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The Characteristics of 'Gap-Year' Students and Their Tertiary Academic Outcomes*

ELISA ROSE BIRCH and PAUL W. MILLER
Business School, University of Western Australia, Crawley, Western Australia, Australia

This study examines the determinants of taking a 'gap-year' (the decision to take a year off study between completing high school and commencing university) and the subsequent impact of this decision on marks at university. It finds that the main factors influencing students' decisions on university deferment are their previous academic achievements, age and location. Students who defer university are found to have higher marks than students who commence university directly after completing high school. This mark advantage is more pronounced among low-performing students, particularly male students, who are in the lower-half of the university marks distribution.

I Introduction

The decision to take a break of a year or more between completing high school and entering university, commonly termed as taking a 'gap-year', has become increasingly popular among high school graduates in Australia. For example, in 1974 approximately 4 per cent of students were estimated to defer their university education for 1 year and then return to study (see Linke *et al*., 1985). By 2004 the proportion of students taking a year off between high school and university study was estimated to be approximately 11 per cent (see Krause *et al*., 2005). Similar increases have been reported in the UK. For instance, Brown (2004) indicates that the proportion of students deferring university rose by almost 30 per cent between 1997 (6.2 per cent) and 2002 (7.9 per cent).

Studies of this practice have found that the proportion of students deferring university varies according to their background characteristics, such as gender and race, and their early academic achievements, such as university entrance exam results (for Australia see Bornholt *et al*., 2004; Linke *et al*., 1985; for the USA see Carroll, 1989; Grosset, 1993; Horn *et al*., 2005). Although these findings have broad appeal, the literature is quite sparse compared to that on other social and economic behaviour.

There have also been several reports that note the benefits of taking a 1-year break between high school and university (see Holroyd, 1998; Hoover, 2001; Macleod Weeks, 2001; Wilson-Clark, 2001; Brown, 2004; Taylor, 2004). For example, Brown (2004, p. 11) suggests that gap-year students are perceived to be 'more mature, more self-reliant and independent' than non-gap-year students. Similarly, Holroyd (1998, p. 47) indicates that

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Correspondence: Paul W. Miller, Business School, Mail Bag M251, University of Western Australia, 35 Stirling Highway, Crawley, WA 6009, Australia. Email: paul.miller@uwa.edu.au

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taking a 1-year break between high school and university allows 'motivation for and interest in study to be renewed'. These studies, however, only discuss the perceived benefits of taking a gap-year and are mainly based on interviews with a small number of students. Little is known about the actual academic outcomes of gap-year students.

The purpose of this paper is to enhance the understanding of gap-year students in Australia. It examines the determinants of students' decisions to defer university study for 1 year and quantifies the relationship between taking a year off study and tertiary academic outcomes. The paper is structured as follows. Section II provides a brief literature review of the main findings of Australian studies that have a focus on gap-year students. Section III discusses the estimating procedures used in the analysis. The empirical results are presented in Section IV and a summary of the major findings is given in Section V.

II Literature Review on 'Gap-Year' Students

Most of the Australian literature on gap-year students is based on surveys of students (e.g. see Pearson, 1977; Thiele, 1977; Watkins, 1977; Weaving, 1978; Gribble, 1984; Linke *et al*., 1985; Wright *et al*., 1996; Lamb, 2001; Bornholt *et al*., 2004; Hillman, 2005; Krause *et al*., 2005). These studies mainly compare the proportion of students deferring university by selected characteristics, and are largely of a descriptive nature.

The definition of gap-year varies across studies. For example, Hillman (2005) defines gap-year students as those who decide to defer university once they commence their course. Krause *et al*. (2005) define gap-year students as students who commence university 1 year after completing secondary school and Lamb (2001) defines students who defer university as those who entered the labour force for a period of time after completing high school and before entering university.[1] The more general definitions of Krause *et al*. (2005) and Lamb (2001) accord best with common usage of the term 'gap-year' and are followed in the present study.

The literature has identified that students with low achievement levels (as measured by their score on university entrance exams or by marks on other exams taken in high school) have higher rates of university deferment than other students (see Barrett & Powell, 1977; Weaving, 1978; Elswoth *et al*., 1982; Linke *et al*., 1985; Bornholt *et al*., 2004; Hillman, 2005). This negative relationship may be linked to the failure of students who defer university to gain entry to their preferred courses at university. Linke *et al*. (1985), for example, report that the rates of university deferment for students who are offered courses that are their third or fourth preference to university are 60 per cent greater than the rates of deferment for students who receive their first preference to university. The negative relationship between scores on university entrance examinations and deferring university could also be attributed to motivation for study, as students who have lower university entrance scores may be less motivated to continue study.

Students' gender and home location are other key determinants of deferring university.[2] It has been shown that female students are more likely to defer university than male students (see, for example, Lamb, 2001; Hillman, 2005). Students who live in rural areas are also more likely to have a 1-year break between high school and university (see Barrett & Powell, 1977; Weaving, 1978; Linke *et al*., 1985; Bornholt *et al*., 2004; Krause *et al*., 2005). The larger proportion of students from non-urban areas taking a gap-year has been attributed to students from these areas needing to accumulate savings for the additional costs (i.e. living) of attending university (see Krause *et al*., 2005).

Wealth is another potential factor influencing students' decisions on taking a gap-year, although the findings on its impact in Australia are mixed. On one hand, the studies by Wright *et al*. (1996) and Krause *et al*. (2005) suggest that students from lower socioeconomic backgrounds and those who are financially independent from their parents have a higher likelihood of deferring university

[1] Most overseas studies that profile the determinants of taking a year off between high school and university are from the USA (see Carroll, 1989; Berkner *et al*., 1996, 2003; Horn & Carroll, 1998; Horn *et al*., 2005). These studies examine both the determinants of taking time off while at university, known as a stopout, and delaying entry to university for a number of years.

[2] Students' race and disability status have also been identified as determinants of deferring university. The proportion of students deferring university appears to be larger for students from English-speaking backgrounds than it is for students from non-English-speaking backgrounds (see Lamb, 2001; Krause *et al*., 2005). Moreover, the proportion of students deferring university is larger for students without disabilities than it is for students with disabilities (see Lamb, 2001).

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than other students. On the other hand, the studies by Lamb (2001) and Linke *et al*. (1985) indicate that the proportion of students taking a gap-year is positively associated with their families' socioeconomic status (SES). There are no reasons apparent from the studies for this difference.

Finally, the proportion of students deferring university has been found to differ by the type of secondary school attended. Students from independent schools appear to be more likely to defer university than students from government schools (see Linke *et al*., 1985; Bornholt *et al*., 2004; Hillman, 2005; Krause *et al*., 2005).[3]

There is only a limited number of studies that compare the academic outcomes of students who take a gap-year with those for students who do not (for Australia see Pearson, 1977; Linke *et al*., 1985; Lamb, 2001; McMillan, 2005; and for the USA see Berkner *et al*., 2003; Horn *et al*., 2005). Moreover, the findings of these studies are mixed. Linke *et al*. (1985) and Pearson (1977) report that students who defer university perform better when they return to university than those who do not defer their studies. The studies by Horn *et al*. (2005), Berkner *et al*. (2003) and Lamb (2001), however, suggest that deferring university actually adversely affects academic outcomes and later labour market outcomes. These studies do not, however, focus specifically on mean marks achieved at university.

In summary, according to the Australian literature that examines the characteristics of gap-year students, the main factors that influence students' decisions on taking a gap-year are associated with their prior academic achievement (such as entrance score to university), their motivation for university study (proxied by, for example, course preference) and their ability to finance their studies (proxied by wealth and home location). There is limited evidence that supports the commonly held perception that students who defer university have higher academic achievements than students who do not defer university.

III Estimating Method, Data and Estimating Equations

The data for this analysis of the determinants of taking a gap-year and of the impact of this decision on marks at university are drawn from the student records files at the University of Western Australia (UWA). These files have information on students' academic achievements, such as entrance score to university (measured by the Tertiary Entrance Rank, TER) and marks at university, as well as students' background characteristics (e.g. gender and home location). The data sample is comprised of students studying in their first year of university in 2002, 2003 or 2004 who entered university directly after completing high school or who took a 1-year break after completing high school and entering university.[4] Full-fee-paying overseas students and those missing information on any of the variables used in the analyses have been excluded from the sample. A sample of 6896 students results following these restrictions.

Following Linke *et al*. (1985) and Krause *et al*. (2005), students who take a gap-year are defined as those who commence study at UWA 1 year after completing high school. Non-gap-year students are defined as students who enter university directly after completing high school. As shown in Table 1, approximately 6 per cent of students took a year off between completing high school and commencing university. The percentage representation of students taking a gap-year varies according to their characteristics. Similar to findings in other Australian studies, the proportion of students taking a gap-year is positively correlated with being female, living outside the capital city, being born in an English-speaking country and speaking English at home. There was also a higher proportion of students taking a gap-year in 2003 (i.e. first-year university students in 2004) students taking a gap-year in 2001 (first-year university students in 2002). The percentage of gap-year students is negatively correlated with students' age, TER and SES.[5] There is a

[3] The proportion of students deferring university may vary by the course offered (see Linke *et al*., 1985; Lamb, 2001; Hillman, 2005) and by the institution offering the courses (see Linke *et al*., 1985; Hillman, 2005).

[4] There are 42 students who have a gap of more than 1 year between completing high school and entering university. For 6 of these, the length of the gap-year could not be determined, 4 had a gap-year of more than 2 years, and 32 (less than half of 1 per cent of the sample) had a gap-year of 2 years. This study is restricted to the more homogenous group that has a 1-year break prior to commencing their university studies. The 1-year deferment period is consistent with the university's 'usual' admission policies.

[5] Students' TER is essentially used as selection criteria for entry to university. It is a rank out of 100 that measures students' final mark on university entrance exams as a ranked position relative to other students. For example, a TER of 90.0 indicates that the student is equal to or better than 90 per cent of the school age population completing high school.

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TABLE 1
The Percentage of Students Taking a Gap-Year by Selected Characteristics

Characteristic	Gap-year students	Non-gap-year students	Row total
All students	6.31	93.69	100.00
Gender			
Male	5.94	94.06	100.00
Female	6.66	93.34	100.00
Home location*			
Capital city	5.25	94.75	100.00
Outside the capital city	14.95	85.05	100.00
Birthplace*			
Australia	7.22	92.78	100.00
Overseas in an English-speaking country	7.42	92.58	100.00
Overseas in a non-English-speaking country	1.52	98.48	100.00
Language spoken at home*			
English	6.93	93.07	100.00
A language other than English	0.98	99.02	100.00
Disability status*			
Has a disability	6.39	93.61	100.00
Does not have a disability	2.58	97.42	100.00
Age at the end of high school*			
Aged under 17 years	10.40	89.60	100.00
Aged 17 years	8.07	91.93	100.00
Aged over 17 years	1.31	98.69	100.00
Tertiary entrance rank (TER)*			
TER below 76	14.81	85.19	100.00
TER between 76 and 85	9.16	90.84	100.00
TER between 86 and 90	7.69	92.31	100.00
TER between 91 and 95	4.79	95.21	100.00
TER over 95	5.67	94.33	100.00
Course preference			
First or second preference	6.43	93.57	100.00
Third or fourth preference	4.05	95.95	100.00
Socioeconomic status (SES)*†			
SES lowest quartile	8.43	91.57	100.00
SES second lowest quartile	6.23	93.77	100.00
SES in second highest quartile	4.05	95.95	100.00
SES in highest quartile	6.51	93.49	100.00
Year*			
Enrolled in university in 2002	5.82	94.18	100.00
Enrolled in university in 2003	5.28	94.72	100.00
Enrolled in university in 2004	7.80	92.20	100.00

Notes: * indicates that the distribution of gap-year and non-gap-year students varies significantly across the characteristics at the 10 per cent level. † Socioeconomic status is measured by the Australian Bureau of Statistics' 'Index of Economic Resources'. This index contains information on the economic resources of families living in particular regions. A high score on the index suggests that the region has a higher proportion of high-income families, a lower proportion of low-income families, a larger number of households living in homes with four or more bedrooms, and higher rent and mortgage payments (Australian Bureau of Statistics, 2001).

smaller proportion of students who do not have a disability or who were accepted into their third or fourth preference who take a gap-year. The proportion of students taking a gap-year varies significantly across the categories of each of the variables listed in Table 1 other than that for gender and course preference.

These descriptive statistics accord with expectations in each instance other than for the smaller propensity to have a gap-year for those who were

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accepted into a course that was their third or fourth preference. This may be a reflection of the use of data for a single higher education institution in the analysis: some students who were offered a low course preference may have opted to study through the Technical and Further Education (TAFE) sector or at another university and, thus, would not be captured in the dataset.

It is apparent from the literature that students' decisions to take a gap-year are potentially influenced by a wide range of factors. This is similar to the university enrolment decision, which has been modelled in the literature using a random utility framework (e.g. see Singell & Stone, 2002). In this approach, individual i takes a gap-year if the utility of the decision exceeds the utility without the gap-year experience. Technically, the horizon should be the lifetime, but a shorter preference period could be contemplated (or effectively imposed by having a relatively high discount rate). The net utility from the gap-year is not observed, however, and a latent index framework is therefore adopted. In this framework, the net utility of the gap-year, or the unobserved tendency to have a break between completing high school and commencing university, is associated with a range of personal characteristics and prior academic achievements (X_i). X_i will capture the utility that derives from the net monetary benefits of the gap-year experience, as well as that linked to the personal enhancement that might be derived from the break in study.

Hence, the unobserved propensity to have a gap-year (GY_i^*) is modelled as a linear function of X_i: namely,

$$GY_i^* = \alpha X_i + \varepsilon_i, \quad (1)$$

where α is a vector of weights to be estimated, and ε is a disturbance term.

This latent index is linked to an observed binary indicator of whether the student has a gap-year (GY_i) as follows:

$GY_i = 1$ where $GY_i^* > 0$, and the student takes a gap-year;

$GY_i = 0$ where $GY_i^* \leq 0$, and the student enrols in university immediately following the completion of high school.

It is assumed that $\varepsilon_i \sim N(0,1)$. A probit model is therefore used to obtain estimates of α.

One of the factors that will enter into X_i is any improvement in academic performance at university expected following the gap-year. This is unobserved, although it should vary according to the model of university performance developed below. Equation (1) should, therefore, be viewed as a reduced-form derived from a structural model based on such expected increments.

University performance ($OUTPUT_i$) has typically been modelled within an education production function framework. Thus,

$$OUTPUT_i = f(PC_i, SC_i, ENV_i), \quad (2)$$

where PC_i is a vector of personal characteristics that affect academic performance, SC_i denotes school characteristics that impact on academic outcomes, and ENV_i represents the environmental factors that are related to academic success. Measures of university performance vary, but in recent Australian studies (e.g. Dobson & Skuja, 2005; Win & Miller, 2005) there has been a focus on the weighted average first-year mark.

The personal characteristics considered in most Australian studies of the academic performance of university students have been limited by the information collected by universities, but include gender, home location, birthplace and prior academic achievements. Of these, the studies by Dobson and Skuja (2005) and Win and Miller (2005) show that prior academic achievement is the most important.

School characteristics have been shown to affect tertiary academic outcomes. The main school characteristics used have been school type (independent, Catholic and government) and coeducational status, although descriptions of the school attended (e.g. representation of students with relatively high scores on the tertiary entrance examinations) have been used in some studies (e.g. Birch & Miller, 2005). These variables are held to impact on the education production function directly via the attitudes towards study that are developed in high school, and indirectly through effects on the TER score used in university entrance decisions.

The environmental factors that may impact on university outcomes are intended to capture the circumstances during the academic year (e.g. whether studies part-time, whether engages in market work) and circumstances leading into the academic year, other than those captured by the characteristics of the school attended. Of primary interest here is a gap-year, which may, according to the literature, increase motivation and, hence, lead to a greater efficiency in the education production function, and this will be reflected in better marks at university.

The specifications of the estimating equations adopted in this study are constrained by the information available on the student record files. Hence, the binary gap-year variable (where students who defer university study for 1 year are assigned a

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value of 1, and students who enter university the year following the completion of high school are given the value of zero) is related to students' gender, home location, birthplace, language spoken at home, disability status, age, SES, TER and course preference.[6] The year of study is also included in the model to capture the variations in the number of students deferring each year.[7] The model can be written as:

$$Gap_i = \beta_0 + \beta_1 Female_i + \beta_2 Noncity_i + \beta_3 ESB_i + \beta_4 NESB_i + \beta_5 NoEnglish_i + \beta_6 Disable_i + \beta_7 AgeHS_i + \beta_8 AgeHS_i^2 + \beta_9 SES_i + \beta_{10} TER_i + \beta_{11} Bottom_i + \beta_{12} FY2003_i + \beta_{13} FY2004_i + \varepsilon_i. \quad (3)$$

The age at the completion of high school is entered in the model in quadratic form as this gave a slightly better fit than a model based on a linear age variable. Quadratic specification for the TER and SES variables were also examined, although the linear terms were preferred on statistical grounds.

The model to estimate the determinants of students' tertiary academic success is similar to the models presented in recent studies in the Australian literature, such as Dobson and Skuja (2005) and Birch and Miller (2006a), except for that fact that it contains information on whether the student takes a gap-year and excludes information on school type.[8] The specification adopted is:[9]

$$Mark_i = \beta_0 + \beta_1 Female_i + \beta_2 Noncity_i + \beta_3 ESB_i + \beta_4 NESB_i + \beta_5 NoEnglish_i + \beta_6 Disable_i + \beta_7 AgeHS_i + \beta_8 SES_i + \beta_9 SES_i^2 + \beta_{10} TER_i + \beta_{11} TER_i^2 + \beta_{12} Bottom_i + \beta_{13} Parttime_i + \beta_{14} HECS_i + \beta_{15} Gap_i + \beta_{16} FY2003_i + \beta_{17} FY2004_i + \varepsilon_i. \quad (4)$$

In the model, students' tertiary academic performance is measured by their weighted average first-year mark (see Appendix I).[10] Note that age is entered in this equation in linear form only: a quadratic term did not improve the fit of the model.

Equations (3) and (4) are estimated separately for men and women. Gender differences in estimated coefficients are discussed below.

IV Empirical Results

(i) Determinants of Taking a Gap-Year

The results from the estimation of Equation (3) using a probit model are presented in Table 2. This table contains the estimated coefficients and the associated '*t*' statistics. The first column presents results for the total sample (when gender effects are captured by a dichotomous variable). Results for men are presented in column (ii) and for women in column (iii). Note that the coefficients presented are for the probit index. Marginal effects computed from these are discussed in the text. For dummy variables these refer to percentage point differences from the omitted categories, with the probit index evaluated at the mean of all variables other than the variable being considered.

Overall, the model performs well. The prediction success rate for the total sample is 93.4 per cent, compared to the prediction success rate under random assignment, using the mean proportion of students taking a gap-year of 0.063, of 88.6 per cent. Thus, the model is able to account for 44.7 per cent of the incorrect predictions under random assignment. The McFadden R^2 is 0.08 and the model χ^2 is significant. The models for men and women are characterised by similar fits.

Many of the findings in the first column of Table 2 are comparable with those obtained using the unstandardised data presented in Table 1. Students' home location has a strong positive

[6] A description of these variables is presented in Appendix I.

[7] Information on faculty or degree could also be included, though decisions about formal deferral are typically made centrally, without consultation with the faculty concerned. A Wald test could not reject the null hypothesis that the propensity to take a gap-year does not vary by degree enrolled in.

[8] Information on school type is not available for students who defer university. While Birch and Miller (2005) indicate that school type is a key determinant of academic success at university, they also report that the inclusion of school type variables in models of academic success does not have a substantial impact on the effects of most other variables.

[9] Information on faculty or degree can be included in the model. Win and Miller (2005, p. 11) report that '... when course variables were added to the model, few were associated with statistically significant effects, and among those that were, the estimated effects were quite small. Importantly, the underlying results for the remaining variables had no significant changes'. The extent to which this result carries over to a more extensive specification of the degree variables is considered below.

[10] The mean weighted average mark for students in the data sample is 63.6. It is 64.6 for students who defer university for 1 year, and 63.5 for students who do not take a gap-year. The difference in the mean marks of gap-year and non-gap-year students is significant at the 10 per cent level ('*t*' statistic of 1.78).

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TABLE 2
Results from the Estimation of the Determinants of Taking a Gap-Year

Variable	Total sample[†]	Men	Women
Constant	7.785	–75.877	5.096
	(5.97)***	(–1.84)*	(3.27)***
Gender: *Female*	0.049	[§]	[§]
	(1.03)		
Home location: *Noncity*	0.555	0.741	0.415
	(7.26)***	(6.53)***	(3.93)***
Birthplace:			
ESB	0.089	0.201	0.006
	(1.03)	(1.57)	(0.05)
NESB	–0.435	–0.399	–0.406
	(–4.03)***	(–2.49)**	(–2.78)***
Language spoken: *NoEnglish*	–0.529	–0.544	–0.517
	(–3.44)***	(–2.42)**	(–2.48)**
Disability status: *Disable*	–0.404	–0.542	–0.362
	(–1.79)*	(–1.51)	(–1.20)
Age in high school			
AgeHS	–0.623	9.42	–0.457
	(–6.89)***	(1.99)**	(–4.30)***
$AgeHS^2$	0.009	–0.289	0.007
	(6.41)***	(–2.12)**	(4.04)***
Socioeconomic status: *SES*/100	0.053	0.055	0.052
	(1.40)	(0.95)	(1.01)
Tertiary entrance rank: *TER*	–0.021	–0.033	–0.014
	(–4.48)***	(–4.68)***	(–2.15)**
Course preference: *Bottom*	–0.213	–0.348	–0.135
	(–1.60)	(–1.69)*	(–0.75)
Year:			
FY2003	–0.042	0.075	–0.151
	(–0.67)	(0.78)	(–1.75)*
FY2004	0.167	0.223	0.126
	(2.86)***	(2.44)**	(1.60)
	Mean *Gap* = 0.063	Mean *Gap* = 0.059	Mean *Gap* = 0.063
	McFadden R^2 = 0.076	McFadden R^2 = 0.119	McFadden R^2 = 0.057
	PSR[‡] = 93.692	PSR[‡] = 94.046	PSR[‡] = 93.315
	RASR = 88.579	RASR = 88.834	RASR = 87.587
	χ^2 = 246.512	χ^2 = 178.800	χ^2 = 99.100
	Sample size = 6896	Sample size = 3336	Sample size = 3560

Notes: [†] The '*t*' statistics are in parentheses. ***, ** and * denote significance at the 1, 5 and 10 per cent levels, respectively [‡] PSR refers to the prediction success rate. RASR refers to the random assignment success rate. The prediction success rate under random assignment using the sample mean proportion of students' taking a gap-year (*Gap*) is determined by $[Gap^2 + (1 - Gap)^2]100\%$. [§] Not included in the estimating equation.

effect on the probability of deferring university for 1 year, with students whose home was located outside the capital city (*Noncity*) being 8 per cent more likely to defer university than students who live in the capital city. Given that the UWA is located in the capital city, and the fact that it does not offer courses in external mode delivery, this finding may be a result of higher costs of attending university for students who do not live close to their institutions. Krause *et al*. (2005) attribute the high rate of university deferment among students living in rural areas to the living costs of attending university.

Students who were born overseas in a non-English-speaking country (*NESB*), or who spoke a language other than English at home (*NoEnglish*), have a lower probability of taking a gap-year. The reductions in these students deferring university

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for 1 year were 3 and 4 per cent, respectively. These findings imply lower net monetary benefits from a gap-year for these students and/or a greater role for non-monetary influences. Among the latter could be the apparent high motivation towards tertiary study among many non-English-speaking background immigrant groups (see Birrell, 1987).

Table 2 shows that students who identified themselves as having a disability, impairment or a long-term medical condition (*Disable*) have a 3 percentage points lower probability of taking a gap-year than students who did not have a disability. This finding is consistent with findings presented in Lamb (2001).

The probability of deferring university decreases at a decreasing rate with age across most age groups represented in the analysis.[11] For example, the predicted probability of taking a gap-year for students who are aged 16 years when they complete their secondary school is 12.2 per cent. It is 7.1 per cent for students who are aged 17 years when they finish high school, 4.0 per cent for students aged 18 years when they complete school and 1.1 per cent for the small group of students aged 20 years at the end of high school. Students' age at completing high school continues to have a negative impact on deferring university up until the age of 34 years. Many commentators have attributed age effects of this nature to the greater personal enhancement that can be achieved via a gap-year by those who complete high school at an earlier age, and in particular to the benefits they derive from being more mature when they commence university.[12]

Consistent with the findings in Linke *et al*. (1985), Hillman (2005) and Bornholt *et al*. (2004), there is a strong negative relationship between the probability of deferring university and students' score on the university examinations. Hence, the predicted rate of university deferment for students with a TER around the minimum cut-off rank for entry to UWA (around 80) is 9.9 per cent. In comparison, it is 6.9 per cent for students with a TER of 90 and 4.6 per cent for students with the highest possible TER (of 99.95). As discussed in the literature, this finding is likely to be an outcome of students who perform well on university entrance exams being more motivated for study than students who do not perform as well on the TER.

The findings in Table 2 also show that the probability of taking a gap-year varies over time. Specifically, the probability of students taking a gap-year for 2003 (*FY2004*) was 2 per cent larger than the predicted probability of students taking a gap-year for 2001. The probability of deferring university for 1 year does not appear to be influenced by SES,[13] course preference (*Bottom*) or students' gender (*Female*).

However, estimation of the model on separate samples of men and women shows that the coefficients in the two samples are not the same, with the statistic from the likelihood ratio test being significant at the 5 per cent level. Five coefficients differ between men and women at the 5 per cent level: age and its square, TER, living in a non-capital city area and the intercept term. The '*Y2003*' dummy differed significantly between men and women at the 10 per cent level.[14]

These significant differences show that female students from non-capital city areas are less likely than their male counterparts to take a gap-year. TER has a larger impact on the probability of deferring for male students. The age effects are slightly less pronounced for women than for men among the younger age groups who dominant the sample. This is illustrated in Figure 1, which presents the relationship between the probability of taking a gap-year and age among 16- to 21-year-olds. This relationship decreases monotonically among the older male age groups, but has a turning point at 33 years among women. Moreover, the 2003 cohort of women are less likely to take a gap-year than men from this cohort, while the gender shift effect in the more general model indicates that women are more likely to take a gap-year than men.

In conclusion, the results from the model of the determinants of taking a gap-year indicate that living outside capital city areas acts as a disincentive

[11] The distribution of ages at the completion of high school is: less than 17 years (1.8 per cent), 17 years (71.5 per cent), 18 years (23.2 per cent), 19 years (2.0 per cent) and 20 or more years (1.5 per cent).

[12] Advocates of a gap-year suggest the transformation from high school to university is facilitated by good work habits and time management skills, which can be developed during a gap-year.

[13] The variable for SES was also entered in the model with dummy variables representing the quartiles of SES in place of the continuous variable. SES was still insignificant using this functional form.

[14] Tests of statistical significance of these gender differences were undertaken using a sample pooled across men and women with a full set of gender interaction terms.

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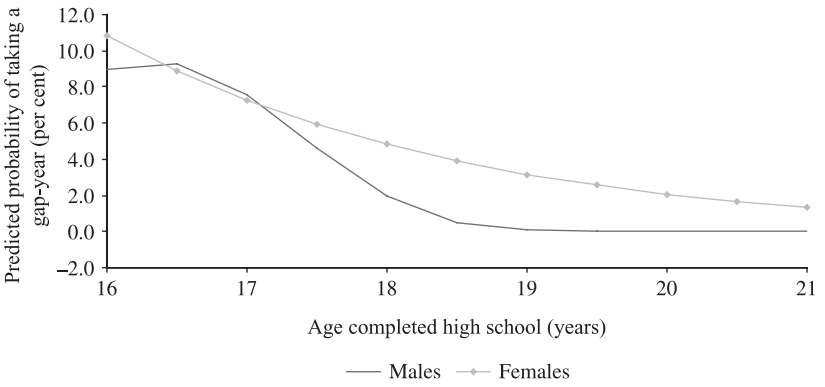
FIGURE 1
Predicted Probabilities of Taking a Gap-Year by Age, for Men and Women



to continue with university study straight from high school. This effect is more important for men than for women. Students who are from non-English-speaking background immigrant families, from families where English is not the usual language spoken at home, who are of an older age and who have high levels of academic achievements appear to be more motivated to continue with their studying immediately after the completion of high school. There are significant differences between men and women in the estimated models of the determinants of taking a gap-year. The age effects discussed above are the main gender difference, and these indicate a more direct school-to-university transition for older male students than for older female students.

(ii) Determinants of Academic Performance

This section examines the impact of taking a gap-year as well as other factors on academic performance in the first-year of university. The first column of Table 3 presents the results for the total sample from the estimation of Equation (4) using ordinary least-squares regression (OLS). Gender effects are captured in this initial analysis using a dichotomous variable. The second and third columns contain the results from the estimation of the model on separate samples of men and women. The dependent variable is students' weighted average first-year mark.

Many of the findings presented in the first column of Table 3 are similar with recent studies on the determinants of academic performance in the Australian literature (see Birch & Miller, 2005, for a review of studies). In particular, the results show that students' TER (*TER*) is the main determinant of marks at university. In line with Win and Miller (2005, p. 10), there is a nonlinear relationship between first-year academic performance and the TER. This relationship is quite flat around the margin for entry into UWA, perverse for lower values of the TER, and strengthens in numerical importance when higher values of the TER are considered. Thus, the marginal effect of TER is 0.43 at a TER of 85, 0.84 at a TER of 90 and 1.25 at TER of 95. This feature carries across to models estimated using alternative functional forms. For example, the measure of academic performance was entered into an alternative specification in logistic form, and this alternative approach did not have any material bearing on the conclusions in this study.

The results indicate that female students (*Female*) have a mark advantage over their male counterparts of approximately 3.4 per cent. Similar findings have been reported in Dobson and Skuja (2005), Win and Miller (2005) and Dancer and Fiebig (2004). This is a very interesting finding, which appears to hold when a range of extra statistical controls are included in the model (e.g. gap-year and HECS liability status in this study, lecture and tutorial attendance and motivation in Dancer & Fiebig, 2004). As shown below, there are also interactions between gender and having a gap-year in relation to their impacts on first-year university performance.

The figures in the first column of Table 3 show that being accepted into the bottom two preferences

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TABLE 3
Results From the Estimation of the Determinants of Academic Performance in First Year

Variable	Total sample†	Men	Women
Constant	236.278 (6.90)***	291.303 (5.75)***	188.441 (4.03)***
Gender: *Female*	3.426 (14.04)***	‡	‡
Home location: *Noncity*	0.242 (0.51)	–0.930 (–1.28)	1.174 (1.89)*
Birthplace			
ESB	0.053 (0.12)	–0.632 (–0.93)	0.701 (1.18)
NESB	–0.220 (–0.57)	0.434 (0.76)	–0.988 (–1.88)*
Language spoken: *NoEnglish*	1.212 (2.62)***	1.185 (1.76)*	1.290 (2.05)**
Disability status: *Disable*	0.633 (0.77)	0.052 (0.04)	1.368 (1.25)
Age in high school: *AgeHS*	0.218 (2.71)***	0.092 (0.69)	0.280 (2.82)***
Socioeconomic status:			
SES	0.161 (3.85)***	0.080 (1.23)	0.220 (4.06)***
SES^2/1000	–0.082 (–4.11)***	–0.045 (–1.46)	–0.108 (–4.20)***
Tertiary entrance rank:			
TER	–6.597 (–11.55)***	–6.879 (–8.55)***	–6.107 (–7.45)***
TER^2/100	4.130 (13.13)***	4.343 (9.80)***	3.799 (8.43)***
Course preference: *Bottom*	–2.473 (–4.37)***	–1.869 (–2.27)**	–2.936 (3.79)***
Mode of study: *Parttime*	–8.324 (–19.18)***	–9.024 (–13.20)***	–7.905 (–14.29)***
Liability status: *HECS*	–1.217 (–4.59)***	–1.385 (–3.53)***	–1.149 (–3.21)***
Gap-year: *Gap*	2.299 (4.53)***	2.211 (2.80)***	2.571 (3.93)***
Year:			
FY2003	–0.047 (–0.16)	–0.960 (–2.13)**	0.825 (2.09)**
FY2004	–0.109 (–0.36)	–0.682 (–1.53)	0.410 (1.04)
	Adjusted R^2 = 0.267	Adjusted R^2 = 0.276	Adjusted R^2 = 0.241
	F-test (17, 6878) = 147.6	F-test (16, 3319) = 80.7	F-test (16, 3543) = 70.3
	Mean mark = 63.596	Mean mark = 62.119	Mean mark = 64.980
	Sample size = 6896	Sample size = 3336	Sample size = 3560

Notes: † The '*t*' statistics are in parentheses. ***, ** and * denote significance at the 1, 5 and 10 per cent levels, respectively. ‡ Not included in the estimating equation.

for university (*Bottom*) and studying at university on a part-time basis (*Parttime*) have negative impacts on first-year performance. Specifically, students who were accepted into courses that were their third or fourth preference for university have marks that are almost 2.5 per cent lower than the marks of students who were accepted into their first or second university preference. Students who studied part-time have average first-year marks that are 8.3 per cent less than the marks of students studying full-time. The reduction in the marks of students who were offered their bottom preferences for university has been attributed to these students' lower motivation for study (see McClelland & Kruger, 1993). The reduction in marks for students studying part-time has been linked to the difficulties in combining study with other activities, such as paid employment (see Smith & Naylor, 2001).

Students' marks at university are positively influenced by speaking a language other than English at home and negatively influenced by age and Higher Education Contribution Scheme (HECS) liability status. However, the impact of these variables on academic performance is fairly minor. Students who did not speak English at home (*NoEnglish*) have marks that are 1.2 per cent higher than the marks of students who speak English at home. Students who deferred their total HECS liability (*HECS*) have marks that are 1.2 per cent lower than the marks of students who paid some or all of their HECS upfront, and being aged 1 year older (*AgeHS*) reduces marks by approximately one-fifth of a percentage point.

There is an inverted U-shaped pattern between marks and students' SES. Hence, students whose home neighbourhoods have a score of 800 on the Index of Economic Resources have predicted

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first-year marks of 61.4. Students whose home neighbourhoods have a score of 1000 on the measure of SES have predicted first-year marks of 64.4, whereas the mean first-year mark of students whose home neighbourhoods have a score of 1200 on the index is predicted to be 60.7.

The relationship between first-year academic performance and SES differs from the findings in other studies, which indicate a positive relationship between the two variables (e.g. Gramlich & Greenlee, 1993; Robst & Keil, 2000; Win & Miller, 2005). The finding presented in the present paper may be capturing school-type effects (which cannot be taken into account). Students who attend non-government schools are commonly found to have lower marks at university than students who attend government high schools. At the same time these students are generally from families with higher levels of wealth than their counterparts going to government schools and, therefore, a negative relationship between marks in university and SES may exist without controls for school type.[15]

Of central importance to this study is the result indicating that taking a 1-year break between completing high school and commencing university (*Gap*) has a positive impact on academic outcomes at university. In particular, students who take a gap-year have marks 2.3 per cent greater than the marks of students who did not take a gap-year. This result supports the common perceptions that taking a year off between high school and university allows students to perform better at university. The result is also consistent with some studies that compare the outcomes of students who take a gap-year with those who do not, such as Linke *et al*. (1985) and Pearson (1977).[16]

Equation (4) was estimated with the inclusion of variables controlling for students' course type.[17] The results from this model indicated that there are small variations in students' weighted average first-year marks according to the type of degree they are enrolled in. Students enrolled in the degrees of arts, arts/education, arts/music, fine arts, horticulture, landscape architecture and social work had higher first-year marks than the reference group of students enrolled in science degrees. Students studying arts/commerce, commerce, computer and mathematical science, health science, engineering, law, medicine, science/economics and a residual group of all other courses had lower marks than science students. Students enrolled in agriculture, music, natural resource management, arts/economics, computer and mathematical science/science, animal science and economics had first-year marks similar to that of their counterparts studying science. The inclusion of course type in the model of academic performance did not have any major impact on the findings for the other variables in the model. For example, the estimated coefficient for the 'Gap' variable in the model with controls for course type was 2.1. It was 2.3 in the model without these controls. Likewise the partial effect for studying part-time in the model controlling for course type was 8.6 while it was 8.3 in the model without the controls for type of course.

To examine whether there were differences in the impact of taking a gap-year on marks across gender, Equation (4) was estimated on separate samples of men and women.[18] The results from this analysis showed that taking a gap-year significantly influenced the marks of both male and female students, with the mark advantage gap-year students have over their counterparts not taking a gap-year being 2.2 per cent for men and 2.6 per cent for women. However, the difference in the mark advantage experienced by men and women was not statistically significant ('*t*' statistic = 0.35).[19]

Equation (4) was also estimated using a quantile regression approach similar to that described in

[15] While information on school type is not available for students who defer university, it is available for non-gap-year students. For this group of students, the mean score on the Index of Economic Resources is 1037.58 for students from government schools and 1064.52 for students from non-government schools. The model was estimated using data on students with information on school type. The results from this model indicated that the relationship between SES and first-year marks was similar to that presented above, though the differences in first-year marks by SES were less pronounced.

[16] The other variables included in the model to estimate the determinants of academic performance, namely those controlling for home location, birthplace, disability status and year of study, were insignificant.

[17] For space reasons, these results are not reported. They are available from the authors. Tests showed that the dummy variables for course type were significantly different from zero (F-test (35, 6844) = 2.34).

[18] There were significant differences in the intercept and slope parameters in the model when estimated for male and female students (F-test (17, 6862) = 14.80).

[19] The impact of living outside the capital city, being born in a non-English-speaking country, TER and the year of the data on first-year marks significantly differed between men and women.

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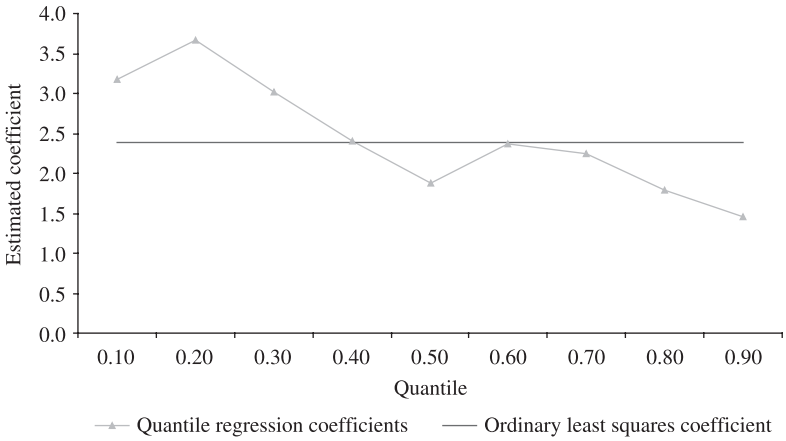
FIGURE 2
The Estimated Impact of Taking a Gap-Year on Marks, Ordinary Least-Squares Regression and Quantile Regression



Eide and Showalter (1998) and Bassett *et al*. (2002). The quantile regression approach allows the influence of the determinants of academic performance to be examined across the entire university marks distribution, and, thus, may facilitate a greater appreciation of the impact of taking a gap-year on academic performance than the results obtained using OLS (results presented in Table 3), as the estimated coefficients from the OLS procedure relate only to the impact on the conditional mean.

The results from the model of academic performance estimated using quantile regression showed that taking a year off between high school and university has a positive impact on marks at university across most of the marks distribution.[20] The estimated coefficients for the gap-year variable from this alternative method of estimation are displayed in Figure 2. These results show that taking a gap-year has a larger impact on the marks of low-achieving students than it does among high-achieving students. For example, the estimated coefficient for *Gap* is 3.6 for students at the 20th quantile of the marks distribution. In comparison, it is 1.5 for students at the 90th quantile. These findings indicate that taking a gap-year is of most benefit (in terms of academic success) to students who have below average academic success. The small impact of taking a gap-year on the marks of students in the top quantiles of the marks distribution may indicate that other factors, such as motivation, are the main determinants of success for these students.

The variation in the impact of taking a gap-year on university marks along the marks distribution differs for male and female students (see Figure 3). For female students, taking a gap-year has a fairly similar impact on their first-year university marks, regardless of whether they are low-performing students or high-performing students. For example, the estimated coefficient for taking a gap-year was 2.9 for female students at the 10th quantile of the marks distribution and 3.0 for female students at the 80th quantile. In contrast, for male students, the impact of taking a gap-year varies considerably between low-achievers and high-achievers. Male students at the 10th quantile of the marks distribution who take a gap-year have first-year marks at university that are 3.7 per cent higher than male students who do not take a gap-year. There is only a 1 percentage point difference in the marks of male gap-year and non-gap-year students at the 80th quantile of the marks distribution.

V Conclusion

This paper has examined the characteristics of students who defer entry to university for 1 year and the subsequent impact of this decision on their tertiary academic performance. To date, most previous literature in this area has been largely of a descriptive nature, with several studies comparing

[20] These results are available from the authors.

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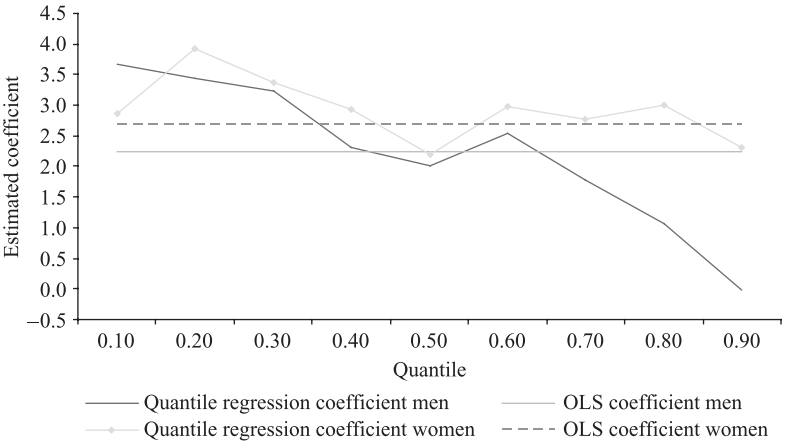
FIGURE 3
The Estimated Impact of Taking a Gap-Year on Marks, Ordinary Least-Squares Regression (OLS) and Quantile Regression, by Gender



the characteristics of students who take a gap-year with those who enter university directly from secondary school, and numerous studies that discuss the perceived benefits of taking a gap-year.

The first set of analyses in this paper used a probit model to examine the determinants of taking a gap-year. Using data from the UWA, it was found that the main determinants of students' decisions to take a 1-year break between completing secondary school and entering university were their prior academic achievements, English language background, age and home location. The probability of taking a gap-year was negatively correlated with students' TER, their age when completing high school and speaking a language other than English at home. It was positively correlated with living in areas outside of the capital city.

To the extent that taking a gap-year represents uncertainty about tertiary study, the negative correlation between taking a gap-year and students' TER suggests that low-achieving students are more uncertain about their tertiary academic studies than high-achieving students. The negative relationship between deferring university and TER may also indicate that lower-achieving students do not have the motivation or conviction to continue with study straight after high school. The strong positive impact of living in non-capital city areas on taking a gap-year may, according to the literature, indicate that students who do not live close to their tertiary institutions need time out between high school and university study to accumulate the resources needed to study at university.

The second set of statistical analyses examined the impact of taking a gap-year on students' academic performance at university. Taking a 1-year break between high school and university was found to have a positive impact on students' tertiary academic performance. This relationship is stronger for students on the lower-end of the marks distribution.

The empirical evidence presented above supports the media that discusses the perceived benefits of taking a gap-year. Therefore, it is possible to suggest that taking a 1-year break between high school and university for travel or work appears to motivate students for study when they commence university. The benefits of taking a gap-year appear to be most valuable for low-achieving students. As such, there may be merit in encouraging some students to take a break between high school and university, particularly for students who are expected to have below average performance at university and who are unsure of their future directions.

The research in this study has many interesting findings and policy implications. It also has some limitations. Foremost among these is its focus on one university, the UWA. Analysis for the entire university system could be conducted using the Department of Education, Science and Training's *Higher Education Statistics* database, albeit it using data on the equivalent full-time student units (EFTSU) passed rather than an actual mark.

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Another limitation is that little is known about 'gap-year' students who do not commence their university study after deferring their entry. Do these students find better alternatives in TAFE, or in employment? Are there differences according to TER in the likelihood of this behaviour? This information would be useful, and could also help account for the relationship between taking a gap-year and first-year university performance: If there is a drift away from university among lower-ability gap-year students, this would accentuate the relationship between taking a gap-year and university outcomes.

A third limitation is that, given the data available, the study has focused on the university marks advantage associated with a gap-year. As noted in the paper, there are other reasons for a gap-year, including motivation and maturity considerations. Unfortunately, measuring these may well prove to be the Achilles' heel of developing the work along these lines, though the longitudinal analysis discussed below could be a useful alternative.

A final limitation is that the study has examined the relationship between academic performance only during the first year at university. This is in line with recent research on student outcomes at university in Australia by Win and Miller (2005), Birch and Miller (2006a), Dobson and Skuja (2005) and Dancer and Fiebig (2004), although the latter study has a focus on a first-year unit rather than the entire first-year academic results. This choice is typically justified by the difficulties in categorising years of study beyond the first year into 'second-year', 'third-year' and so on, due to, for example, failures and split years. Birch and Miller (2006b), however, eschew a focus on academic level in favour of an analysis of students' results simply according to the calendar year of enrolment. Their analysis of second- and third-year outcomes appears to give intuitively reasonable results. Moreover, this analysis enabled Birch and Miller (2006b) to apply Tinto's (1975) longitudinal model, which has a focus on social and academic integration, to interpret the weights that might be attached to the potential channels of influence that HECS, the focus of that particular study, might have on students' university performance. This enabled them to conclude that the main effect of HECS liability on university performance appears to be as a proxy for socioeconomic background and the related circumstances that impact on study habits and commitment. A similar analysis with a focus on gap-year is a fruitful direction for future research.

REFERENCES

Australian Bureau of Statistics (2001), 'Census of Population and Housing: Socio-economic Indexes for Areas, Australia', Information Paper, Australian Bureau of Statistics cat. no. 2039.0, Canberra, ACT.

Barrett, E. and Powell, J. (1977), 'Deferring Students Who Did Not Re-enrol at the University of New South Wales in 1976', Tertiary Education Research Centre Research and Development Paper No. 44, Tertiary Education Research Centre, University of New South Wales, Kensington, NSW.

Bassett, G., Tam, M. and Knight, K. (2002), 'Quantile Models and Estimators for Data Analysis', *Metrika*, **55**, 17–26.

Berkner, L., Cuccaro-Alamin, S. and McCormick, A. (1996), 'Descriptive Summary of 1989–90 Beginning Postsecondary Students: Five Years Later, With an Essay on Postsecondary Persistence and Attainment', National Center for Education Statistics Report No. 96–155, US Department of Education, Washington, DC.

Berkner, L., He, S., Forrest-Cataldi, E. and Knepper, P. (2003), 'Descriptive Summary of 1995–96 Beginning Postsecondary Students: Six Years Later, Statistical Analysis Report', National Center for Education Statistics Report No. 2003-151, US Department of Education, Washington, DC.

Birch, E. and Miller, P. (2005), 'The Determinants of Students' Tertiary Academic Success', in Productivity Commission (eds). *Quantitative Tools for Microeconomic Policy Analysis: Conference Proceedings*. Productivity Commission, Canberra, ACT; 45–80.

Birch, E. and Miller, P. (2006a), 'Student Outcomes at University in Australia: A Quantile Regression Approach', *Australian Economic Papers*, **45**, 1–17.

Birch, E. and Miller, P. (2006b) 'The Impact of HECS Debt on Students' Tertiary Academic Performance', *Education Research and Perspectives*, **33**, 1–32.

Birrell, R. (1987), 'The Educational Achievement of Non-English Background Students and the Politics of the Community Languages Movement', in Baker, L. and Miller, P. (eds). *The Economics of Immigration: Proceedings of a Conference at the Australian National University, 22–23 April 1987*. Australian Government Publishing Service, Canberra, ACT; 91–121.

Bornholt, L., Gientzotis, J. and Cooney, G. (2004), 'Understanding Choice Behaviours: Pathways From School to University with Changing Aspirations and Opportunities', *Social Psychology of Education*, **7**, 221–8.

Brown, M. (2004), 'Gap Years', *Times Educational Supplement*, 9 January 2004, 11.

Carroll, C. (1989), 'College Persistence and Degree Attainment for 1980 High School Graduates: Hazards for Transfers, Stopouts, and Part-Timers', National Center for Education Statistics Report No. 89-302, US Department of Education, Washington, DC.

Dancer, D. and Fiebig, D. (2004), 'Modelling Students at Risk', *Australian Economic Papers*, **43**, 158–73.

Dobson, I. and Skuja, E. (2005) Secondary Schooling, Tertiary Entrance Ranks and University Performance. *People and Place*, **13**, 53–62.

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14754932, 2007, 262, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/j.1475-4932.2007.00418.x by Macau University Of Science And Technology Foundation, Wiley Online Library on [03/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Eide, E. and Showalter, M. (1998), 'The Effect of School Quality on Student Performance: A Quantile Regression Approach', *Economics Letters*, **58**, 345–50.

Elswoth, G., Day, N., Hurworth, R. and Andrews, J. (1982), 'From School to Tertiary Study', Australian Council for Education Research Monograph No. 14. Australian Council for Educational Research, Melbourne, Vic.

Gramlich, E. and Greenlee, G. (1993), 'Measuring Teaching Performance', *Journal of Economic Education*, **24**, 3–14.

Gribble, J. (1984), *Deferment at Monash University 1983*. Victoria College, Melbourne, Vic.

Grosset, J. (1993), 'A Profile of Community College Stopouts', *Community College Review*, **20**, 51–8.

Hillman, K. (2005), 'The First Year Experience: The Transition from Secondary School to University and TAFE in Australia', Longitudinal Surveys of Australian Youth Research Report No. 40, Australian Council for Educational Research, Melbourne, Vic.

Holroyd, L. (1998), 'We're Outta Here', *The Herald Sun*, 1 December 1998.

Hoover, E. (2001), 'More Students Decide That College Can Wait', *Chronicle of Higher Education*, **48**, A51–2.

Horn, L. and Carroll, C. (1998), 'Stopouts or Stayouts? Undergraduates Who Leave College in Their First Year', National Center for Education Statistics Report no. 1999-087, US Department of Education, Washington, DC.

Horn, L., Forrest-Cataldi, E. and Sikora, A. (2005), 'Waiting to Attend College, Undergraduates Who Delay Their Postsecondary Enrollment, Postsecondary Education Descriptive Analysis Report', National Center for Education Statistics Report No. 2005-152, US Department of Education, Washington, DC.

Krause, K., Hartley, R., James, R. and McInnis, C. (2005), *The First Year Experience in Australian Universities: Findings From a Decade of National Studies*. Department of Education, Science and Training, Canberra, ACT.

Lamb, S. (2001), 'The Pathways from School to Further Study and Work for Australian Graduates', Longitudinal Surveys of Australian Youth Research Report No. 19, Australian Council for Educational Research, Melbourne, Vic.

Linke, R., Barton, A. and Cannon, R. (1985) *Deferment of Entry Into Higher Education*. Tertiary Education Authority, Adelaide, SA.

Macleod Weeks, A. (2001), 'Three Student Perspectives on Taking a Year Off', *Journal of College Admission*, **173**, 12–7.

McClelland, A. and Kruger, P. (1993), *An Investigation of the Subsequent Performance in Tertiary Studies of Students Admitted Through the Queensland Tertiary Admission Centre in 1989–90, Australian*. Government Publishing Service, Canberra, ACT.

McMillan, J. (2005), 'Course Change and Attrition from Higher Education', Longitudinal Surveys of Australian Youth Research Report 39, Australian Council of Education Research, Melbourne, Vic.

Pearson, M. (1977), 'Student Deferments at the University of New South Wales', *Vestes*, **20**, 33–4.

Robst, J. and Keil, J. (2000), 'The Relationship Between Athletic Participation and Academic Performance: Evidence from NCAA Division III', *Applied Economics*, **32**, 547–58.

Singell, L. and Stone, J. (2002), 'The Good, the Poor, and the Wealthy: Who Responds Most to College Financial Aid?' *Bulletin of Economic Research*, **54**, 393–407.

Smith, J. and Naylor, R. (2001), 'Determinants of Degree Performance in UK Universities: A Statistical Analysis of the 1993 Student Cohort', *Oxford Bulletin of Economics and Statistics*, **63**, 29–60.

Taylor, A. (2004), 'Mind the Gap', *The Sydney Morning Herald*, 18 December 2004, 8.

Thiele, H. (1977), 'A Study of Deferment of Entry to a University Course', University of Queensland Counselling Services Research Report. University of Queensland, St Lucia, Qld.

Tinto, V. (1975), 'Dropout From Higher Education: A Theoretical Synthesis of Recent Research', *Review of Educational Research*, **45**, 89–125.

Watkins, D. (1977), 'Student Attitude to Deferment of Entry to the University of New England', *Vestes*, **20**, 13–4.

Weaving, A. (1978), 'What Happens to Deferring Students at the University of New South Wales', *Vestes* **21**, 31–3.

Wilson-Clark (2001), 'Study Break Pays Off', *The West Australian*, 28 April 2001, 12.

Win, R. and Miller, P. (2005), 'The Effects of Individual and School Factors on University Students' Academic Performance', *Australian Economic Review*, **38**, 1–18.

Wright, C., Frew, T., Hatcher, D. and Mok, M. (1996), 'The Social and Demographic Characteristics of Direct and Delay Entry Nursing Students in Australian Universities', *Higher Education Research and Development*, **15**, 239–48.

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Appendix I

Description of the Variables in Models of Taking a Gap-Year and of the Determinants of Students' Marks[†]

Variable/code	Description	All students: Mean	All students: Standard deviation
Gap-year:			
Gap	This is the decision on taking a gap-year where *Gap* = 1 if the student commences university 1 year after completing high school and *Gap* = 0 if the student commences university in the semester immediately after completing high school.	0.063	0.243
Tertiary academic performance:			
Mark	Continuous variable for students' average final mark in each unit of study weighted by the relative contribution of the unit studied towards the value of the students' degree. It is measured as a mark out of 100.	63.596	11.786
Gender (omitted category = male students):			
Female	Dummy variable for female students.	0.516	0.500
Home location (omitted category = living in the capital city):			
Noncity	Dummy variable for students whose permanent home address is not in the capital city or in the surrounding suburbs of the capital city.	0.109	0.311
Birthplace (omitted category = born in Australia):			
ESB	Dummy variable for students who were born overseas in English-speaking countries.	0.082	0.275
NESB	Dummy variable for students who were born overseas in non-English-speaking countries.	0.163	0.369
Language spoken (omitted category = speaks English at home):			
NoEnglish	Dummy variable for students who speak a language other than English at home.	0.104	0.305
Disability status (omitted category = non-disabled students):			
Disable	Dummy variable for having a disability, impairment or a long-term medical condition.	0.022	0.148
Age in high school:			
AgeHS	Continuous variable for the students' age at the completion of high school. It is entered in quadratic form in the gap-year model, but linear form in the model of university outcomes.	17.392	1.549
Socioeconomic status:			
SES	Continuous variable for the socioeconomic status of students' home address measured by ABS's Index of Economic Resources. It is entered in linear form in the gap-year model and in quadratic form in the model of university outcomes.	1052.469	73.864
Tertiary Entrance Rank:			
TER	Continuous variable for students' TER. It is entered in linear form in the gap-year model and in quadratic form in the model of university outcomes.	92.578	5.211
Course preference (omitted category = first or second preference):			
Bottom	Dummy variable for students who were accepted into their bottom two preferences for university.	0.050	0.218
Study mode (omitted category = studying full-time):			
Parttime	Dummy variable for students who study on a part-time basis defined as those whose aggregate 'Equivalent Full Time Student Unit' for all the course is less than 0.75.	0.089	0.285
Liability status (omitted category = paying HECS up-front):			
HECS	Dummy variable for students who defer their entire HECS liability.	0.676	0.467
Year (omitted category = 2002):			
FY2003	Dummy variable for students who studied first-year university in 2003.	0.321	0.467
FY2004	Dummy variable for students who studied first-year university in 2004.	0.335	0.472

Notes: [†] The means for the separate samples of men and women are similar. Tabulations showing this are available from the authors upon request.

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