Highest post-school qualification						
Completed a university qualification	1.101*	0.179	37.780	1.354*	0.218	6.21
Completed diploma or advanced diploma	0.266	0.179	2.210	0.387***	0.222	1.74
Completed certificate III or IV	-0.079	0.185	0.184	0.025	0.224	0.11
Completed certificate I or II	0.503*	0.195	6.666	0.574**	0.245	2.34
Completed Year 12	0.061	0.136	0.198	0.167	0.166	1
Completed an apprenticeship or traineeship	-0.049	0.166	0.088	0.062	0.202	0.31
Did not complete school and post-school qualification	.	.	.	.	.	.
Age						
More than 20 years old	0.774*	0.250	9.583	0.667**	0.279	2.39
20 years old	0.733*	0.242	9.131	0.578**	0.266	2.17
19 years old	0.494**	0.239	4.286	0.383	0.260	1.47
18 years old	0.363	0.241	2.280	0.251	0.259	0.97
Under 18 years old	.	.	.	.	.	.
Ability	0.026*	0.010	7.083	0.027**	0.012	2.22
Gender						
Male	0.206*	0.077	7.097	0.256*	0.095	2.7
Female	.	.	.	.	.	.
Time						
First year after leaving full-time education	0.165	0.133	1.528	-0.116	0.149	-0.78
Second year after leaving full-time education	0.014	0.130	0.012	-0.017	0.142	-0.12
Third year after leaving full-time education	-0.021	0.129	0.025	-0.089	0.140	-0.64
Fourth year after leaving full-time education	.	.	.	.	.	.

Notes: *, **, *** denote significance at the 1%, 5% and 10% level respectively.
. denotes the reference category.

Table A7 The likelihood of working in low-skill jobs by pooled logit and random effects logit models with log (wage) residual

Variable	Pooled logit			Random effects logit		
	Estimate	Standard error	Chi-square	Estimate	Standard error	t
Intercept	-2.509*	0.286	76.702	-2.392*	0.322	-7.43
Jobs characteristics						
Log (wage) residual	0.112	0.111	1.010	0.042	0.155	0.27
Occupational status	0.014*	0.004	9.787	0.014*	0.005	2.76
Job satisfaction	-0.010	0.042	0.061	-0.021	0.047	-0.46
Part-time employment	-0.219**	0.088	6.221	-0.200**	0.100	-2.01
Full-time employment	.	.	.	.	.	.
Casual employment	0.030	0.086	0.122	0.033	0.099	0.33
Permanent employment	.	.	.	.	.	.
Highest post-school qualification						
Completed a university qualification	1.128*	0.191	35.018	1.297*	0.226	5.74
Completed diploma or advanced diploma	0.318***	0.189	2.846	0.382***	0.230	1.66
Completed certificate III or IV	0.007	0.193	0.001	0.057	0.229	0.25
Completed certificate I or II	0.506**	0.205	6.106	0.510**	0.255	2
Completed Year 12	0.137	0.144	0.907	0.192	0.172	1.12
Completed an apprenticeship or traineeship	0.035	0.175	0.040	0.091	0.208	0.44
Did not complete school and post-school qualification	.	.	.	.	.	.
Age						
More than 20 years old	0.592**	0.264	5.041	0.536***	0.290	1.85
20 years old	0.512**	0.255	4.039	0.423	0.278	1.52
19 years old	0.285	0.248	1.320	0.218	0.269	0.81
18 years old	0.234	0.249	0.885	0.157	0.267	0.59
Under 18 years old	.	.	.	.	.	.
Ability	0.024**	0.010	5.546	0.025**	0.012	2.07
Gender						
Male	0.220*	0.080	7.621	0.256*	0.097	2.65
Female	.	.	.	.	.	.
Time						
First year after leaving full-time education	0.132	0.139	0.903	-0.107	0.154	-0.7
Second year after leaving full-time education	-0.006	0.135	0.002	-0.026	0.146	-0.17
Third year after leaving full-time education	-0.059	0.135	0.190	-0.094	0.145	-0.65
Fourth year after leaving full-time education	.	.	.	.	.	.

Notes: *, **, *** denote significance at the 1%, 5% and 10% level respectively.
. denotes the reference category.

Table A8 The likelihood of working in low-skill jobs by pooled logit and random effects logit models with log (wage)

Variable	Pooled logit			Random effects logit		
	Estimate	Standard error	Chi-square	Estimate	Standard error	t
Intercept	-2.764*	0.351	62.085	-2.691*	0.397	-6.78
Jobs characteristics						
Log (wage)	0.112	0.111	1.010	0.155	0.126	1.23
Occupational status	0.014*	0.004	9.787	0.014*	0.005	2.68
Job satisfaction	-0.010	0.042	0.061	-0.022	0.047	-0.48
Part-time employment	-0.219**	0.088	6.221	-0.204**	0.100	-2.04
Full-time employment	.	.	.	.	.	.
Casual employment	0.030	0.086	0.122	0.027	0.099	0.27
Permanent employment	.	.	.	.	.	.
Highest post-school qualification						
Completed a university qualification	1.077*	0.188	33.007	1.273*	0.225	5.66
Completed diploma or advanced diploma	0.287	0.187	2.348	0.369	0.229	1.61
Completed certificate III or IV	-0.012	0.192	0.004	0.055	0.228	0.24
Completed certificate I or II	0.494**	0.205	5.834	0.506**	0.255	1.98
Completed Year 12	0.115	0.144	0.643	0.179	0.172	1.04
Completed an apprenticeship or traineeship	0.001	0.174	0.000	0.075	0.208	0.36
Did not complete school and post-school qualification	.	.	.	.	.	.
Age						
More than 20 years old	0.592**	0.264	5.041	0.469	0.294	1.6
20 years old	0.512**	0.255	4.039	0.367	0.280	1.31
19 years old	0.285	0.248	1.320	0.178	0.271	0.66
18 years old	0.234	0.249	0.885	0.129	0.268	0.48
Under 18 years old	.	.	.	.	.	.
Ability	0.023**	0.010	5.233	0.025**	0.012	2.03
Gender						
Male	0.212*	0.080	6.974	0.244**	0.097	2.51
Female	.	.	.	.	.	.
Time						
First year after leaving full-time education	0.159	0.138	1.329	-0.090	0.154	-0.58
Second year after leaving full-time education	0.012	0.134	0.008	-0.014	0.146	-0.1
Third year after leaving full-time education	-0.050	0.134	0.136	-0.090	0.145	-0.62
Fourth year after leaving full-time education	.	.	.	.	.	.

Notes: *, ** denote significance at the 1% and 5% level respectively.
. denotes the reference category.

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