

Women pay their way on income contingent student debt

Author

West, Tracey

Published

2019

Journal Title

Policy Futures in Education

Version

Accepted Manuscript (AM)

DOI

[10.1177/1478210319895182](https://doi.org/10.1177/1478210319895182)

Rights statement

West, T, Women pay their way on income contingent student debt, Policy Futures in Education, OnlineFirst, 2019. Copyright 2019 The Authors. Reprinted by permission of SAGE Publications.

Downloaded from

<http://hdl.handle.net/10072/397428>

Griffith Research Online

<https://research-repository.griffith.edu.au>

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

Women Pay Their Way on Income Contingent Student Debt

Tracey West^{a*}

^a Department of Accounting, Finance and Economics, Griffith University. Gold Coast, Australia.

* Corresponding author; Lecturer. Department of Accounting, Finance and Economics, Griffith University. Gold Coast QLD 4222 Australia. Tel: +61 7 555 29769. Email: t.west@griffith.edu.au.

1 **Women Pay Their Way on Income Contingent Student Debt**

2

3

4

5 **Abstract**

6

Does the gender pay gap affect women’s ability to repay their student debt? This study investigates the extent to which an income contingent scheme benefits women because of their individual earnings. Using the Australian HILDA Survey, gender differences in debt repayment behaviour over the past two decades is examined. The regression includes interaction terms for women that are risk-averse, of low socio-economic status, low wealth, and low income. The industries where the majority of women are employed, education and health, are also examined. We find that over 2002 to 2014, women generally have less student debt than men, but those that are low income carry more debt. This is the first study to include an analysis of student debt by industry with a gender lens. Given the increasing amount of student debt Australians are carrying, it is important for policymakers to pay attention to its impacts to ensure fairness and equity.

18

19

Keywords: Student debt; HILDA; Women; Gender Pay Gap

20

21

Classification codes: D1 Household Behaviour and Family Economics; I22

22

Educational Finance, Financial Aid; I240 Education and Inequality

23

24

1 **1. Introduction**

2 The benefits of higher education are well established for individuals in terms of relatively
3 higher incomes and rates of employment (Barr 1998, 2004). The private rate of return has been
4 quantified to be as high as 21.1 percent in Australia (Borland, Johnson and Williams, 2000).
5 Such benefits are seen to justify shifting the higher education costs from taxpayers to students,
6 particularly in the neoliberal environment (Chang and McLaren 2018, Nygreen 2018, Tesar
7 2019).

8 Australian students are advantaged by access to a student loan scheme that defers
9 repayments until an income threshold is met. Australia introduced the first income-contingent
10 loan (ICL) scheme to broaden higher education access and reduce the financial burden of
11 higher education provision on government over 30 years ago. Other countries with well-
12 established full or partial ICL schemes include England, New Zealand, the Netherlands, South
13 Korea and Hungary (Britton, van der Erve and Higgins, 2018). The ICL scheme has progressive
14 income thresholds for repayment. For example, the Australian ICL has nil repayment for those
15 with gross incomes under \$51,957 and 2 percent of income is paid for those with incomes in
16 the \$51,957 to \$57,729 income bracket in 2018-19. Progressive increases in income brackets
17 and repayment rates follow, with the top tier being 8 percent repayment on incomes over
18 \$107,214.

19 Another major distinction of the Australian ICL scheme from student loans in other
20 countries such as the United States (US), where many loans are privatised, is the treatment of
21 interest. The Australian ICL scheme does not charge debtors interest, but balances are adjusted
22 in June each year for inflation, established by the Consumer Price Index (CPI) that has averaged
23 2.4 percent over the last decade. In comparison, in 2018 interest rates for Federal loans in the
24 US ranged between 5.0 percent to 7.6 percent, and private loans ranged from 3.9 to 14.3 percent
25 (Kirkham 2019). The rate of interest for Federal Loans in the US is linked to the 10-year

1 Treasury bond rate plus a fixed percentage. Changing the indexation from the CPI to the
2 Treasury bond rate, capped at 6 percent, was similarly proposed in Australia in 2014 through
3 legislation that did not pass Parliament (Dow 2014).

4 The purpose of the inflation adjustment is to maintain the real value of student debt on
5 the Government's balance sheet and reflect opportunity cost for the lender, functioning in a
6 similar manner as an interest charge. If the recipient pays off the ICL debt, they have paid the
7 principal borrowing amount plus an additional sum (the 'adjustment'), which is added to the
8 principal and thus compounds the debt. As compulsory repayments depend on income earned,
9 some recipients take longer than others to pay off the loan, thus incurring more 'adjustments'
10 and compounding effects than others. If a recipient never pays off the loan, then they receive a
11 larger subsidy from the government than others. Indeed, 21.8 percent of Australian ICL debts
12 are unlikely to be repaid which equates to a significant amount of the total ICL debt forecasted
13 to reach \$11 billion in 2025 (PBO 2016). Hence, Governments will continue to be motivated
14 to review the current settings in the neoliberal environment.

15 It is from this perspective that the impact of Australia's ICL system on women is
16 examined. Given increasing attention on the gender pay gap, it is timely to inspect whether a
17 scheme designed to increase the rate of repayment as incomes increase has unintentional
18 consequences. Given that women earn lower incomes than men and tend to have time out of
19 the workforce, it is likely that women take longer to pay down their ICL loan, thus incurring
20 more 'adjustments' over time. They also have their repayment deducted from their incomes for
21 longer periods of time. We use Australian HILDA Survey data from 2002 to 2018 to test this
22 hypothesis through inspection of descriptive statistics, transition tables, and a regression model
23 including demographic and socioeconomic characteristics for student debt levels.

24 We refer to the Australian ICL scheme henceforth as the HELP system. The Higher
25 Education Loan Program (HELP) is the major Australian scheme and was formerly called the

1 Higher Education Contribution Scheme (HECS). See Parliament of Australia (2018) for an
2 explanation of these loan schemes and others.

3 The remainder of this paper has the following structure. The next section sets the context
4 of the gender wage gap in Australia and the intention of the HELP scheme. Section 3 briefly
5 reviews the literature on the impact of student debt on financial decision-making. The
6 subsequent section explains the empirical methodology and the data employed in the analysis.
7 Section 5 presents the results and Section 6 discusses the findings.

8 **2. Background of Gender and the Australian HELP Scheme**

9 The field of feminist economics despairs at assumptions underpinning ‘rational’
10 decision-making and policies made from a traditional masculinist model of reasoning, that
11 favour the rights and needs of men (Gonzalez-Arnal and Kilkev 2009). Globally, the constraints
12 of student debt schemes and gender shape decisions for university study and the labour market
13 (Dwyer, Hodson and McCloud 2013). Dwyer et al. (2013) express the view that consideration
14 of tertiary finance as a gendered issue is important for a number of reasons, including that (1)
15 graduate incomes for female-dominated occupations may not pass the cost–benefit threshold
16 for tertiary study; (2) the gender pay gap for women is particularly large for jobs that do not
17 require a tertiary qualification and the gender pay gap reduces student debt repayment capacity;
18 (3) women may have fewer options for jobs that do not require tertiary qualifications, and
19 therefore feel pressured to attend university; and (4) women may want more support during
20 study than men, including for academic preparation, family support, and peer networks, and
21 therefore drop out or do not attend at all. Thus, returns on higher education are likely to be
22 differentiated, and indeed for some, not guaranteed (Gonzalez-Arnal and Kilkev 2009).

23 Given these factors, one could argue that women are advantaged by the HELP scheme.
24 The high-income thresholds and income contingency mean that women may not earn enough

1 to pay off the debt over their working lives and thus their education has been heavily subsidized
2 by the Government. It is an intended outcome that the design supports equity of access and
3 places the burden of repayment on those that can afford to pay (Barr, 1998).

4 However, a report by The Grattan Institute in 2016 put the spotlight on women. The
5 author of the report entitled ‘HELP for the Future: Fairer Repayment of Student Debt’ stated
6 that “the major cause of HELP’s problems is that debtors who earn less than its initial
7 threshold...do not repay” and that “women’s repayment rates are critical to HELP’s finances”
8 (Norton 2016, 18). Additionally, Norton (2016) argues that half of HELP debtors should not
9 feel financial strain from the extra repayment as many women live in a couple household with
10 incomes that exceed \$80,000 per year. The crux of report was that if the initial repayment
11 threshold was lowered more women would be captured in the compulsory repayment and thus
12 in aggregate more of the HELP debt outstanding would be paid down.

13 Off the back of this report, the Parliament passed a reform in 2018 to reduce the initial
14 repayment threshold from \$51,957 to \$45,000 (with a reduction in the initial threshold
15 repayment rate from 2 percent to 1 percent). For those with incomes of \$45,000 per year, the
16 HELP repayment would be \$9 a week. The legislation (*Higher Education Support Legislation*
17 *Amendment (Student Loan Sustainability) Bill 2018*) stated that the purpose of the change is to
18 improve the sustainability of the HELP scheme by bringing more individuals into the
19 repayment scope over time, while acknowledging the higher and sooner repayment of HELP
20 for some students may reduce access to higher education. In particular, it is noted that there are
21 disproportionate impacts on women and other low-income groups:

22 The Government currently carries a higher deferral subsidy from demographic
23 groups that tend to have lower incomes. This includes women, individuals in part-
24 time work, or individuals in low paid professions. As a result, some of these
25 individuals, including women, may be making repayments for the first time as a

1 result of the introduction of a lower minimum repayment threshold. Addressing
2 this income inequality, however, is not the role of the higher education loans
3 system.

4 *Higher Education Support Legislation Amendment (Student Loan Sustainability) Bill*
5 *2018, pp 6-7.*

6 In an era of rising awareness of a gender pay gap and its economic and societal impacts,
7 policy reform that dismisses its impact on women seems ill-considered and ignores social
8 justice factors (Chang and McLaren 2018, Nygreen 2018). While, as Norton (2016) argues,
9 many women live in couple households with household incomes that can afford the \$9 per
10 week, the remainder may comprise of lone people and lone parent households, trying to work
11 and support dependents. Divorce rates of 2 per 1,000 people also indicate that some of the
12 coupled women may separate, taking their HELP debt with them (AIFS 2019).

13 The gender pay gap in Australia ranges between 17.3 percent to 26.7 percent, depending
14 on seniority of position and industry. An analysis by the Workplace Gender Equality Agency
15 (WGEA) in 2018 of 4 million employees and 11,000 employers finds significant gender pay
16 gaps remain once compositional differences between men and women are accounted for and
17 comparing like-for-like remuneration (controlling for level of occupational seniority, industry
18 and employment status). Thus, inequalities in pay between men and women are not explained
19 by the different ways that men and women work, or the different roles that women and men
20 play at equivalent occupational levels within an organisation. The report finds that more
21 organisations than ever before are taking specific actions on pay equity, such as pay gap audits
22 and analysis (WGEA 2018).

23 Given that organisations are reassessing policies through a gender lens, government
24 should be motivated to do the same. There are consequences for government at the aggregate
25 level. For example, women under financial strain because they are low income or because they

1 make repayments over longer periods of time, have less financial capacity to save for
2 unforeseen life events and retirement, thus putting pressure on the public purse. In addition,
3 this money is withheld from spending, reducing economic activity.

4 **2. Review of the literature**

5 The literature on student debt is concentrated in the United States, where student debt
6 was recently labelled a \$1.5 trillion crisis (Friedman 2018). High student debt levels are found
7 to have a negative impact on some individuals' financial decisions and circumstances
8 (Williams and Oumlil 2015) which of itself can be a barrier to participating in tertiary education
9 (Burdman 2005; Linsenmeier, Rosen and Rouse, 2006). Higher instances of late bill payment,
10 credit denials, increased applications for hardship, as well as other social and economic
11 disadvantages are examples of the impacts of high student debt (Bricker and Thompson 2016;
12 Despard et al. 2016). Further, having large student debts can make unforeseen events especially
13 hard to navigate, like job loss, divorce, and illness (Dwyer et al. 2013). Student debt has been
14 linked with financial stress, anxiety and depression. Financial stress also has a negative impact
15 on academic performance (Archuleta, Dale and Spann, 2013). In aggregate, high student debt
16 can have negative consequences on productivity and economic growth (Barros, Guironnet and
17 Peypoch 2011, Ferretti, Jones and McIntosh 2016).

18 American and Canadian research supports the contention that the cost of study affects
19 student diversity (Despard et al. 2016, Jackson and Reynolds 2013, Javine 2013, Woloschuck,
20 Lemay and Wright 2010). In Australia and England, students from low socio-economic
21 backgrounds, as well as women, older students, single parents, and students with family
22 responsibilities, have all been found to be debt-averse and less likely to study if they will
23 accumulate debt (Gonzalez-Arnal and Kilkev 2009, Marks 2009). An Australian survey of
24 7,000 high school students who were questioned regarding their intention to participate in

1 higher education found that 39 percent of students from low socio-economic backgrounds
2 believed that costs might stop them from attending (James 2002). This finding compared to 23
3 percent of students from high socio-economic backgrounds. Wright (2005) also found that
4 student fees were the primary factor in study decisions of students from low socio-economic
5 backgrounds, leading to reduced participation in the Sydney region (Wright 2005). Students
6 expressed unease about the level of debt they incurred as a direct consequence of attending
7 university and commented on their lack of foresight in relation to the repayment of this money.

8 However, not all studies agreed. Andrews (1999) and Aungles, Buchanan, Kermel and
9 MacLachlan (2002) did not find that the proportion of people from low socio-economic
10 backgrounds had changed much over time. These findings support work from New Zealand
11 (Tumen and Shulruf 2008) and the US (Waddell and Singell 2011) suggesting that increased
12 student debt is not a discouraging factor and is, indeed, an effective vehicle for access among
13 higher need students (Yezdani 2015). An experiment conducted recently by Bartholomae et al.
14 (2019) that explicitly tested the impacts of gender in student debt borrowing decisions also
15 found no significant gender differences.

16 Student debt has been linked to the delay of childbearing for women in the US and
17 Australia (Bozick and Estacion 2014, Jackson 2002). However, other authors attributed the fact
18 that women were having children at older ages to wider societal trends (Armstrong 2004).
19 Nonetheless, this line of questioning triggered some evidence-based responses to investigating
20 the issue of the impact of student debt on financial decision-making. In a survey of student
21 nurses in New Zealand, for example, 69 percent of respondents indicated that having student
22 debt was an impediment to further study, buying a home, and starting a family (O'Connor
23 2003). Student debt can also create problems in obtaining finance. A random sample of bank
24 managers in New Zealand revealed that 51 percent had declined applications for finance and
25 mortgages because of student debt (Pearse 2003). Other Australian research found no

1 association of student debt with lower fertility expectations, but the magnitude of the student
2 debt did affect parenthood decisions (Yu, Kippen and Chapman 2007).

3 Finally, there is limited literature relating to gender and repayment of student debt. A
4 study by Saleh Leslie, Yu, and Seydel (2017) found that it takes women an average of 0.168
5 years' more salary than men to pay back student loans in the US. The authors state that "it
6 clearly takes longer for females on average to repay their college loans than it does for males,
7 and this serves as a major impediment to the financial success and equal progress of females
8 in modern society" (p. 236). The American Association of University Women reported that
9 four years after graduation, men paid off 44 percent of their student loan debt four years later,
10 while women were only able to pay of 33 percent, due to the gender pay gap (Women in
11 Academic Report 2016). Particularly disadvantaged were African American and Hispanic
12 women, paying off 9 percent and 3 percent of student loans respectively over the same period.

13 Examination of ten years of the Australian HILDA Survey (2001 to 2011) shows
14 substantial repayment capacity differences between male and female debtors (Higgins and
15 Sinning 2013). Average debt levels of male graduates drop relatively quickly over time,
16 whereas female graduates' levels of debt remain constant, leading to projections that
17 outstanding debt levels for female university graduates remain high while male balances are
18 close to zero or very low. Data analysis of Australian Tax Office statistics raises further
19 concern, as they reveal that the average time to make the first compulsory ICL payment (for
20 both men and women) increased from 4.9 years in 2007 to 5.1 years in 2011, and the average
21 time to repay the debt grew from 7.5 years in 2007 to 8.1 years in 2011 (Highfield and Warren
22 2015). Highfield and Warren (2015) however, did not provide an analysis of repayment by
23 gender.

1 **3. Data and Methodology**

2 The literature suggests that accumulating student debt can be a barrier to access higher
3 education and can cause financial stress and other financial consequences post-study. In
4 Australia, there has been some focus on the study decisions of low-socioeconomic status in this
5 respect, with debt-aversion seen as one of the deterring factors. However, there is no study
6 identified that investigates the repayment behaviour of people with these characteristics once
7 holding student debt. It would be reasonable to assume that people that are low income, low
8 wealth and low socio-economic status maintain higher levels of student debt because of the
9 income contingent nature of the HELP scheme and reduced capacity to make voluntary
10 repayments. It would also be reasonable to assume that risk-averse people behave similarly to
11 debt-averse people, in that once they have accumulated the student debt, they pay it down at a
12 faster rate than risk seeking people, if economically possible.

13 Further, the context of the gender pay gap and the HELP scheme highlights the need to
14 understand the impacts of repayment capacity of women in more detail. Accordingly, the
15 research questions focus on the repayment behaviour of women. As the gender pay gap can
16 vary by industries, this study makes a novel contribution to the literature by investigating the
17 HELP repayment behaviour of females in industries where females are most employed. An
18 assumption is made that the gender pay gap in these industries means that women hold higher
19 HELP balances than men.

20 Accordingly, the research questions are:

21 H₁: Females that are low income, low wealth, and low socio-economic status maintain
22 higher levels of HELP

23 H₂: Females that are risk averse maintain lower levels of HELP

24

25

1 H₃: Females in industries with highest female participation rates maintain higher levels
2 of HELP

3 This study employs Waves 1 to 14 (corresponding to the years 2001 to 2014) of the
4 Household, Income, and Labour Dynamics in Australia (HILDA) survey. HILDA tracks 7,682
5 Australian households comprising 19,914 individuals throughout their lives and is weighted to
6 be representative of the Australian population. The HILDA survey is particularly useful for
7 examination of student debt as the personal questionnaire asks respondents “Do you have any
8 outstanding HECS debts or other student loans?” This question is followed by “How much do
9 you still owe?”^a These questions are asked in the Wealth Module, which is included every four
10 years (Waves 2, 6, 10 and 14^b). Unfortunately, HILDA does not differentiate between student
11 debt types, so the analysis relates to various ICL student debt schemes provided by the
12 government in aggregate.^c Respondents may also report student loans from financial
13 institutions that are not income contingent. Furthermore, student debt dollar amounts are
14 reported by the respondent during the interview and may or may not have been cross-checked
15 with official records as to the balance owing.

16 The HILDA sample information on HELP does also not perfectly correspond with the
17 information provided by the Department of Education and Training (DET) (DET 2018). The
18 HILDA student debtors comprise 8 percent of the sample in 2002, 8 percent in 2006, 9 percent
19 in 2010 and 12 percent in 2014. By comparison, DET (2018) reports that the proportion of the
20 Australian population that had outstanding student debt (HELP debt) was 2 percent in 2002, 6
21 percent in 2006, 7 percent in 2010, and 9 percent in 2014. Thus, the HILDA sample is
22 marginally overstated.

^a HILDA still refer to the HELP system as HECS

^b Wave 18 not published at time of writing

^c Possible student loans include HECS, HELP, HECS-HELP, VET Student Loans, VET FEE-HELP, FEE-HELP, SA-HELP, OS-HELP, SSL, SFSS and TSL. See Parliament of Australia (2018) for an explanation of these loan schemes.

1 Results must be interpreted within the limitations of the data. HILDA does offer
2 advantages over other datasets, such as that provided by the Australian Tax Office, in terms of
3 generalisability and access to individual demographic and socio-economic factors.

4 The gender analysis of student debt is considered in four parts. First, descriptive statistics
5 using the HILDA survey provides an overview of gender differences and trends over time. The
6 descriptive statistics present participation rates and average balances of student debt for males
7 and females, as well as by attitude to risk-taking, age, socio-economic status (SES), household
8 type, year, education, wealth, personal income and industry classification.

9 Further descriptive statistics are provided by graphing cohort differences in HELP levels.
10 Cohort differences are modelled by identifying when participants first responded positively to
11 having student debt and grouping participants into cohorts based on the years 2002 or before,
12 2003 to 2006, 2007–2010 and 2011–2014. Students in the first cohort may have accumulated
13 student debt any time before 2002, thus pushing down average student debts. Categories of
14 average student debt owing were also generated to show the gender difference in the
15 distribution across the sample.

16 Transition tables are used to illustrate the proportion of individuals moving between
17 categories. Using a binary student debt variable, equal to one if HELP is greater than \$0, the
18 category of interest in terms of understanding gender differences in HELP repayment is the
19 proportion of individuals moving from 1 to 0 in the HELP binary variable. That is, who has
20 held no student debt (0) in time t but held student debt (1) in $t-1$.

21 Finally, a pooled regression model tests for the significance of gender and other
22 demographic and socio-economic factors on HELP levels. Demographic and socio-economic
23 factors include gender, age, education, personal income, household type, SES, wealth and
24 attitudes to taking financial risk. The panel data regression model is as follows:

$$\begin{aligned}
HELP_{ij} = & \alpha_j + \beta_1 Year + \beta_2 Gender + \beta_3 Age + \beta_4 Household\ type \\
& + \beta_5 Education + \beta_6 Fem \times SES + \beta_7 SES + \beta_8 Fem \times Low\ Wealth \\
& + \beta_9 Wealth + \beta_{10} Fem \times Low\ Income + \beta_{11} Personal\ Income \\
& + \beta_{12} Fem \times No\ Risk + \beta_{13} Attitude\ to\ Taking\ Financial\ Risk \\
& + \beta_{14} Fem \times Education\ Industry + \beta_{15} Fem \times Health\ Industry \\
& + \beta_{16} Industry + \mu_{ij}
\end{aligned}$$

1 where:

2 *HELP* is the amount of outstanding student debt for person *i* over time *j*. It is expressed in
3 dollars. We confine the sample to people with *HELP* outstanding (>\$0).

4 *Year* is a dummy variable for each wave of the Wealth Module.

5 *Gender* is a binary variable where female is (1) and males (0)

6 *Age* is a series of age category dummy variables, recoded from the HILDA continuous age
7 variable. The categories include ages 16 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64 and over
8 65 years.

9 *Household Type* is a series of household type dummy variables, recoded from twenty-eight
10 HILDA household structure categories to four categories. These categories include couples
11 with children, couple, lone parent and lone person households.

12 *Education* is a series of qualification dummy variables, where respondents nominate their
13 highest qualification attained. The ten categories in HILDA have been recoded to three,
14 where degree indicates a degree or higher educational qualification, a vocational qualification
15 indicates further study after school that is not a university program, and Year11/12 is
16 completion of school level education and unknown or undetermined education.

17 *SES* is a series of Socio-Economic Status categories, recoded from the ten Socio-Economic
18 Indexes for Areas (SEIFA) classifications in HILDA to five. These categories include low

1 SES (SEIFA 1-2), low-mid SES (SEIFA 3-4), mid SES (SEIFA 5-6), mid-high SES (SEIFA
2 7-8) and high SES (SEIFA 9-10)

3 *Wealth* is a series of household net wealth categories, recoded from a continuous variable in
4 HILDA. The categories include less than \$499,000, \$500,000 to \$999,999, \$1,000,000 to
5 \$1,499,999 and greater than \$1,500,000.

6 *Personal Income* is a series of personal income dummy variables for four categories. The
7 categories have been recoded from the continuous variable in HILDA. The categories include
8 personal income less than \$19,999, \$20,000 to \$49,999, \$50,000 to \$99,999 and \$100,000
9 and over. Low income earners are assumed to be those earning less than \$19,999 per annum,
10 approximately a quarter of Australian average earnings.

11 *Attitude to risk-taking* is derived from an attitudinal question in the Wealth Module, where
12 respondents are asked to rate their level of willingness to take financial risks. We recode the
13 response to positive risk taking, that include indicating ‘substantial’, ‘above-average’ and
14 ‘average’ risks into a dummy variable ‘risk-taking’. We recode those that indicated no
15 appetite for risk-taking as ‘no risk’. We dropped responses to the fifth option of ‘I never have
16 any cash’ from being included in these variables for the purposes of our analysis.

17 *Industry* is a series of nineteen industry dummies from the Australian and New Zealand
18 Standard Industrial Classification (ANZSIC) 2006 division available in HILDA.

19 **4. Results**

20 Table 4.1 provides an overview HELP balances for women and male of selected
21 demographic and socio-economic characteristics, averaged over the 2002 to 2014 sample
22 period. The table shows that female HELP debtors were 60.9 percent (or 3,295 respondents)
23 over the 2002 to 2014 sample, with an average student debt of \$3,233.72. Males comprises
24 39.1 percent of HELP debtors, with an average student debt of \$3,189.68. In 2002, female
25 HELP debtors’ average balances were \$1,713.67, and this increased to \$5,332.48 in 2014.

1 Males experience similar increases, averaging \$1,653.92 in 2002 and \$5,292.49 in 2014. In
2 general, female student debtors are slightly older than men, have higher levels of education,
3 lower levels of participation in the labour force, and lower rates of personal income than their
4 male counterparts. Importantly, a very large portion of the student debtor population is under
5 34 years old.

6 <insert Table 4.1 here>

7 Figure 4.1 shows the trajectories of males and females for the level of student debt for
8 different cohorts. The trajectory of the 2002 cohort, the longest time span, shows a constant
9 upward trajectory for females over the 12-year period, whereas males reduced overall debt in
10 2010 and then increased it in 2014. Reasons for this pattern for men is unknown, but labour
11 market challenges related to the GFC may have increased return to study. The 2006 trajectory
12 shows a hump shape for men, converging with the female trajectory in 2014. The 2010
13 trajectory shows more divergence between the female and male trajectories, with males having
14 a much steeper gradient.

15 These data highlight worrying trends in HELP balances for both males and females. The
16 cohort holding student debt since (at least) 2002 does not seem to be reducing its balances over
17 time as much as would be expected. In fact, no downward trend is discernible. This finding is
18 consistent with estimates of increasing average times to repay debt (Highfield and Warren
19 2015). The steeper gradients, or quicker escalation, of debts for more recent cohorts, combined
20 with very long pay-down times observed, means student debts stay with the holder for quite a
21 long time, which is not ideal for either the Government budget or the debt holder, especially if
22 holding student debt has negative consequences for other financial decisions.

23 <insert Figure 4.1 here>

24 Further insight into repayment behaviours is provided by inspecting the transition tables
25 on the binary HELP variable. Table 4.2, Panel (i) shows that for females, 94.73 percent of

1 respondents have never held student debt, while 65.72 percent continue to hold student debt.
2 Over the sample period, 34.28 percent of respondents transitioned into having student debt,
3 while 5.27 percent of females paid off student debt (transitioned out of holding student debt).
4 A comparison of Panel A and B shows that the proportion of women that paid off student
5 debt over the sample period was slightly more than that of their male counterparts (5.27
6 percent vs 3.68 percent). This trend is upheld in Panels (ii), (iii) and (iv) that show the change
7 in states between each of the Wealth Modules. Interestingly, the HELP holders who stay in
8 the same state (1,1) have increased over time (64.38/60.32 percent in 2002-06, 62.57/64.59 in
9 2006-10, and 69.87/68.72 percent in 2010-14). This is a concerning trend for policymakers
10 looking to reduce the HELP burden on the balance sheet.

11 <insert Table 4.2>

12 Regression results provided in Table 4.3 provide marginal effects, Jackknife standard
13 errors and levels of significance for 10,508 observations. The adjusted r-square reports a
14 goodness of fit of 11.06 percent, meaning there is significant variance not explained by the
15 model. Generally, and reporting only on the statistical coefficients, HELP balances have
16 increased over the years, they are larger in younger age groups, they are larger for university
17 qualifications, and larger if you are in categories of high SES, high wealth, and mid-range
18 personal income. Those that are willing to take financial risks also have slightly higher levels
19 of HELP than the average. Those on high incomes, low SES, and a vocational qualification are
20 likely to have less HELP balances than the average. Interestingly, all household types are
21 significant and negative, meaning that people in these household types have HELP balances
22 substantially under the average. For household structures where having children as dependents
23 can strain household resources and result in gendered work/care decisions, such as couples
24 with children and lone parents, the results are similar. The marginal effects coefficient are
25 5,922.36 and -5,417.67, respectively. In comparison, Lone person households is -8,580.27 and

1 couples are -3,300.50. In response to the Grattan Institute report, it seems there is some merit
2 to the assertion that those in coupled households have capacity to repay HELP debt.

3 Several variables of interest relating to females are not significant. The marginal effect
4 for gender is not significant, but the direction of the relationship between HELP balances and
5 being female is negative (-1,127.11). Likewise, the interaction term for Female×Low Wealth
6 is negative but not significant (-206.84) and Female×No Risk is very small and negative (-
7 1.39). While not significant, the direction of the change indicates that women in these
8 categories maintain lower HELP balances than males. There could be several explanations for
9 these results, but the most likely one is that women are studying in fields that don't accrue as
10 much HELP as males, and/or have shorter programs of study. The descriptive statistics
11 (transition tables in particular) show that there are just as many women as men with HELP over
12 the sample period, so these results are unlikely to be due to women avoiding entering tertiary
13 education. Alternatively, women in these categories make enough income to meet the
14 repayment thresholds and/or make voluntary contributions in order to pay down HELP balance.
15 More detailed information is needed to support these contentions, but it certainly appears that
16 women maintain lower HELP balances than men, thus repaying their fair share.

17 However, two of the interaction terms have positive coefficients. Female×Low SES is
18 not significant but is positive marginal effect (1,026.14). In comparison to the low SES variable
19 being significant at the 10 percent level and negative (-1,552.33), this is worth noting. Females
20 in this category may be finding it more difficult than their male counterparts to reduce their
21 HELP balances. The other positive interaction term is Female×Low Income (1,464.91), which
22 is significant at the 10 percent level. Similarly, women in this category have higher HELP
23 levels than men. The magnitudes of the two positive effects are not great compared to some of
24 the other marginal effects reported (e.g. 2014 is 10,073.06), but it indicates women are finding
25 it harder than their male counterparts to reduce the balance over time.

1 Finally, the industries are examined, noting only two industries were significant.
2 Generally, people in the ‘Health Care and Social Assistance’ industry have \$5,184.69 more
3 HELP. This is likely to be associated with medicine, dentistry and other related professions
4 where lengthy degrees and training are required. Those in the ‘Accommodation and Food
5 Services’ industry have \$1,720.60 less HELP, and degrees aren’t necessary required. The
6 descriptive statistics showed that women are primarily employed in the ‘Health Care and Social
7 Assistance’ industry and the ‘Education and Training’ industry. Interaction terms were created
8 for these two industries to see the HELP repayment behaviour of women in these industries.
9 The regression showed no significance for the two marginal effects. For women in Health
10 though, they were likely to have \$5,531.60 less HELP than their male counterparts. This result
11 is most likely attributed to the difference in the HELP debt associated with more female-
12 dominated professions within the Health discipline, such as nursing.

13 <insert Table 4.3>

14 This analysis makes important contributions to the discourse on student debt. Overall,
15 we find that the HELP repayment behaviour of women is marginally better than men and
16 refutes the assertion by the Grattan Institute that there is a problem with women not paying
17 their way. The results need to be interpreted within the limitations of the data and there are
18 avenues for further research with higher frequency data. Nonetheless, the HILDA data does
19 provide evidence that females in particular categories, such as low income and low SES, hold
20 higher HELP balances than similar males. Notwithstanding the lack of significance, we provide
21 partial support for H₁ that females that are low income, low wealth, and low socio-economic
22 status maintain higher levels of HELP. Regarding H₂, the Female×No Risk interaction term
23 was not significant and the magnitude very small, so we do not support the hypothesis that
24 females that are risk averse maintain lower levels of HELP. They are on par with the average
25 HELP balances. Finally, females in Health maintain lower HELP balances than their male

1 counterparts, while females in Education have slightly higher balances. Thus, overall H₃, that
2 females in industries with highest female participation rates maintain higher levels of HELP,
3 is not supported.

4

5 **5. Discussion**

6 This study makes several contributions to the literature. First, results add to the current
7 literature on student debt trajectories. By including an additional observation point (2014) the
8 study extends earlier work of Higgins and Sinning (2013) and provides new insights into cohort
9 differences, observing the increasing debt trends. Transition tables further report gender
10 differences in HELP repayment behaviour over the whole sample period as well as in between
11 Wealth Modules, and highlight concerning trends regarding the increasing proportion of HELP
12 holders who do not pay off their balance.

13 We did not find gender to be a significant factor in the level of HELP balance, and for many
14 of the female interaction terms, the direction of the relationship was negative. This means that
15 there is no evidence that women are holding significantly higher balances of HELP than men
16 which may happen if they are impacted by the gender wage gap or not paying down their fair
17 share of HELP as asserted by the Grattan Institute. However, we did find that women in low
18 SES and low-income categories were carrying more HELP than males in the same category. In
19 the HILDA data averaged over the twelve-year period, the magnitude of these differences was
20 relatively small (1,026.14 and 1,464.91 respectively). Future research should revisit these
21 statistics given the policy change to lower the initial income threshold for compulsory
22 repayment in 2019.

23 This study makes a further contribution to the literature by examining the relationship
24 between industry classifications and HELP balances. Further research could examine the

1 returns on investment in education particular industries, or examine the field of study and the
2 industry working in. For example, the descriptive statistics show higher HELP balances for
3 industries such as Arts and Recreation Services, and Health Care and Social Assistance for
4 women.

5 While data is specific to Australia, the findings are important for higher education
6 policymakers internationally. In aggregate, high student debt can have negative consequences
7 on productivity and economic growth and widen the gender wealth gap (Barros et al. 2011;
8 Ferretti et al. 2016). Researchers and public policymakers are encouraged to monitor the
9 disquieting trends of increasing student debt balances that may produce different financial
10 outcomes for men and women. Future research on understanding whether prolonged holding
11 of student debt changes the financial decision-making of women, including changing jobs,
12 starting their own business, applying for loans or other activities is encouraged.

13

14 **Geolocation Information:** This article uses data that is representative of the Australian
15 population.

16 **Acknowledgements:** This research did not receive any specific grant from funding agencies
17 in the public, commercial, or not-for-profit sectors. The authors would like to acknowledge
18 the reviewers for their highly constructive comments which make this paper more valuable.

19

20 **Declarations of interest:** none

21 **Data Availability:** Information about accessing the HILDA Survey dataset is available at

22 <https://melbourneinstitute.unimelb.edu.au/hilda>

23

24 **References**

25

- 1 AIFS (Australian Institute of Family Studies) (2019) Divorce rates in Australia, Facts and Figures.
2 Retrieved from <https://aifs.gov.au/facts-and-figures/divorce-rates-australia>.
- 3 Andrews L (1999) Does HECS deter? Factors affecting university participation by Low SES groups.
4 *Occasional paper series 99F, Department of Education, Training and Youth Affairs, Higher*
5 *Education Division, Canberra*. Retrieved from <http://www.voced.edu.au/content/ngv%3A15411>
- 6 Archuleta K, Dale A and Spann SM (2013) College students and financial distress: Exploring debt,
7 Financial satisfaction and financial anxiety. *Journal of Financial Counselling and Planning*,
8 24(2); 50-62.
- 9 Armstrong F (2004) The price of graduation: Is our system of funding for nursing education failing
10 our students? *Australian Nursing Journal*, February, 22.
- 11 Aungles P, Buchanan I, Kermel T and MacLachlan M (2002) HECS and opportunities in higher
12 education: Investigating the impact of the Higher Education Contributions Scheme (HECS) on
13 the higher education system, *Draft working paper*. Canberra: Research, Analysis and
14 Evaluation Group, Department of Education, Science and Training. Retrieved from
15 [http://pandora.nla.gov.au/pan/68064/20070219-](http://pandora.nla.gov.au/pan/68064/20070219-0000/www.dest.gov.au/sectors/higher_education/publications_resources/profiles/hecs_and_opportunities_in_higher_education_investigating.html)
16 [0000/www.dest.gov.au/sectors/higher_education/publications_resources/profiles/hecs_and_op](http://pandora.nla.gov.au/pan/68064/20070219-0000/www.dest.gov.au/sectors/higher_education/publications_resources/profiles/hecs_and_opportunities_in_higher_education_investigating.html)
17 [rtunities_in_higher_education_investigating.html](http://pandora.nla.gov.au/pan/68064/20070219-0000/www.dest.gov.au/sectors/higher_education/publications_resources/profiles/hecs_and_opportunities_in_higher_education_investigating.html)
- 18 Barr N (1998) Higher education in Britain and Australia: What lessons? *Australian Economic Review*,
19 31(2); 179-188.
- 20 Barr N (2004) Higher education funding. *Oxford Review of Economic Policy*, 20(2); 264-282. doi:
21 10.1093/oxrep/grh015 Barros, C. P., Guironnet, J-P., & Peypoch, N. (2011). Productivity
22 growth and biased technical change in French higher education. *Economic Modelling*, 28(1-2),
23 641-646. doi: 10.1016/j.econmod.2010.06.005
- 24 Bartholomae S, Kiss E, Jurgenson JB, O'Neill B, Worthy SL and Kim J (2019) Framing the human
25 capital investment decision: Examining gender bias in student loan borrowing. *Journal of*
26 *Family and Economic Issues*, 40(1); 132-145.
- 27 Bozick R and Estacion A (2014) Do student loans delay marriage? Debt repayment and family
28 formation in young adulthood. *Demographic Research*, 30(69); 1865-1981.
- 29 Bricker J and Thompson J (2016) Does education loan debt influence household financial distress?
30 An assessment using the 2007-2009 survey of consumer finances panel. *Contemporary*
31 *Economic Policy*, 34(4); 660-677. <https://doi.org/10.1111/coep.12164>
- 32 Britton J, van der Erve L and Higgins T (2018) Income contingent student loan design: Lessons from
33 around the world, *Economics of Education Review*, online 21 June
34 <https://doi.org/10.1016/j.econedurev.2018.06.001>
- 35 Burdman P (2005) The student debt dilemma: Debt aversion as a barrier to college access. *Research*
36 *and Occasional Paper Series*, Berkeley, CA: Centre for Studies in Higher Education, UC.
37 Retrieved from [https://cshe.berkeley.edu/publications/student-debt-dilemma-debt-aversion-](https://cshe.berkeley.edu/publications/student-debt-dilemma-debt-aversion-barrier-college-access)
38 [barrier-college-access](https://cshe.berkeley.edu/publications/student-debt-dilemma-debt-aversion-barrier-college-access)
- 39 Cameron AC and Trivedi PK (2009) *Microeconometrics: Methods and Applications*. Melbourne:
40 Cambridge University Press
- 41 Carr J (2019) What is the average graduate salary in Australia? *GradAustralia*. Retrieved from
42 <https://gradaustralia.com.au/what-is-the-average-graduate-salary-in-Australia>
- 43 Cassells R, Vidyattama Y, Miranti R and McNamara J (2009) *The impact of a sustained gender wage*
44 *gap on the Australian economy: Report to the Office for Women, Department of Families,*
45 *Community Services, Housing and Indigenous Affairs*. Retrieved from
46 http://library.bsl.org.au/jspui/bitstream/1/1601/1/gender_wage_gap.pdf

- 1 Chang, B and McLaren, P (2018) Emerging issues of teaching and social justice in Greater China:
2 Neoliberalism and critical pedagogy in Hong Kong, *Policy Futures in Education*, 16(6); 781-
3 803.
- 4 Davis E and Lea SEG (1995) Student attitudes towards credit and debt. *Journal of Economic*
5 *Psychology*, 1; 663-679.
- 6 Department of Education and Training, Australian Government (2019) *Annual Report 2016-17*.
7 Retrieved from
8 https://docs.education.gov.au/system/files/doc/other/education_annual_report_2016-17_0.pdf
- 9 Despa S (2018) What is survival analysis? *StatNews #78*. Retrieved from
10 <https://www.cscu.cornell.edu/news/statnews/stnews78.pdf>
- 11 Despard MR, Perantie D, Taylor S, Grinstein-Weiss M, Friedline T and Raghavan R (2016) Student
12 debt and hardship: Evidence from a large sample of low-and-moderate-income households.
13 *Children and Youth Services Review*, 70; 8-18.
- 14 Dow, C (2014) Reform of the higher education demand driven system (revised), Budget Review
15 2014-15 Index. Retrieved from
16 [https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/
17 pubs/rp/BudgetReview201415/HigherEdu](https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/BudgetReview201415/HigherEdu)
- 18 Dwyer RE, Hodson R and McCloud L (2013) Gender, debt and dropping out of college. *Gender and*
19 *Society*, 27(1); 30-55.
- 20 Ferretti F, Jones S and McIntosh B (2016) Economic growth and the harmful effects of student loan
21 debt on biomedical research, *Economic Modelling*, 49 (September); 308-313.
- 22 Friedman Z (2018, 13 June) Student Loan Debt Statistics in 2018: A \$1.5 Trillion Crisis, *Forbes*,
23 Retrieved from [https://www.forbes.com/sites/zackfriedman/2018/06/13/student-loan-debt-
24 statistics-2018/#c1286687310f](https://www.forbes.com/sites/zackfriedman/2018/06/13/student-loan-debt-statistics-2018/#c1286687310f)
- 25 Gonzalez-Arnal S and Kilkey M (2009) Contextualising rationality: Mature student carers and higher
26 education in England. *Feminist Economics*, 15(1); 85-111.
27 <https://doi.org/10.1080/13545700802528323>
- 28 Ha H (2013) Credit card use and debt by female students: A case study in Melbourne, Australia.
29 *Youth Studies Australia*, 32(4); 57-71. Retrieved from
30 <https://search.informit.com.au/fullText;dn=769059811260161;res=IELHSS>
- 31 Hancock AM, Jorgensen BL and Swanson MS (2012) College students and credit card use: The role
32 of parents, work experience, financial knowledge and credit card attitudes. *Journal of Family*
33 *and Economic Issues*, 34(4); 369-381. Retrieved from
34 <https://link.springer.com/article/10.1007/s10834-012-9338-8>
- 35 Higgins T and Sinning M (2013) *Modelling income dynamics for public policy design: An application*
36 *to income contingent student loans*. Institute for the Study of Labour (IZA) Discussion Paper No.
37 7556. Retrieved from [http://melbourneinstitute.unimelb.edu.au/assets/documents/hilda-
38 bibliography/working-discussion-research-
39 papers/2013/Higgins_etal_Modeling_Income_Dynamics_for_Public_Policy_Design_dp7556.pdf](http://melbourneinstitute.unimelb.edu.au/assets/documents/hilda-bibliography/working-discussion-research-papers/2013/Higgins_etal_Modeling_Income_Dynamics_for_Public_Policy_Design_dp7556.pdf)
- 40 Highfield R and Warren N (2015) Does the Australian Higher Education Loan Program (HELP)
41 undermine personal income integrity. *eJournal of Tax Research*, 13(1), 202-261. Retrieved
42 from [https://www.business.unsw.edu.au/research-site/publications-site/ejournaloftaxresearch-
43 site/Documents/08_HighfieldWarren_HELP.pdf](https://www.business.unsw.edu.au/research-site/publications-site/ejournaloftaxresearch-site/Documents/08_HighfieldWarren_HELP.pdf)
- 44 Jackson N (2002) The Higher Education Contribution Scheme—A HECS on the Family? Joint
45 Special Issue. *Journal of Population Research and NZ Population Review*, September; 105-
46 117. Retrieved from
47 <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.488.9587&rep=rep1&type=pdf>

- 1 Jackson B and Reynolds J (2013) The price of opportunity: Race, student loan debt, and college
2 achievement. *Sociological Inquiry*, 83(3); 335-368. doi: <https://doi.org/10.1111/soin.12012>
- 3 James R (2002) *Socioeconomic Background and Higher Education Participation: An Analysis of*
4 *School Students' Aspirations and Expectations*, Canberra: Australian Government Publishing
5 Service. Retrieved from [https://melbourne-cshe.unimelb.edu.au/research/past-research-](https://melbourne-cshe.unimelb.edu.au/research/past-research-projects/equity/socioeconomic-background)
6 [projects/equity/socioeconomic-background](https://melbourne-cshe.unimelb.edu.au/research/past-research-projects/equity/socioeconomic-background)
- 7 Javine V (2013) Financial knowledge and student loan usage in college students, *Financial Services*
8 *Review*, 22(4); 367-387.
- 9 Kirkham E (2019) What is the average student loan interest rate? The Balance. Retrieved from
10 <https://www.thebalance.com/average-student-loan-interest-rate-4684306>
- 11 Knott M (2016) Collecting HECS from the dead on the table as the Turnbull government searches for
12 savings. *The Sydney Morning Herald*. March 22. Retrieved from
13 [http://www.smh.com.au/federal-politics/political-news/collecting-hecs-from-the-dead-on-the-](http://www.smh.com.au/federal-politics/political-news/collecting-hecs-from-the-dead-on-the-table-as-turnbull-government-searches-for-savings-20160317-gnl7kf.html)
14 [table-as-turnbull-government-searches-for-savings-20160317-gnl7kf.html](http://www.smh.com.au/federal-politics/political-news/collecting-hecs-from-the-dead-on-the-table-as-turnbull-government-searches-for-savings-20160317-gnl7kf.html)>
- 15 Linsenmeier DM, Rosen HS and Rouse CE (2006) Financial aid packages and college enrolment
16 decisions: An econometric case study. *Review of Economics and Statistics*, 88(1); 126-145.
17 Retrieved from <http://www.nber.org/papers/w9228>
- 18 Marks GN (2009) The social effects of the Australian Higher Education Contribution Scheme
19 (HECS), *Higher Education*, 57; 71-84. Retrieved from <http://www.jstor.org/stable/40269107>
- 20 Nelson B and Department of Education, Science and Training, Australia (2003) *Our Universities:*
21 *Backing Australia's Future*. Canberra: Department of Education, Science and Training.
22 Retrieved from <http://www.voced.edu.au/content/ngv%3A38781>
- 23 Norton A and Cherastidham I (2014) *Mapping Australian Higher Education 2014-15*, Grattan
24 *Institute*. Retrieved from [https://grattan.edu.au/wp-content/uploads/2014/10/816-mapping-](https://grattan.edu.au/wp-content/uploads/2014/10/816-mapping-higher-education-20142.pdf)
25 [higher-education-20142.pdf](https://grattan.edu.au/wp-content/uploads/2014/10/816-mapping-higher-education-20142.pdf)
- 26 Norton A (2016) *HELP for the Future: Fairer Repayment of Student Debt*, Grattan Institute.
27 Retrieved from [https://grattan.edu.au/wp-content/uploads/2016/03/968-HELP-for-the-](https://grattan.edu.au/wp-content/uploads/2016/03/968-HELP-for-the-future1.pdf)
28 [future1.pdf](https://grattan.edu.au/wp-content/uploads/2016/03/968-HELP-for-the-future1.pdf)
- 29 Nygreen, K (2018) Neoliberal reform and family engagement in schools: An intersectional gender
30 analysis, *Policy Futures in Education*, 17(2); 205-221.
- 31 O'Connor T (2003) Student debt is profoundly affecting nursing: An investigation into the impact of
32 student loan debt has revealed its negative effects on nurses' personal, professional and family
33 lives, *Kai Tiaki: Nursing New Zealand*, June. Retrieved from
34 [http://link.galegroup.com/apps/doc/A114701922/HRCA?u=griffith&sid=HRCA&xid=3d8eaa4](http://link.galegroup.com/apps/doc/A114701922/HRCA?u=griffith&sid=HRCA&xid=3d8eaa47)
35 [7](http://link.galegroup.com/apps/doc/A114701922/HRCA?u=griffith&sid=HRCA&xid=3d8eaa47)
- 36 PBO (Parliamentary Budget Office) (2016) *Higher Education Loan Programme, Report No. 02/2016*.
37 Canberra: Parliament of Australia.
- 38 Pearse H (2003) *The Social and Economic Impact of Student Debt: Research Paper*. Council of
39 Postgraduate Associations Incorporated, March. Retrieved from [http://www.capa.edu.au/wp-](http://www.capa.edu.au/wp-content/uploads/2016/12/impact_of_student_debt.pdf)
40 [content/uploads/2016/12/impact_of_student_debt.pdf](http://www.capa.edu.au/wp-content/uploads/2016/12/impact_of_student_debt.pdf)
- 41 Saleh A, Leslie HS, Yu Q and Seydel J (2017) Gender equity, student loans and returns on investment
42 in American higher education. *International Journal of Sociology and Education*, 6(2), 216-
43 243. Retrieved from file:///C:/Users/trace/Downloads/Dialnet-
44 [GenderEquityStudentLoansAndReturnsOnInvestmentInAm-6123256.pdf](file:///C:/Users/trace/Downloads/Dialnet-GenderEquityStudentLoansAndReturnsOnInvestmentInAm-6123256.pdf)
- 45 StataCorp (2011) *Stata: Release 12. Statistical Software*. College Station, Texas: Stata Press Publication

- 1 Stokes A and Wright S (2010) What are the alternatives to student loans in higher education funding?
2 *Contemporary Issues in Education Research*, 3(1); 19-30. Retrieved from
3 <https://files.eric.ed.gov/fulltext/EJ1072557.pdf>
- 4 Tesar, M (2019) Global politics and local impacts on educational policy, *Policy Futures in Education*,
5 17(3); 302-305.
- 6 Tumen S and Shulruf B (2008) The effect of student loan schemes on students returning to study.
7 *Journal of Higher Education Policy and Management*, 30(4); 401-414. Retrieved from
8 <https://www.tandfonline.com/doi/full/10.1080/13600800802383075?src=recsys>
- 9 Waddell GR and Singell Jr LD (2011) Do no-loan policies change the matriculation patterns of low-
10 income students? *Economics of Education Review*, 30(2); 203-214. Retrieved from
11 <https://pdfs.semanticscholar.org/16fd/2f0ab8237f931fd7ce8931dfd4a64309d78c.pdf>
- 12 Williams A and Oumlil B (2015) College student financial capability. *International Journal of Bank*
13 *Marketing*, 33(2); 637-653. Retrieved from
14 <https://www.emeraldinsight.com/doi/full/10.1108/IJBM-06-2014-0081>
- 15 Wright SJ (2005) *The Impact of Changes in HECS on Students from Low Socio-Economic*
16 *Backgrounds*, Sydney: Greenacre Educational Publications.
- 17 Woloschuk W, Lemay J and Wright B (2010) What is the financial state of medical students from
18 rural backgrounds during tuition fee deregulation? *Canadian Journal of Rural Medicine*, 15(4);
19 156-160. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20875315>
- 20 Women in Academic Report (2016) *Gender Pay Gap for Recent College Graduates Impacts Ability to*
21 *Pay Off Student Loan Debt*. Bartonsville: United States. Retrieved from
22 <https://www.aauw.org/research/deeper-in-debt/>
- 23 Workplace Gender Equality Agency (WGEA) (2018) Gender equity insights 2018: Inside Australia's
24 gender pay gap. Retrieved from [https://bcec.edu.au/assets/BCEC-WGEA-Gender-Equity-](https://bcec.edu.au/assets/BCEC-WGEA-Gender-Equity-Insights-2018-Report_WEB.pdf)
25 [Insights-2018-Report_WEB.pdf](https://bcec.edu.au/assets/BCEC-WGEA-Gender-Equity-Insights-2018-Report_WEB.pdf)
- 26 Worthy SL, Jonkman J and Blinn-Pike L (2010) Sensation-seeking, risk-taking, and problematic
27 financial Behaviours of college students, *Journal of Family and Economic Issues*, 31(2); 161-
28 170. Retrieved from <https://link.springer.com/article/10.1007%2Fs10834-010-9183-6>
- 29 Yezdni O (2015) The nature of choice and value for services and amenities in Australian universities,
30 *Journal of Higher Education Policy and Management*, 37(3); 282-294. Retrieved from
31 <https://www.tandfonline.com/doi/abs/10.1080/1360080X.2015.1034428>
- 32 Yu P, Kippen R and Chapman B (2007) Births, debts and mirages: The impact of the Higher
33 Education Contribution Scheme (HECS) and other factors on Australian fertility expectations,
34 *Journal of Population Research*, 24(1), 73-90. Retrieved from
35 <https://link.springer.com/article/10.1007%2F03031879>

36
37
38
39
40
41
42
43

- 1
- 2
- 3
- 4
- 5
- 6
- 7

Appendix

Table 4.1. Descriptive Statistics, Student Debt Holders

Parameter	Student Debt, 2002-2014					
	Female			Male		
	Proportion of Total Sample (N=3295)	Mean Student Debt	Standard Deviation	Proportion of Total Sample (N=2114)	Mean Student Debt	Standard Deviation
Year						
2002	0.186	1,713.67	6,312.87	0.199	1,653.92	6,150.49
2006	0.191	2,013.07	6,989.64	0.179	2,008.35	7,081.74
2010	0.230	3,150.42	10,013.71	0.235	3,071.06	9,701.86
2014	0.392	5,332.48	14,648.06	0.387	5,292.49	15,308.56
Gender	0.609	3,233.72	10,586.88	0.391	3,189.68	10,800.46
Age Category						
16-24 years	0.396	7,356.72	15,341.76	0.457	6,709.65	5,663.27
25-34 years	0.371	5,440.17	13,219.40	0.359	5,631.95	13,848.34
35-44 years	0.149	1,700.90	6,517.45	0.118	1,643.92	6,648.27
45-54 years	0.064	3,048.91	11,142.00	0.044	2,461.29	10,229.24
55-64 years	0.017	1,754.63	7,637.60	0.018	2,110.82	8,229.97
Over 65 years	0.003	239.18	2,526.61	0.004	222.78	2,171.75
Household Type						
Couple with children	0.401	3,876.80	11,436.52	0.384	3,708.97	1,650.53
Couple	0.259	2,705.91	10,312.35	0.241	2,616.21	10,074.19
Lone parent	0.121	3,256.57	9,832.64	0.079	3,711.72	10,868.50
Lone person	0.159	1,700.79	6,798.95	0.206	1,556.58	6,091.57
Education						
Bachelor's degree and above	0.510	6,697.87	15,510.91	0.438	6,605.79	16,878.06
Vocational qualification	0.171	2,248.67	8,021.73	0.143	1,905.14	7,426.13
Year 11/12	0.319	2,200.15	8,483.97	0.420	2,668.23	9,103.33
Socio-Economic Status						
Low SES	0.137	1,814.57	6,838.98	0.130	1,744.60	6,726.87
Low-Mid SES	0.173	2,555.75	8,325.01	0.173	2,519.67	8,559.41
Mid SES	0.198	2,812.52	10,470.54	0.173	2,835.53	11,772.44

	Mid-High SES	0.237	4,023.11	11,684.00	0.246	4,050.57	11,762.59
	High SES	0.253	4,993.36	13,909.36	0.279	4,749.39	13,410.90
Wealth							
	<\$499,000	0.732	3,242.22	10,355.59	0.727	3,305.75	10,493.71
	\$500,000-\$999,999	0.154	2,942.87	9,409.66	0.132	2,686.78	8,938.35
	\$1,000,000-\$1,499,999	0.05	3,266.76	10,134.96	0.064	3,138.13	9,901.08
	>\$1,500,000	0.06	3,755.71	14,045.28	0.078	3,559.98	15,405.39
Personal Income							
	Less than \$19,999	0.369	2,783.94	9,725.02	0.344	2,918.56	9,672.01
	\$20,000 to \$49,999	0.400	3,253.39	10,373.23	0.365	3,243.22	11,509.74
	\$50,000 to \$99,999	0.214	4,383.82	12,964.19	0.243	3,365.32	11,053.70
	\$100,000 and over	0.017	2,656.18	8,777.14	0.049	3,306.46	10,958.54
Attitude to Risk-Taking							
	No Risk	0.366	2,945.66	9,771.48	0.240	2,638.77	9,469.63
	Risk-Taking	0.360	3,807.76	11,910.35	0.487	3,751.45	12,234.34
Industry							
	Agriculture, Forestry and Fishing	0.005	1,184.47	5,405.14	0.015	1,570.57	6,907.44
	Mining	0.003	2,193.33	6,650.35	0.010	2,744.48	9,431.26
	Manufacturing	0.023	3,009.83	9,498.72	0.044	2,297.24	8,310.12
	Electricity, Gas, Water and Waste Services	0.002	1,891.59	5,252.31	0.007	3,434.84	10,436.27
	Construction	0.007	2,332.10	7,178.67	0.042	2,369.55	8,716.59
	Wholesale Trade	0.010	2,743.45	9,048.44	0.018	2,506.40	8,194.09
	Retail Trade	0.108	4,537.39	11,828.48	0.115	5,070.06	12,355.19
	Accommodation and Food Services	0.071	4,376.48	11,576.55	0.071	4,642.15	15,937.06
	Transport, Postal and Warehousing	0.006	1,931.24	9,800.80	0.026	2,472.19	10,107.04
	Information, Media and Telecommunications	0.022	5,307.48	23,136.23	0.021	4,178.38	11,402.17
	Financial and Insurance Services	0.025	3,589.45	10,811.49	0.035	2,425.32	14,705.33
	Rental, Hiring and Real Estate Services	0.008	3,331.15	11,805.29	0.010	3,838.85	10,733.66

Professional, Scientific and Technical Services	0.077	5,826.61	14,204.30	0.110	6,387.61	16,718.93
Administrative and Support Services	0.018	3,001.02	9,804.00	0.019	3,544.25	10,528.02
Public Administration and Safety	0.036	3,591.28	10,164.45	0.050	3,780.47	11,013.75
Education and Training	0.148	5,514.31	12,743.72	0.087	5,708.27	12,303.88
Health Care and Social Assistance	0.175	4,449.65	12,449.52	0.065	6,682.30	18,383.99
Arts and Recreation Services	0.022	5,837.91	13,876.75	0.027	5,676.53	16,438.66
Other Services	0.017	3,265.87	10,287.56	0.024	2,995.68	9,184.35

Student Debt, 2002-2014

Parameter	Female			Male		
	Proportion of Total Sample (N=6,816)	Mean Student Debt	Standard Deviation	Proportion of Total Sample (N=6,220)	Mean Student Debt	Standard Deviation
<i>N</i>						
Year						
2002	0.228	1,713.67	6,312.87	0.230	1,653.92	6,150.49
2006	0.228	2,013.07	6,989.64	0.225	2,008.35	7,081.74
2010	0.237	3,150.42	10,013.71	0.237	3,071.06	9,701.86
2014	0.307	5,332.48	14,648.06	0.308	5,292.49	15,308.56
Gender	0.526	3,233.72	10,586.88	0.474	3,189.68	10,800.46
Age Category						
16-24 years	0.159	7,356.72	15,341.76	0.171	6,709.65	15,663.27
25-34 years	0.169	5,440.17	13,219.40	0.172	5,631.95	13,848.34
35-44 years	0.182	1,700.90	6,517.45	0.178	1,643.92	6,648.27

45-54 years	0.171	3,048.91	11,142.00	0.173	2,461.29	10,229.24
55-64 years	0.133	1,754.63	7,637.60	0.133	2,110.82	8,229.97
Over 65 years	0.169	239.18	2,526.61	0.153	222.78	2,171.75
Household Type						
Couple with children	0.397	3,876.80	11,436.52	0.434	3,708.97	11,650.53
Couple	0.289	2,705.91	10,312.35	0.310	2,616.21	10,074.19
Lone parent	0.125	3,256.57	9,832.64	0.064	3,711.72	10,868.50
Lone person	0.162	1,700.79	6,798.95	0.155	1,556.58	6,091.57
Education						
Bachelor's degree and above	0.227	6,697.87	15,510.91	0.200	6,605.79	16,878.06
Vocational qualification	0.229	2,248.67	8,021.73	0.350	1,905.14	7,426.13
Year 11/12 [#]	0.544	2,200.15	8,483.97	0.449	2,668.23	9,103.33
Socio-Economic Status						
Low SES	0.205	1,814.57	6,838.98	0.200	1,744.60	6,726.87
Low-Mid SES	0.199	2,555.75	8,325.01	0.199	2,519.67	8,559.41
Mid SES	0.198	2,812.52	10,470.54	0.199	2,835.53	11,772.44
Mid-High SES	0.199	4,023.11	11,684.00	0.196	4,050.57	11,762.59
High SES	0.200	4,993.36	13,909.36	0.207	4,749.39	13,410.90
Wealth						
<\$499,000	0.609	3,242.22	10,355.59	0.597	3,305.75	10,493.71
\$500,000-\$999,999	0.208	2,942.87	9,409.66	0.209	2,686.78	8,938.35

\$1,000,000- \$1,499,999#	0.08	3,266.76	10,134.96	0.085	3,138.13	9,901.08
>\$1,500,000	0.10	3,755.71	14,045.28	0.109	3,559.98	15,405.39
Personal Income						
Less than \$19,999	0.426	2,783.94	9,725.02	0.294	2,918.56	9,672.01
\$20,000 to \$49,999	0.355	3,253.39	10,373.23	0.303	3,243.22	11,509.74
\$50,000 to \$99,999#	0.180	4,383.82	12,964.19	0.278	3,365.32	11,053.70
\$100,000 and over	0.038	2,656.18	8,777.14	0.125	3,306.46	10,958.54
Attitude to Risk-Taking						
No Risk	0.404	2,945.66	9,771.48	0.302	2,638.77	9,469.63
Risk-Taking	0.319	3,807.76	11,910.35	0.441	3,751.45	12,234.34
Industry						
Agriculture, Forestry and Fishing	0.013	1,184.47	5,405.14	0.034	1,570.57	6,907.44
Mining	0.003	2,193.33	6,650.35	0.018	2,744.48	9,431.26
Manufacturing	0.029	3,009.83	9,498.72	0.091	2,297.24	8,310.12
Electricity, Gas, Water and Waste Services	0.002	1,891.59	5,252.31	0.010	3,434.84	10,436.27
Construction	0.010	2,332.10	7,178.67	0.093	2,369.55	8,716.59
Wholesale Trade	0.013	2,743.45	9,048.44	0.029	2,506.40	8,194.09
Retail Trade	0.069	4,537.39	11,828.48	0.055	5,070.06	12,355.19
Accommodation and Food Services	0.046	4,376.48	11,576.55	0.038	4,642.15	15,937.06
Transport, Postal and Warehousing	0.120	1,931.24	9,800.80	0.045	2,472.19	10,107.04

Information, Media and Telecommunications	0.012	5,307.48	23,136.23	0.016	4,178.38	11,402.17
Financial and Insurance Services	0.023	3,589.45	10,811.49	0.021	2,425.32	14,705.33
Rental, Hiring and Real Estate Services	0.010	3,331.15	11,805.29	0.008	3,838.85	10,733.66
Professional, Scientific and Technical Services	0.041	5,826.61	14,204.30	0.052	6,387.61	16,718.93
Administrative and Support Services	0.020	3,001.02	9,804.00	0.019	3,544.25	10,528.02
Public Administration and Safety	0.031	3,591.28	10,164.45	0.051	3,780.47	11,013.75
Education and Training	0.084	5,514.31	12,743.72	0.038	5,708.27	12,303.88
Health Care and Social Assistance	0.124	4,449.65	12,449.52	0.032	6,682.30	18,383.99
Arts and Recreation Services	0.010	5,837.91	13,876.75	0.014	5,676.53	16,438.66
Other Services	0.021	3,265.87	10,287.56	0.029	2,995.68	9,184.35

Figure 4.1. Cohort Trajectories

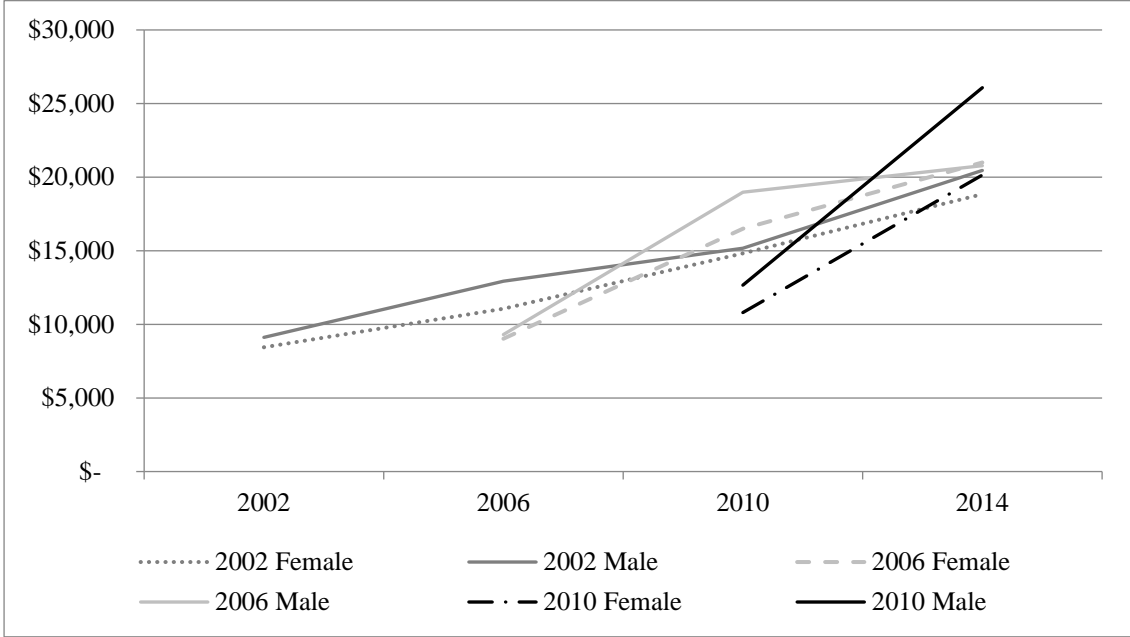


Table 4.2 Transition Tables

i. 2002-2014				ii. 2002-2006			
A. Female HELP holder	Lagged Female HELP holder	A. Female HELP holder	Lagged Female HELP holder				
	0 1	Total		0	1	Total	
0	14,895 826	15,721	0	4,793	168	4,961	
	94.73 5.27	100.00		96.61	3.39	100.00	
1	566 1,088	1,654	1	171	309	480	
	34.28 65.72	100.00		35.63	64.38	100.00	
Total	15,461 1914	17,375	Total	4,964	477	5,441	
	88.97 11.03	100.00		91.23	8.77	100.00	
B. Male HELP holder	Lagged Male HELP holder	B. Male HELP holder	Lagged Male HELP holder				
	0 1	Total		0	1	Total	
0	13,712 524	14,326	0	4,321	102	4,423	
	96.32 3.68	100.00		97.69	2.31	100.00	
1	369 681	1,050	1	125	190	315	
	35.14 64.86	100.00		39.68	60.32	100.00	
Total	14,081 1025	15,286	Total	4,446	292	4,738	
	92.12 7.88	100.00		93.84	6.16	100.00	
iii. 2006-2010							iv. 2010- 2014
A. Female HELP holder	Lagged Female HELP holder	A. Female HELP holder	Lagged Female HELP holder				
	0 1	Total		0	1	Total	
0	4,930 255	5,185	0	4,972	386	5,358	
	95.08 4.92	100.00		92.8	7.2	100.00	
1	195 326	521	1	185	429	614	
	37.43 62.57	100.00		30.13	69.87	100.00	
Total	5,125 581	5,706	Total	5,157	815	5,972	
	89.82 10.18	100.00		86.35	13.65	100.00	
B. Male HELP holder	Lagged Male HELP holder	B. Male Student HELP holder	Lagged Male HELP holder				
	0 1	Total		0	1	Total	
0	4,511 182	4,693	0	4,641	227	4,868	
	96.12 3.88	100.00		95.34	4.66	100.00	
1	108 197	305	1	127	279	406	
	35.41 64.59	100.00		31.28	68.72	100.00	
Total	4,619 379	4,998	Total	4,768	506	5,274	
	92.42 7.58	100.00		90.41	9.59	100.00	

Table 4.3 Pooled Regression

Variables	Student Debt (\$)	
	Marginal Effects	Jackknife Standard Error
Year		
2002	-2,255.11 ***	584.31
2006 [#]		
2010	4,229.15 ***	556.73
2014	10,073.06 ***	511.74
Gender		
Female	-1,127.11	762.14
Male [#]		
Age Category		
16-24 years	6,466.48 ***	615.94
25-34 years	3,889.79 ***	593.92
35-44 years [#]		
45-54 years	4,235.14 ***	652.42
55-64 years	4,533.33 ***	817.49
Over 65 years	-1,476.41	1,532.84
Household Type		
Couple with children [#]	-5,922.36 ***	807.12
Couple	-3,300.50 ***	825.42
Lone parent	-5,417.67 ***	925.08
Lone person	-8,580.27 ***	929.93
Education		
Bachelor's degree and above	4,827.10 ***	489.88
Vocational qualification	-1,474.24 **	510.42
Year 11/12 [#]		
Socio-Economic Status		
Female×Low SES	1,026.14	1,069.01
Low SES	-1,552.33 *	866.54
Low-Mid SES	-299.54	601.76
Mid SES [#]		
Mid-High SES	1,319.32 *	556.07
High SES	2,714.47 ***	553.57
Wealth		
Female×Low Wealth	-206.84	752.92
<\$499,000	300.43	836.82
\$500,000-\$999,999	-616.27	752.45
\$1,000,000-\$1,499,999 [#]		851.30

>\$1,500,000	1,648.64	**	851.30
Personal Income			
Female×Low Income	1,464.91	*	803.06
Less than \$19,999	1,118.56		755.90
\$20,000 to \$49,999	2,075.63	***	501.12
\$50,000 to \$99,999#			
\$100,000 and over	-2,023.30	**	774.99
Attitude to Risk-Taking			
Female×No Risk	-1.39		787.78
No Risk	323.24		670.21
Risk-Taking	881.07	*	464.02
Industry			
Female×Education	246.49		1,284.94
Female×Health	-5,531.60		1,406.99
Agriculture, Forestry and Fishing	-565.57		1,657.10
Mining	508.91		2,020.37
Manufacturing	-75.04		927.44
Electricity, Gas, Water and Waste Services	-255.58		2,306.96
Construction	-1,298.91		1,021.10
Wholesale Trade	-997.87		1,416.26
Retail Trade	-503.47		792.62
Accommodation and Food Services	-1,720.60	**	831.23
Transport, Postal and Warehousing	450.58		1,332.99
Information, Media and Telecommunications	-83.92		1,356.55
Financial and Insurance Services	-555.97		1,162.23
Rental, Hiring and Real Estate Services	2,423.47		1,926.97
Professional, Scientific and Technical Services	358.60		811.75
Administrative and Support Services	-262.44		1,310.46
Public Administration and Safety	-692.32		976.02
Education and Training	-877.67		1,151.12
Health Care and Social Assistance	5,184.69	***	1,307.86
Arts and Recreation Services	465.73		1,331.36
Other Services	-115.09		1,222.08
Number of observations	10,508		
F statistic/ Wald Chi2	27.130		
R-Square	0.115		
Adjusted R-Square	0.111		

Notes: *p<0.10, **p<0.05, ***p<0.01; # denotes the reference category.

Marginal effects indicate the effect of each outcome on the level of Student Debt; the standard normal density function is used for the continuous variables; the marginal effects for the dummy variables are analysed by comparing the probabilities that result when the variable takes its two different values with those that occur with the other variables held at their sample means; probabilities for all categories sum to zero.