

HECS and HECS-HELP: Equity Issues

by

Elisa Rose Birch

Business School, University of Western Australia

and

Paul W. Miller*

Business School, University of Western Australia

Abstract

There have been many changes to the Higher Education Contribution Scheme (HECS) since its introduction in 1989. The most significant of these is possibly the reforms announced in the 2003 Federal Budget, which allow universities to increase the contributions required of students by up to 25 per cent. This paper considers the distribution of deferred HECS liabilities according to the socioeconomic status of students. An algorithm is presented for converting area-level data to its individual-level equivalent. It is found that students of lower socioeconomic status defer a much larger proportion of their HECS than students of higher socioeconomic status. The adverse side effects of HECS identified in the literature will therefore be more acute for low socioeconomic status background students than for their wealthier counterparts.

For correspondence:

Professor Paul W. Miller
Business School,
Mail Bag M251,
University of Western Australia,
35 Stirling Highway
Crawley WA 6009
Ph: +61 8 6488 2924
Email: pwm@biz.uwa.edu.au

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HECS and HECS-HELP: Equity Issues

I Introduction

The Higher Education Contribution Scheme (HECS) was introduced in Australia in 1989. It was seen as a way through which Australian students could co-fund the cost of their university studies and hence facilitate an expansion of the tertiary sector. At the time of introduction, students (on average) were required to pay approximately twenty per cent of the cost of their university courses.

Since 1989 there have been various changes to HECS, some minor, others major. The most significant of these has undoubtedly been the reforms introduced in the 2003 Federal Budget. These reforms abolished the HECS financing system, replacing it by a Higher Education Loans Program (known as HECS-HELP).

These substantial changes to the way of financing the higher education sector affect a large number of students, with approximately 750,000 domestic students at university in recent years. Despite this, only little is known of the impact that HECS has had, or that HECS-HELP is likely to have. It is generally argued that HECS has had a significant influence on applications to enter university (*e.g.*, Andrews, 1999; Robertson *et al.*, 1990), particularly among mature aged students (see Andrews 1999; Aungles *et al.*, 2002). It has also been claimed that among those who attend university, HECS is associated with adverse impacts on graduates' ability to accumulate savings for home deposits (Mudd *et al.*, 2001). It has also been linked to the decline in Australia's total fertility rate (see Jackson, 2002; Kelly *et al.* 2003) and to a brain drain from Australia (see Armstrong, 2004). Importantly, there was no improvement in the representation in tertiary institutions of students from a low socioeconomic background following the introduction of HECS (Birrell *et al.*, 2000).

Are the impacts of HECS among students attending university neutral across socioeconomic classes? The limited writing on this suggests they are not. Curtin (1997), for example, argues that HECS is equivalent to an income tax surcharge that focuses on the benefit principle of taxation to the exclusion of income re-distribution principles, with the result being that "...HECS is a notable contribution to perpetuation of the poverty trap in which most Australians find themselves". The Council of Postgraduate Associations (2003) concludes, however, that '...there is an

urgent need for more extensive research into the wider social and economic impact of student debt in Australia”.

This paper presents an analysis of the distribution of deferred HECS liabilities according to the socioeconomic status of students. It has a focus on inequality from the perspective of the family backgrounds of students, which is in line with much of the higher education literature and with government policy. Government policy, for example, has a stated commitment to equity, with merit-based scholarships (*e.g.* Commonwealth Learning Scholarships) being provided for target equity groups, including those from low socioeconomic status backgrounds. As outlined in Dobson and Skuja (2005), low socioeconomic status background is defined in the Commonwealth Equity Scheme as those from the 25 per cent of postcodes at the bottom of the socioeconomic hierarchy.

The paper shows that many students from high socioeconomic status families pay their HECS (or have their HECS paid—see Smith *et al.*, 1998) up-front. HECS therefore is likely to have minimal impact on the subsequent financial situation, in terms of net (after-tax) earnings, of these students. However, few students from low socioeconomic status to medium socioeconomic status families pay their HECS (or have their HECS paid) up-front. For these students HECS constitutes an obligation that is likely to affect their future after-tax earnings, and hence impact on their real future standard of living and presumably their future decision making on a range of wealth-sensitive issues. It may also impact on current decision making. HECS has been discussed in the literature in relation to matters such as subject choice at university, propensities to undertake further study, brain drains, and housing choice.

This paper is structured as follows. Section II provides a brief history of the Higher Education Contribution Scheme. Section III discusses issues that arise when attempting to analyse aspects of HECS according to the socioeconomic status of students’ parents. Section IV considers a range of distributional aspects of HECS. This analysis is based on aggregate-level data organised according to the home location postcode provided by students. Then Section V considers the type of relationship that must exist between HECS debts and individual-level information on students’ socioeconomic background. Section VI offers a discussion of the findings.

II History of the Higher Education Contribution Scheme

Prior to 1974 approximately three-quarters of all students studying at Australian universities were in receipt of State Government Teachers' College Scholarships or Commonwealth Government Scholarships which provided free education (Chapman, 2001). The remainder of students paid up-front university tuition fees. In 1969, the average up-front tuition fees for Australian universities ranged from \$370 to \$430 per year, depending on course studied (Selby Smith, 1975). In 2004 terms, these average fees are equivalent to \$3,179 and \$3,695, respectively.

In 1973 the newly elected Whitlam Labor Government abolished up-front tuition fees for tertiary students. While this was done as a means of reducing the barriers to participating in higher education, particularly for students of a low socioeconomic background, the policy change did not have a major impact on university participation rates (Hope and Miller, 1988; Chapman, 2001). This was mainly because only a small proportion of students paid up-front tuition fees, and because many individuals from low socioeconomic backgrounds did not complete high school, and thus did not reach the academic requirements for tertiary study.

There were no major changes to the financing arrangements for student tuition fees until 1986. This was when, in order to offset the rising costs of tertiary education, the Labor Government introduced the Higher Education Administration Charge (HEAC) (see Aungles *et al.*, 2002). Under this scheme, all students were required to make an annual contribution towards the higher education institutions' administrative costs. This payment was annually indexed to inflation and did not vary by the students' course load. In 1987, the contribution was \$250 per student. In 1988 the HEAC was increased to \$263 (equivalent to \$437 in 2004).

The rapid growth in student enrolments in the mid-to-late 1980s raised concerns over the government's ability to fund the system (Dawkins, 1987). The Committee on Higher Education Funding (Wran Committee) was formed to address this and related issues, and recommended that Australia adopt a higher education contribution charge where students pay a deferrable contribution towards the costs of their tertiary studies.

Based on the recommendations made by the Wran Committee, in 1989 the Australian Government introduced HECS. Under this scheme, domestic students were required to pay \$1,800 per year, or approximately 20 per cent of the cost of a university course.¹ The remainder of the costs were met by the government. Students' contributions could be deferred until their earnings reached a threshold level of \$22,000, a figure which was based on average annual earnings. Once at this income threshold, students were required to pay back a proportion of their HECS liabilities, at a rate between one per cent, if their taxable income was between \$22,000 and \$25,000, and three per cent, if their taxable income was over \$34,999 (see Table 1). No interest was charged on students' HECS debts, but they were indexed to inflation. Students who chose to pay up-front to their institution for each semester received a 15 per cent discount on their HECS liability. This discount has been argued by Curtin (1997) to be the equivalent of a positive real rate of interest on HECS debts.

A number of studies have found that HECS significantly influenced application rates to university (see Edwards, 1989; Robertson *et al.*, 1990; Savvas *et al.*, 1994; Andrews, 1999). For example, the analysis by Andrews (1999) found that Year 12 applications to university fell by 20,000 persons, or 14 per cent, when HECS was introduced. Similarly, Robertson *et al.* (1990) found that approximately 8 per cent of Victorian and West Australian Year 12 students stated that HECS was a very important reason for them not applying to university.

A number of minor changes were made to the HECS system between 1989 and 1996. These included:

- Increases in the level of students' contributions. By 1996, students were required to contribute \$2,442 per year to the cost of their studies, representing an overall increase of 36 per cent from 1989. These increases only reflected changes in the consumer price index.
- Changes to the measure of income threshold and repayment income. In 1996 the income threshold and the reference income for repayment rates changed from students' taxable income to their HECS repayment income. The HECS repayment income is a student's taxable income for a year, plus any amount of taxable income that they claim has been reduced by a net rental loss and

any reportable fringe benefits amounts shown on their *Pay As You Go (PAYG) Payment Summary*.

- Increases in the income threshold level. Over the period of 1989 to 1996, the income threshold level increased 25 per cent, to \$27,675. These increases were a result of changes in average weekly earnings.
- Changes to the repayment rates once students were at the income threshold. In 1996 the repayment rate ranged from three per cent for income between \$27,675 and \$31,449 to five per cent for income over \$44,029.
- Changes to the discount received for up-front payments. In 1993 the discount for up-front payments to institutions increased to 25 per cent. In 1996 a discount for voluntary payments to the Australian Tax Office of 15 per cent for payments over \$499 was introduced. As well, in 1996 and 1997, a 10 per cent discount was given for payments at two per cent of repayment income between a voluntary threshold (\$20,000 in 1996) and first required threshold (\$28,522 in 1996).

In 1997 the Coalition Government made four major reforms to the HECS system. First, there was a substantial increase in the levels that students contributed to the costs of their tertiary studies. Under the new system, students' contributions to the costs of their university study increased between 35 and 125 per cent.

Second, the proportion of tertiary costs that students paid varied according to the costs of their course and the average earnings potential of graduates from their course, though continuing students were exempt from this reform, and were required to pay a flat (non-differential) rate of HECS, equal in 1997 to \$2,478. Commencing students were categorised into three bands. HECS Band 1 included students who studied in the subject areas of arts, humanities, legal studies and justice, social studies, visual and performing arts, education and nursing. These students were required to contribute \$3,300 per year towards the costs of their university education. HECS Band 2 comprised students studying mathematics, computing, health sciences (excluding medicine, medical science, dentistry and dental services), agriculture, renewable resources, built environment, architecture, sciences, engineering, processing and administration, business and economics. They were required to pay tuition fees of

\$4,700. HECS Band 3 students comprised those who studied law, medicine, medical science, dentistry, dental services and veterinary science subjects. The amount which these students were required to contribute towards the costs of their university education was \$5,500 per year. The status quo prevailed in terms of up-front payments to institutions and voluntary payments to the Australian Tax Office. The only significant change here between 1997 and 2005 occurred in 1998 when the 10 per cent discount for voluntary payments of two per cent of repayment income between the voluntary income threshold and the first required threshold was abolished. This followed from the marked reduction in the threshold income, described below.

The third major change to the system was a substantial increase in the rates at which students were required to start paying back their HECS debt. Specifically, in 1997 the income threshold level was reduced to \$20,701. This income threshold level was considerably lower than the average weekly earnings of Australians and was chosen to increase the rate at which students start paying back their HECS debt. The repayment rates were increased from a maximum of five per cent for students with HECS repayment income over \$44,029 to a maximum of six per cent for students with HECS repayment income over \$37,263.

The final major reform in 1997 was a small shift towards the deregulation of university fees. Hence, universities were able to charge their own level of tuition fees for students who were not accepted into university under existing university HECS quotas. However, they were required to have at least 75 per cent of students in HECS subsidised places.

Although the 1997 reforms to HECS drew some criticisms, it appears that they had little impact on total university participation (see La Rocque, 2003; Chapman and Ryan, 2002). However, a number of studies show that they had a negative impact on the university application rates of mature age students. For example, Andrews (1999) found that the number of mature aged applicants fell by 10 per cent after the 1997 changes to HECS were implemented. Similarly, Aungles *et al.* (2002) reported that 17,000 fewer mature aged students applied for university places following the 1997 changes to HECS. The Ministerial Committee of Advice to the Minister for Tertiary

Education and Training in Victoria also attributed the decline in mature age students at Victorian universities to the 1997 reforms to HECS (see Andrews, 1999).

This impact is generally attributed to the changes to the rates at which HECS debt had to be repaid (Andrews, 1999). Many mature aged students combine study with work, and so may have been subjected immediately to HECS repayments following the implementation of the 1997 reforms.

With the effects of subsequent minor HECS policy changes and inflation, in 2004 students in HECS Band 1 paid \$3,768 per year for their degree. Students in HECS Band 2 paid tertiary fees of \$5,367 and HECS Band 3 students were required to contribute \$6,283 towards the costs of their higher education. The income threshold level has also been increased since 1997. As shown in Table 1, the income threshold level for 2004 was \$25,348. This represents an increase of 22 per cent. The HECS repayment income levels at which the various repayment rates cut in have also increased. For example, in 1997 the income range for students who were required to repay their HECS at three per cent of their HECS repayment income was \$20,701 to \$21,830. In 2004, the corresponding income range was \$25,348 to \$26,731.

Table 1 HECS Repayment Income Threshold Level and Repayment Rates, 1989, 1997 and 2004

Percentage of HECS repayment income ^(a)	1989 Income levels	1997 Income levels	2004 Income levels
0.0%	Less than \$22,000	Less than \$20,701	Less than \$25,348
1.0%	\$22,000 to \$24,999	-	-
2.0%	\$25,000 to \$34,999	-	-
3.0%	More than \$34,999	\$20,701 to \$21,830	\$25,348 to \$26,731
3.5%	-	\$21,831 to \$23,524	\$26,732 to \$28,805
4.0%	-	\$23,525 to \$27,288	\$28,806 to \$33,414
4.5%	-	\$27,289 to \$32,934	\$33,415 to \$40,328
5.0%	-	\$32,935 to \$34,665	\$40,329 to \$42,447
5.5%	-	\$34,666 to \$37,262	\$42,448 to \$45,628
6.0%	-	More than \$37,262	More than \$45,628

Source: www.goingtouni.gov.au

Notes: ^(a) For 1989, repayments were based on taxable income.

HECS appears to have had little impact on aggregate participation at university, a finding that may be associated with excess demand in the higher education sector and government controls on enrolments over much of the period under review. However, a number of studies have indicated that paying back HECS liabilities via the income

tax system has had a substantial negative effect on students' economic and social wellbeing after they graduate (see Mudd *et al.*, 2001; Kelly *et al.*, 2003; Jackson, 2002).

Mudd *et al.* (2001, p. 26) state "In addition, the introduction of HECS, with the requirement for tertiary graduates to repay part of the costs of their education, results in them entering the workforce with a debt. This could retard their initial capacity to save the equity required to buy a first-home". Jackson (2002, p. 11) expands on the possible range of effects of HECS, speculating that "...self-provision for higher education has the potential to have a substantial negative impact on fertility". Kelly *et al.* (2003, p. 4) also suggest HECS debt may be one of the reasons for delays in recent cohorts starting a family. Among the other adverse impacts of HECS that have been raised are a negative impact on propensities for further study, a brain drain and alterations of subject choice at university (see Armstrong, 2004). Some of these possible adverse impacts of HECS have been contested in the literature (*e.g.* Norton, 2003), though it is fair to say that they have not been investigated in any detail. The brain drain issue has, however, risen to prominence in New Zealand with Dumont and Lemaître (2005) reporting that 24.2 per cent of the highly skilled born in New Zealand are living in other countries, the highest rate of emigration among OECD countries. In addition, the exemption of Nursing and Education from the variable HECS reforms suggests that the government believes HECS impacts on subject choice at university.

New financing arrangements for tertiary study were introduced in 2005. Commonly known as the Nelson reforms, there is now greater deregulation of university fees. The HECS financing system has been abolished for all new students entering university in 2005, and in its place the Australian Government has implemented a Higher Education Loan Programme (HELP).

The HECS-HELP system is quite different from the HECS system. One of the main differences is that the Australian Government no longer sets the amounts which students are required to contribute to the costs of their tertiary study. Instead, institutions are able to do this, and in 2005 can, with the exception of the Nursing and Education courses noted earlier, levy fees up to 125 per cent of the 2004 required

contributions. The HECS-HELP contributions ranges for the three course bands are presented in Table 2.

Table 2 Student Contributions under the HECS and HECS-HELP Financing Systems

Band	2004 HECS Contributions	2005 Continuing Students' HECS Contributions	2005 HECS-HELP Contribution Range
Band 3: students studying law, medicine, medical science, dentistry, dental services and veterinary science.	\$6,283	\$6,414	\$0 to \$8,018
Band 2: students studying mathematics, computing, other health sciences, agriculture, renewable resources, built environment, architecture, sciences, engineering, processing and administration and business and economics.	\$5,367	\$5,479	\$0 to \$6,849
Band 1: Students studying arts, humanities, legal studies and justice, social studies, and visual and performing arts.	\$3,768	\$3,847	\$0 to \$4,808
National Priorities: Students studying education or nursing.			\$0 to \$3,847
Source:	www.goingtouni.gov.au		

Students have a choice of either paying their HECS contribution up-front or taking out a HECS-HELP loan. Students who pay their HECS-HELP contribution up-front receive a 20 per cent discount on their fees for payments over \$499. Students who take out a HECS-HELP loan do not have to repay their debt until their income reaches the threshold level of \$35,000. The repayment rates vary from 4 per cent for students with HECS-HELP repayment income of \$35,001 to \$38,987, to 8 per cent for students with HECS-HELP repayment income of \$64,999. HECS-HELP loans do not attract interest but are annually indexed to inflation.

Eligible fee paying students have access to a FEE-HELP loan to assist them pay tuition fees, and are able to borrow up to \$50,000 for their tertiary fees (subject to a 20 per cent loan fee). FEE-HELP loan debt is grouped with the student's other university debt (*e.g.* HECS debt). Students who take out a FEE-HELP loan do not have to repay their debt until their income reaches the threshold level, set at the same level as for HECS-HELP Loans. Their debt is indexed to inflation and does not accrue interest.

The reforms implemented in 2005 can be viewed as an expansion of the HECS system introduced in 1989. They indicate that an income-contingent scheme is likely to be a key component of the financing arrangements for tertiary study for at least the immediate future. Formal, independent evaluation of some of the social, political, psychological and financial issues associated with the system might therefore be seen

as a priority at the present time. The analyses that follow are a contribution in this spirit.

III Socioeconomic Status and HECS

Universities do not collect direct information on the socioeconomic background of their students. An exception is a survey of commencing students in 2001, *Survey on Parental Background of Students Commencing Higher Education*, conducted by the then Department of Education, Training and Youth Affairs. Unfortunately, the Australian Vice-Chancellors' Committee (AVCC) could not agree to the inclusion of information such as that collected in this survey in the set of data required for reporting to the Department of Education, Science and Training. Another exception to this is *A Survey of Australian Undergraduate University Student Finances*, analysed by Long and Hayden (2001) for the AVCC. However, this survey only contains information on 19 universities in Australia and the unit record data are not publicly available.

Universities do, however, collect home postcode (updated each semester in the reports to the Department of Education, Science and Training). As various measures of socioeconomic status are available for postcode areas (see below) the home postcode information can be used to provide an indicator of socioeconomic background. While useful for many purposes, particularly when alternative individual-level indicators are not available, this measure has three main deficiencies.

First, the measure of socioeconomic status is representative of the area as a whole. Within a given region, there can be variability in the intended measure. That is, a 'good' postcode area could have a relatively poor section and a superior section. The more heterogenous the underlying areas are, the weaker the measure will be. Similarly, the measures do not necessarily represent the standing of individuals across regions. Poor families can live in rich areas and rich families can live in poor areas. Western *et al.* (1998) report a correlation coefficient of only 0.21 between individuals' socioeconomic status and that of their neighbourhood for a sample of first-year university students in Queensland.

Second, the home postcode provided by students may not be that of their parents. Unfortunately, neither the extent nor implications of this misreporting can be quantified. Inspection of the patterns in the data disaggregated by age of students, by whether a commencing or non-commencing student, and by length of time students have been studying (see next section) suggests that this issue is not likely to be of major importance.

Third, the measures available are encompassing measure of the socioeconomic status of areas, and do not necessarily map directly onto income. While, as outlined below, family income enters into some of the indices, it is only one of a range of underlying socioeconomic variables used to construct the area measures.

Despite these weaknesses, socioeconomic indexes are used in implementing government equity programmes. For example, the Department of Education, Science and Training uses the Australian Bureau of Statistics' (ABS) 'Index of Education and Occupation' for the postcode of students' permanent home address in the Higher Education Equity Programme. In other words, the analyses reported below are based on measures of direct relevance to decision making in the higher education sector at the present time.

Two measures of socioeconomic status are considered. These are the ABS' 'Index of Economic Resources' and 'Index of Education and Occupation' (for further information regarding these indexes, see ABS, 2001). The Index of Economic Resources reflects the economic resources of families living in particular areas. It is calculated using information on annual income, whether dwellings have four or more bedrooms, amount of rent paid and amount of mortgage repayments, disaggregated in some instances by family type (*e.g.*, couples with dependent children, couples with no children and single persons). A high score on the index indicates that the region has a higher proportion of high income families, a lower proportion of families on low income, a larger number of households living in homes with four or more bedrooms, and higher rent and mortgage payments (ABS, 2001).

The Index of Education and Occupation assesses the levels of education and occupational structures of regions. A high score on this index indicates that the region

contains a larger proportion of individuals who have higher levels of education or work in skilled occupations.

Both the Index of Economic Resources and the Index of Education and Occupation are ordinal measures that allow the geographical areas to which they are applied to be ranked in a meaningful way. The Index of Economic Resources targets economic disadvantage and advantage, and hence permits a ranking along these lines, from most disadvantaged to most advantaged. The Index of Education and Occupation targets educational and occupational disadvantage and advantage, and hence permits a ranking for this composite measure, which is often associated with preferences towards higher education. The indices do not share any common variables that are used to compile them, and hence it seems reasonable to consider using both in the analysis. However, the simple correlation coefficient between them is 0.81 when all regions (all Collection Districts in Australia) are considered (ABS, 2001), and 0.85 when applied to the postcode data in the current sample.² Accordingly, the same general patterns emerge when either index is used. In the interest of brevity only results from the Index of Economic Resources are presented below.

The analysis draws upon data from DEST's *Higher Education Statistics* for 2002. This data base contains information on all students studying at Australian universities in 2002. The data sample is restricted to students who were studying towards a bachelor degree, have Australian citizenship (including those with dual citizenship) and who had incurred a HECS liability during the year. The number of students in the purged data set is 488,971.

IV HECS and the Index of Economic Resources

This section considers the relationship between HECS and students' socioeconomic status, as measured by the Index of Economic Resources. The exposition is by way of a series of charts followed by a simulation analysis. To facilitate the first set of analyses, the index of socioeconomic status is categorised into twenty equal sized groups. This categorisation is based on a ranking for all students. Hence, in all the diagrams the first data point relates to students who have home postcodes shared by the five per cent of all students from the poorest neighbourhoods. The second data point relates to students whose home postcode is shared with the five per cent of

students from the second poorest group of neighbourhoods. To the extent that participation rates in university for different groups (*e.g.*, males and females, English speaking background and non-English speaking background) vary by socioeconomic status, the representation in the twenty groups formed may depart from five per cent when sub-groups of the population are considered. This will not be important for the study of means, though it will be of (minor) importance for the study of any aggregates.

Figure 1 shows the variation in the mean proportion of HECS deferred across socioeconomic areas. The figures on HECS payments in this analysis have been adjusted to take into account the fact that students who pay their total HECS up-front, or make up-front HECS repayments of \$500 or more, receive a 25 per cent discount off their HECS. Students who originate from lower socioeconomic status neighbourhoods defer a larger proportion of their HECS up-front than students who are from higher socioeconomic status neighbourhoods. Thus, the mean proportion of HECS deferred by students in the bottom two groups of the socioeconomic index was more than 84 per cent. In comparison, the mean proportion of HECS deferred by students who were in the top two groups of the index was under 70 per cent, and it was close to 60 per cent for the top group.

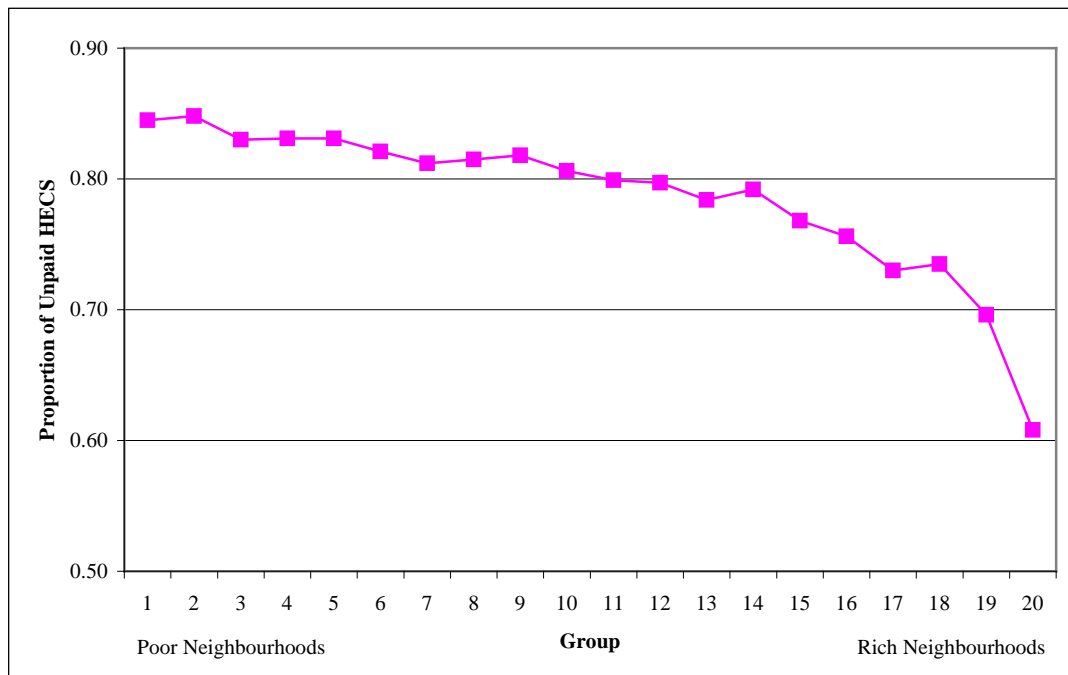
There were, however, only small changes in the proportion of HECS deferred for students in the bottom fifteen groups. Hence, for these students, the proportion of HECS deferred decreases by only 8 percentage points, from 84.5 per cent for Group 1 to 76.8 per cent Group 15.

The decrease in the proportion of HECS deferred for students who were in the top five groups of the index was approximately double the decrease in the proportion of HECS deferred for students in the lower groups of the index. For these students the proportion of HECS deferred ranged from 76 per cent (students in Group 16) to 61 per cent (students in Group 20).

These findings mirror the results from Long and Hayden (2001), who, using a data sample of approximately 30,000 students, report that there was almost a 10 percentage point difference in the proportion of students making up-front HECS payments among

those whose families were in the lowest and highest quintiles of socioeconomic status. If HECS causes problems, as claimed by Baum and Wulff (2003), Mudd *et al.* (2001), Kelly *et al.* (2003) and Jackson (2002), it appears to be more likely to be associated with problems for students from poor neighbourhoods than it will for students from rich neighbourhoods.

Figure 1 Mean Proportion of Unpaid HECS: Students by Socioeconomic Status

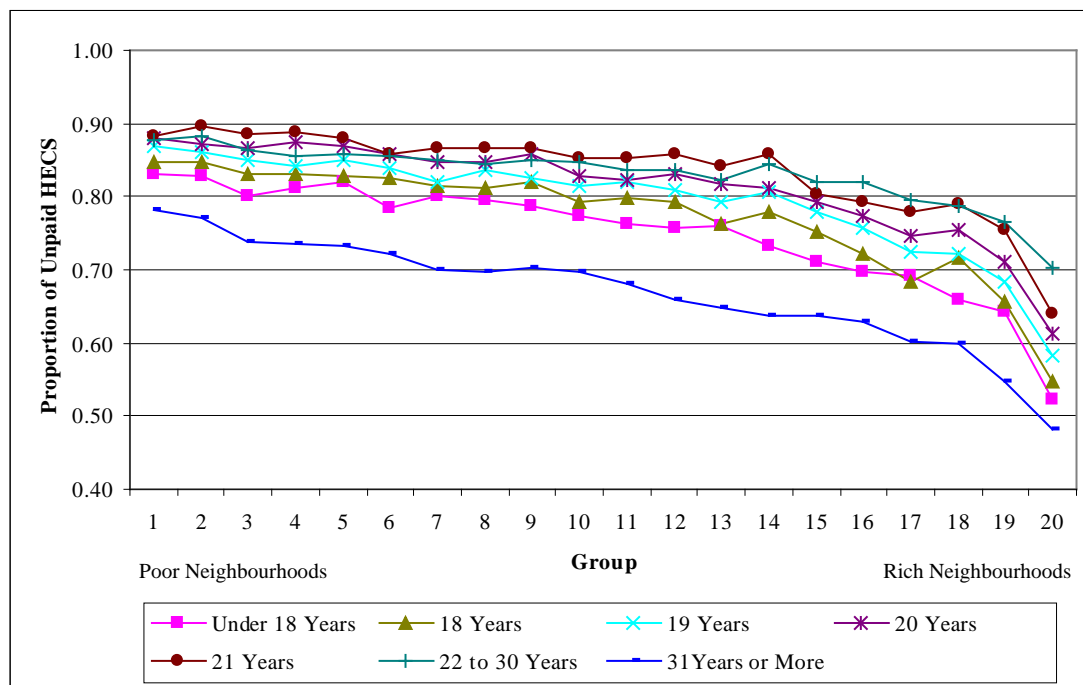


The data available do not permit insights into why some students defer their HECS and some pay it. However, Smith *et al.* (1998), on the basis of analysis of a sample of around 5,000 university students collected in 1997, reported that 49.0 per cent of students who pay their HECS up-front source their funds from personal savings, 34.3 per cent from family members, 12.1 per cent from employers and 4.6 per cent from other sources. This, and the variation in the mean proportion of HECS deferred by socioeconomic status, suggests that capacity to pay that is associated with family circumstances plays a major role in the pay up-front/defer decision.

The relationship between the proportion of HECS deferred for students of different age groups by their socioeconomic status is presented in Figure 2.³ There are several interesting patterns in this presentation by age. First, there are substantial variations in the proportion of HECS unpaid across the age groups, where age refers to the

student's age on 31st December 2001. The mean proportion of unpaid HECS for students under 18 years of age is 75 per cent. In contrast, the means for students aged 18, 19, 20, 21 or 22 to 30 years were 77, 79, 81, 83 and 81 per cent. Thus, among students under 30 years of age, the likelihood of HECS being deferred tends to rise with age. This may be a consequence of a growing awareness of the income contingent nature of the HECS system. Moreover, younger students, such as those aged under 18 years, may be more likely to live with their parents, and this may be associated with a greater likelihood of their parents paying for their university studies.

Figure 2 Mean Proportion of Unpaid HECS by Age: Students by Socioeconomic Status



The mean proportion of HECS unpaid for students aged over 30 year is 69 per cent, and this is considerably lower than the mean for younger students. This finding could be a result of these students working, and hence having incomes that push them over the threshold at which they are required to make HECS payments. These students may thus opt to pay their HECS up-front to receive the associated discount. The findings in Smith *et al.* (1998), which indicate that students who work full-time or have annual earnings of \$20,000 or more are less likely to defer their HECS than students who study part-time or earn less than \$20,000 per annum, support this argument. The evidence is also comparable with Long and Hayden (2001), who report that students

who are of an older age, work full-time or have high incomes are all more likely to pay HECS up-front than other students.

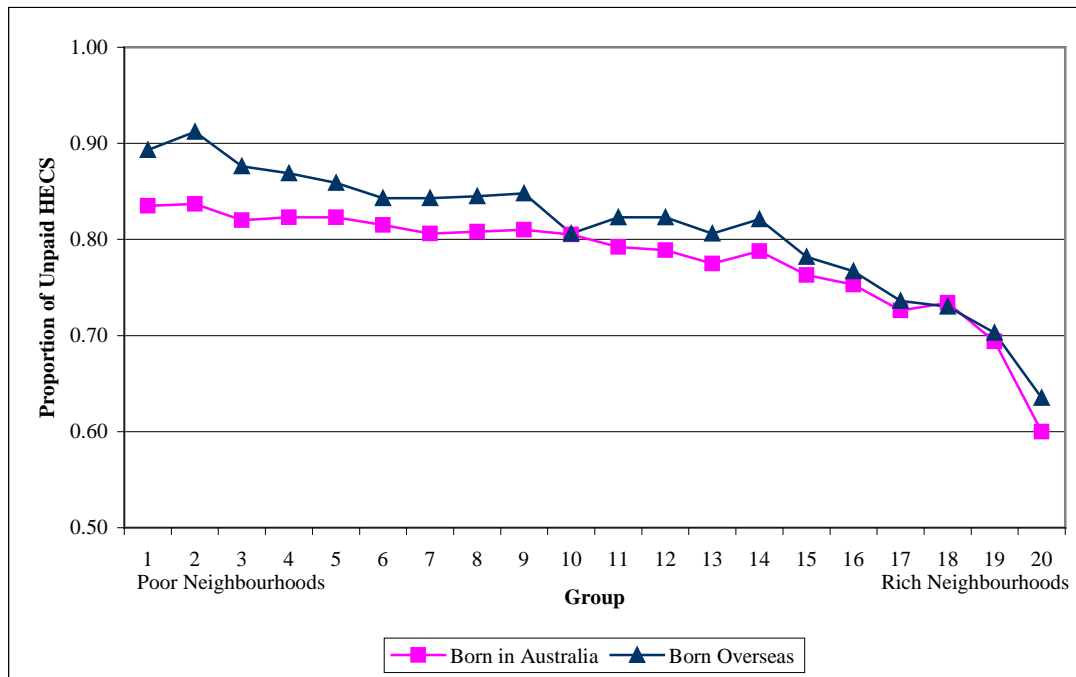
Second, the strong inverse relationship between the amount of HECS unpaid and socioeconomic status prevails for each age group. The relationship is, however, stronger for “younger” students and students of a relatively “old” age than for “middle” aged students. For students aged under 18 years, the difference in the mean proportion of unpaid HECS for those in Group 1 and Group 20 was 31 percentage points (mean of 83 for Group 1 and mean of 52 for Group 20). The equivalent difference for students aged over 30 years was just over 30 percentage points (mean of 83 for Group 1 and mean of 52 for Group 20). In comparison, for students aged 21 years the gap between the mean proportion of HECS debt for those in the lowest and highest socioeconomic status groups was only 24 percentage points (mean of 88 per cent for the lowest group and mean of 64 per cent for the highest group).

As presented in Figure 3, there was an association between the proportion of HECS students defer and their country of birth. Students who were born in Australia tend to defer a smaller proportion of their HECS than their overseas-born counterparts. The mean proportion of HECS deferred for Australian-born students was 3 percentage points less than the mean for overseas-born students (mean of 78 per cent for students born in Australia and 81 per cent for students born overseas). This finding may be a result of immigrant families having a lower capacity to pay for the tertiary education of their children up-front due to the difficulties of accumulating wealth once they move to their destination country. It is consistent with the finding by Long and Hayden (2001), who report that the proportion of overseas-born students who pay their HECS up-front was 4 percentage points lower than the proportion of Australian-born students paying up-front HECS.

There was also a negative correlation between the proportion of HECS deferred and home neighbourhoods’ economic resources for both overseas- and Australian-born students. In a manner consistent with the previous three graphs, Figure 4 shows that over the first fifteen groups in the economic resources at home index, the proportion of unpaid HECS falls slowly. Over the last five groups, however, it falls at a faster rate. The reduction in the proportion of HECS deferred from Group 1 to Group 20

was similar for students born in Australia and overseas, falling 24 percentage points for Australian-born students and 26 percentage points for overseas-born students.

Figure 3 Mean Proportion of Unpaid HECS by Country of Birth: Students by Socioeconomic Status



The relationship between unpaid HECS and type of attendance (full-time or part-time) for students of different socioeconomic status regions mirrors that of the relationships shown in the previous graphs. At the aggregate level, there are differences in the mean proportion of unpaid HECS for students with different attendance types. Similar to the findings reported in Smith *et al.* (1998) and Long and Hayden (2001), students who studied full-time had a slightly larger proportion of unpaid HECS (81 per cent) than students who studied part-time (77 per cent). However, Figure 4 shows that both full-time and part-time students from low socioeconomic status neighbourhoods have a considerably higher proportion of unpaid HECS debt than students from higher socioeconomic status neighbourhoods.

The relationship between the proportion of HECS unpaid and the socioeconomic status of the students' home neighbourhood is stronger for full-time students than for part-time students. As a consequence, the difference between the proportion of HECS debt deferred for students in the bottom and upper groups was larger for full-time

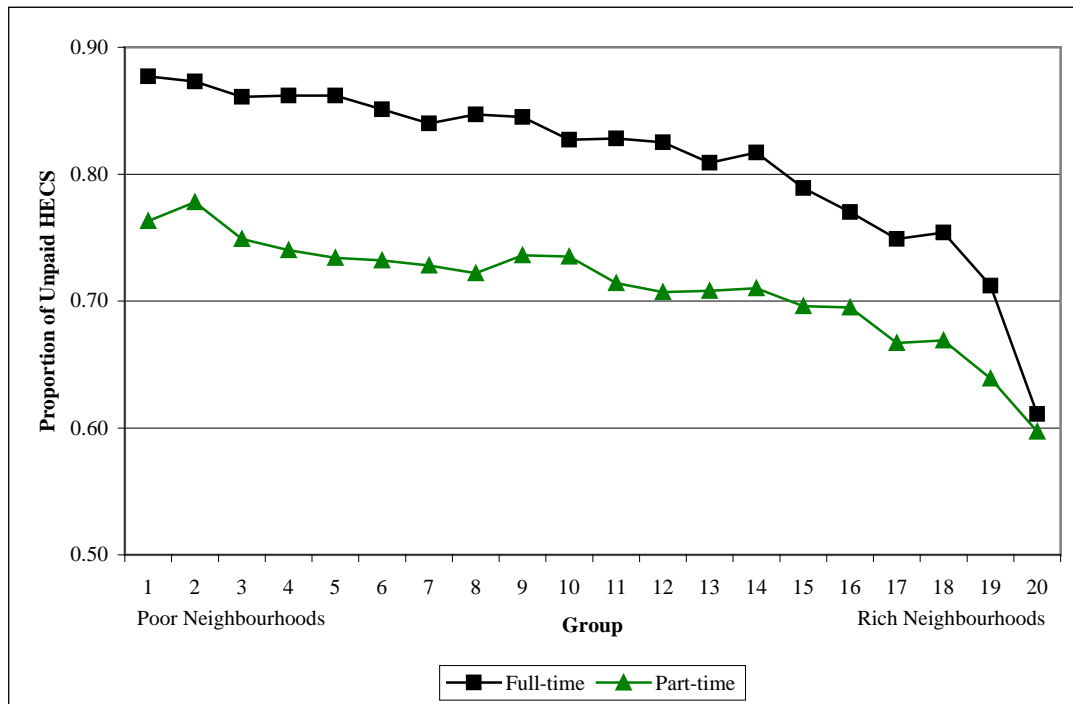
students than for part-time students. For full-time students, the proportion of unpaid HECS ranged from 88 per cent (Group 1) to 61 per cent (Group 20), producing a gap of 27 percentage points. This gap was approximately 60 per cent larger than the gap for part-time students (proportion of 76 per cent for students in Group 1 and 60 per cent for students in Group 20). This relationship is consistent with patterns established in Long and Hayden (2001): they report that there is a 15 percentage point gap between the proportion of full-time students paying HECS up-front among students from families in the lowest and highest quintiles of socioeconomic status. There was only a 3 percentage point difference in the proportion of part-time students making up-front HECS payments between the bottom and top quintiles of their measure for socioeconomic status. As argued above in relation to the incentives that older students face, part-time students may have earnings that push them over the threshold at which HECS repayments need to be made, and this may create an incentive to pay up-front and receive a discount.

A consequence of the different relationships between up-front HECS payments and the socioeconomic status of students' neighbourhoods is that the difference in the mean proportion of unpaid HECS for students who studied full-time and students who studied part-time was larger for students in the lower socioeconomic status neighbourhoods than for students in the higher socioeconomic status neighbourhoods (see Figure 4). Hence, the gap between the mean proportion of unpaid HECS for full-time and part-time students in Group 1 was 11.4 percentage points (mean of 87.7 per cent for full-time students and 76.3 per cent for part-time students). The corresponding gap for students in Group 20 was only 1.4 percentage points (mean of 61.1 per cent for full-time students and 59.7 for part-time students).

The larger gap between the proportion of unpaid HECS for full-time and part-time students from lower socioeconomic status neighbourhoods than the gap for full-time and part-time students from higher socioeconomic status neighbourhoods may be associated with differences in the amount of part-time work undertaken, with those from poorer neighbourhoods engaging in relatively more work and hence facing a stronger incentive to pay HECS up-front. Data from Long and Hayden (2001) tend to support this proposition, as they show that part-time students from the bottom quintile

of socioeconomic status work, on average, two and a half hours per week more than their counterparts from families in the top quintile of socioeconomic status.

Figure 4 Mean Proportion of Unpaid HECS by Type of Attendance: Students by Socioeconomic Status

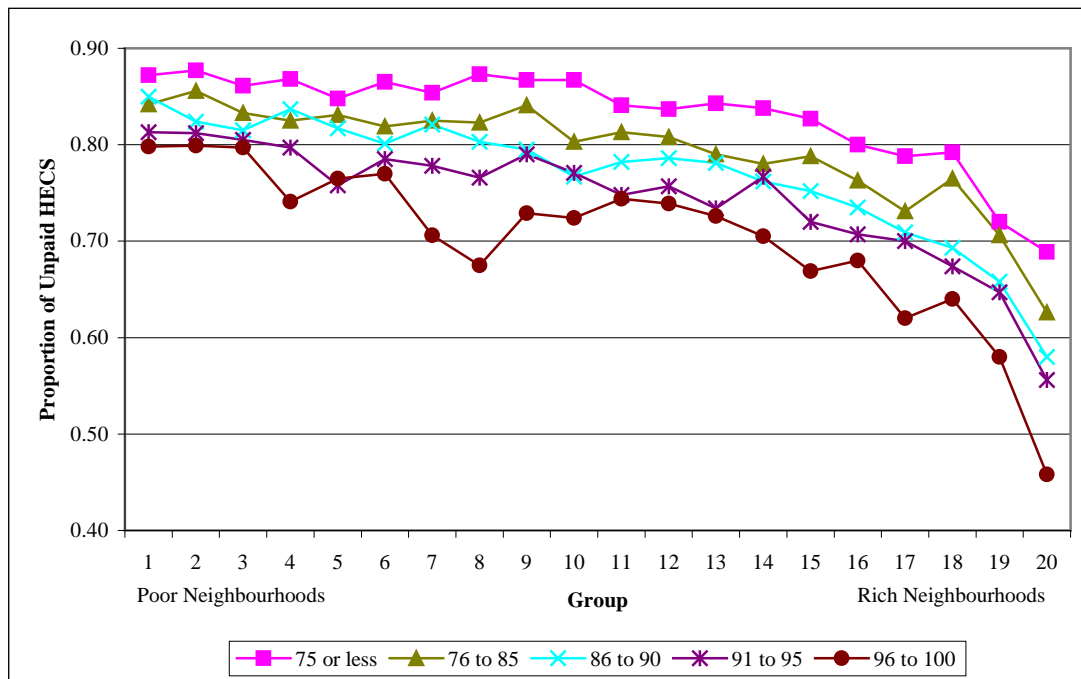


Finally, Figure 5 links the relationship between the proportion of HECS deferred and socioeconomic status of students' home locations to tertiary entrance ranks (TER).⁴ This figure indicates that there were substantial differences in the mean proportion of HECS debt for the groups of students defined using TER. Moreover, it appears that there is a negative correlation between unpaid HECS debt and TER. The mean proportion of HECS deferred for students with a TER of 75 or less was 84 per cent. It was 80, 76 and 73 per cent for students with a TER of 76 to 85, 86 to 90 and 91 to 95. Students with a TER of 96 to 100 had the smallest proportion of unpaid HECS, with a mean of only 70 per cent.

The relationship between the amount of HECS that is unpaid and the socioeconomic status of students' home locations is stronger for students with better high school achievement than for students with lower high school achievement (see Figure 5). That is, the difference between the proportion of HECS paid for students in the lowest and highest socioeconomic groups was larger for students with high TERs than for

students with low TERs. For students with a TER of 96 to 100, the mean proportion of unpaid HECS liability ranged from 80 per cent for students in Group 1 to 46 per cent for students in Group 20, producing a gap of 34 percentage points. For students with a TER of less than 76, the difference between the mean proportion of unpaid HECS liability for students in Group 1 (87 per cent) and students in Group 20 (69 per cent) was only 18 percentage points.

Figure 5 Mean Proportion of Unpaid HECS by Tertiary Entrance Score: Students by Socioeconomic Status



The difference in the proportion of HECS debt unpaid for students with high TERs and those with low TERs is more pronounced for students in the top five per cent of the socioeconomic index than for students in the bottom five per cent of the index. Hence, for students in Group 20, the difference between the mean proportion of unpaid HECS for students with a TER of 96 to 100 and students with a TER of less than 76 was 23 percentage points. This was almost three-times the gap for the same groups of students who were in Group 1 (difference of 7 percentage points).

The relationship between the proportion of HECS unpaid and the Index of Economic Resources was also examined for two special interest groups, students of an Aboriginal or Torres Strait Islander background and by disability status (students who

indicate the existence of a disability, impairment or a long-term medical condition). The detailed graphs are available upon request from the authors. The findings on the relationship between race and HECS debt unpaid show that the proportion of HECS unpaid for students of an Aboriginal or Torres Strait Islander origin does not decline substantially over the socioeconomic index (the proportion of HECS unpaid for non-Aboriginal students followed the pattern depicted throughout the paper). Aboriginal or Torres Strait Islander students also had a considerably lower proportion of HECS unpaid than their non-Indigenous counterparts. Students with disabilities were found to have a larger proportion of HECS unpaid than students without disabilities.

V What Would Individual-Level Data Tell Us?

Figure 1 informed that there is a strong negative relationship between the proportion of HECS that is unpaid and the socioeconomic status of students' home neighbourhoods, measured at the postcode level. This proportion drops from approximately 85 per cent in the first group to around 60 per cent in the top group of neighbourhoods. Most of the change occurs among the higher socioeconomic status groups.

The relationship between the proportion of HECS that is unpaid and the socioeconomic status of the students' family will, by definition, be stronger than that recorded in the area-level data in Figure 1. This is because in the poorest neighbourhood the area-level data will comprise individuals who are among the poorest when ranked on an individual-level measure, and individuals who are more affluent when ranked on the same individual-level measure. In contrast, the highest group in the area-level data will comprise individuals who are in the most affluent group on an individual-level measure, and individuals who are in less affluent groups. The Longitudinal Survey of Australian Youth, 1995 Cohort, can be used to illustrate this issue. For this illustration, quintiles are used. Thus, Table 3 cross-classifies the ranks of students (1 to 5) on a measure of the socioeconomic status of their father by their ranks on the basis of a measure of the socioeconomic status of their home neighbourhood.

Table 3 shows that, as noted in the Introduction, there is an association between the individual-level measure and the area-level measure. However, the most striking

feature of the table is that many poor people (on the measure of status for individuals) live in good neighbourhoods, and many rich people, (again, on the basis of the measure of status for individuals) live in poor neighbourhoods.

Table 3 Cross-Classification of Rankings of Area-Level and Individuals-Level Information on Occupation Background

	Father's Occupational Status (Individual-Level Measure)						Total
	1	2	3	4	5		
Index of Education and Occupation (Area-Level Measure)	1	27.06	24.90	19.01	19.19	9.12	100.0
	2	24.56	20.71	19.18	22.77	12.77	100.0
	3	23.29	18.76	20.21	19.49	17.26	100.0
	4	17.35	18.20	20.00	21.03	23.42	100.0
	5	10.54	13.77	14.62	25.61	35.47	100.0

The information in this table can be used to illustrate the way the area-level data in Figure 1 may have been generated. Consider a data point in Figure 1 such as the proportion of HECS that is deferred of around 40 per cent for the highest socioeconomic status area. Assume this figure applies to the fifth quintile of the area-level measure in Table 3. This 40 per cent would be generated in part by a (presumably) relatively low rate of deferral of HECS among the 35.47 per cent of students in this quintile who are ranked in the top quintile of the individual-level measure. It would have a component that is due to the rate of deferral of HECS among the 25.61 per cent of students in this quintile who are in the fourth quintile of the individual-level measure. To generate the area-level relationship depicted in Figure 1, the proportion of HECS deferred in this fourth quintile of the individual-level measure would need to be greater than for the fifth quintile of the same measure. Further contributions to the mean rate of HECS deferral for students in the fifth quintile of the area-level measure would come from the still greater rates of deferral of HECS among the 10.54 per cent, 13.77 per cent and 14.62 per cent of individuals in the first three quintiles of the individual-level measure. To generate the relatively flat area-level relationship for these initial groups, the rate of deferral of HECS in these quintiles would need to be similar. Moreover, the rates on the individual measure would need to be greater than for the area-level measure to make allowance for the lower rates of deferral among those from deciles four and five of the individual-level data when forming the mean rates of deferral for the first few quintiles in the area-level data.

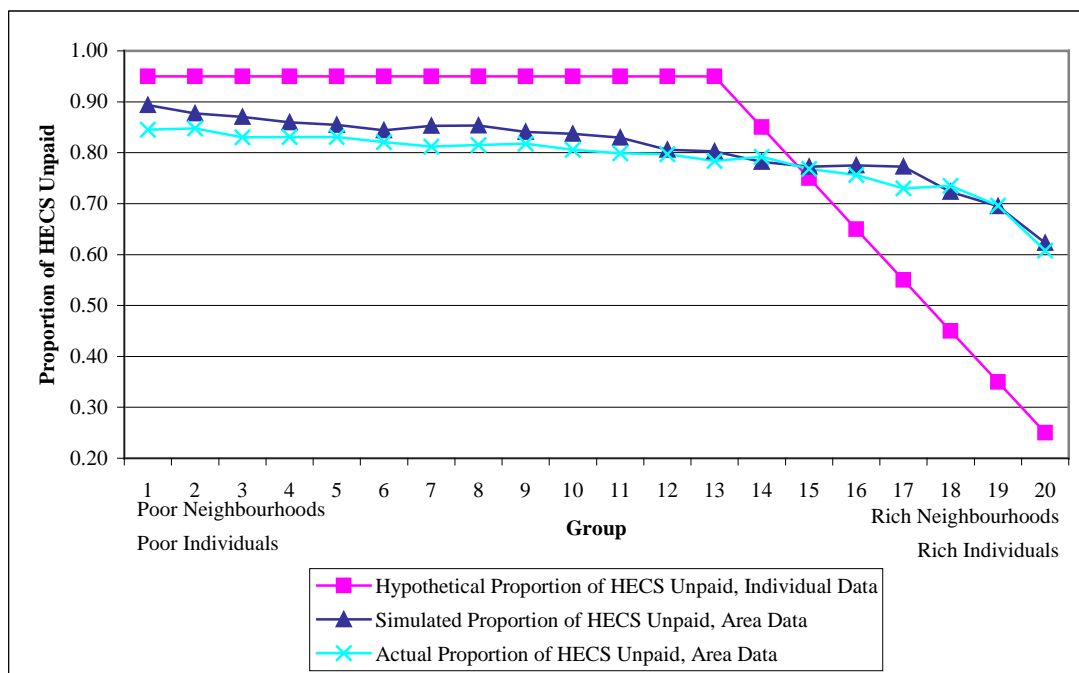
Hence, each data point in Figure 1 may be thought as being derived as a weighted average of the proportions of individuals in the various groups formed from an individual measure and their appropriate unpaid proportions, and the homogeneity that arises within the groups in the area-level data will thus attenuate the true (individual-level) relationship between the proportion of HECS unpaid and socioeconomic status. However, the general shape of the relationship between the proportion of HECS unpaid and the ranks for the individual-level measure of well-being is apparent: it must be quite flat over the first 13 to 14 groups, with the gradual decline that emerges in Figure 1 over these groups being driven by the progressively higher proportions of individuals having higher ranks (and hence lower rates of unpaid HECS) on the individual-level measure. The relationship between the ranks of the individual-level measure of well-being and the proportion of HECS unpaid must then decline sharply, and be below that of the area-level data: this is because in generating the area-level means for rich neighbourhoods the lower rates of HECS deferral for high-income individuals living in rich neighbourhoods are offset by higher rates of HECS deferral among the poor living in rich neighbourhoods.

Figure 6 displays a hypothetical proportion of HECS unpaid for individuals, the simulated proportion of HECS unpaid for the area-level measure that would be consistent with this hypothetical, and the actual proportion of HECS unpaid for the postcode data used in this analysis. This simulated proportion of HECS unpaid has been formed using a matrix of the representation of students of various socioeconomic standings (on the basis of their father's occupational status) in each of the neighbourhoods (ranked on the basis of an aggregate measure of well-being).⁵

It is quite clear that the simulated relationship tracks the actual relationship quite well. It is also quite clear that the hypothetical individual-level relationship used to form the simulated area-level relationship is not the only one that can yield a simulated curve like that depicted in Figure 6. Hypothetical relationships that have slightly lower (flat) rates of deferral over the first 13 groups and slightly higher rates of HECS deferral over the remaining groups will work, as will hypothetical relationships that have slightly higher (flat) rates of deferral over the first 13 groups and slightly lower (declining) rates of HECS deferral over the remaining groups. The deviations from the hypothetical relationships presented in Figure 6, however, are minor.

Figure 6 therefore shows that very few individuals from low socioeconomic backgrounds (individual-level measure) pay HECS up-front (that is, they almost all defer all their HECS debt). It also shows that it is only once one enters the upper-middle segment of the socioeconomic status distribution that students start paying HECS up-front in substantial numbers, and that possibly as few as 25 per cent of students in the highest rank of the individual-level measure of socioeconomic status defer their HECS liability. There are, consequently, massive differences between the ‘rich’ and the ‘poor’ in the importance of deferral of HECS liability (or, equivalent, up-front HECS payments). Importantly, the area-level data appear to mask important inequalities in the rates at which students pay HECS up-front.

Figure 6 *Hypothetical Proportion of HECS Unpaid (Individual-level) and Simulated and Actual Proportions of HECS Unpaid (Area-level)*



The relationships depicted in Figure 6 do not make any allowance for disparities between students’ home locations and the residential location of their parents. For the same arguments advanced when explaining the relationship between the individual-level and area-level measures, this limitation of the home location data on the DEST database should tend to attenuate the true relationship between the proportion of HECS unpaid and the socioeconomic status of parents. In other words, the true unpaid proportion of HECS among low socioeconomic status individuals may be quite close

to 1.0. If this is the case, the true unpaid proportion of HECS among high socioeconomic status individuals would need to be approximately only 15 per cent.

Figure 6 shows a much stronger relationship between the likelihood of deferring HECS and the socioeconomic status of students' home postcodes than that reported in Long and Hayden (2001), who suggest that the proportion of students paying HECS up-front varies from 21.8 per cent among the lowest quartile on the measure of socioeconomic status to 30.0 per cent among the highest quartile of this measure. This difference may be attributable to the use of quartiles by Long and Hayden (2001) when there is considerable heterogeneity in repayment rates by socioeconomic status.

VI Discussion

As an income contingent scheme for the repayment of deferred education debts, HECS has been advanced as being neutral across university students on the basis of their socioeconomic background. However, close examination of data on the distribution of up-front HECS payments, and the associated deferred debts, reveals that students of favourable socioeconomic backgrounds are far more likely to pay their HECS debts up-front (or have their debts paid for them) than students of a less favourable socioeconomic status background.

As they graduate, therefore, students of poor socioeconomic backgrounds will emerge with, on average, considerable debt (typically this should be \$20,000 to \$30,000). Consequently, they will have lower after tax earnings (until their debt is repaid). Any decisions that are based on net wealth or after-tax earnings will be affected. In comparison, relatively few students of rich socioeconomic background complete their university studies with outstanding HECS debt.

A number of studies have already identified that students with large HECS debts after graduation have difficulties in accumulating wealth (see Kelly *et al.*, 2003; Baum and Wulff, 2003). As poorer students are more likely to face large HECS debts when they enter the workforce, it is expected that these students will suffer the greatest in terms of wealth accumulation. As a result the gap between richer and poor individuals will widen and the measured income inequality between students who pay their HECS up-front and those who defer will be more pronounced in later life. While it could

be argued that the intergenerational transfers documented here would have occurred anyway through transfers during the parents' lifetime or through bequests, these alternatives possibilities are difficult to quantify, and should not detract from the evidence presented.

The evidence reported in this study seems reasonable. However, the important relationship between the proportion of HECS deferred and the social background of students was inferred from aggregate area-level data. It would seem a high priority should be attached to the collection (and reporting to DEST in a systematic manner) of information on the socioeconomic background of students. At the university level, this information will permit systematic evaluation of the need for fee rebates and the success of equity-based admissions policies. At the sector-level, the information will enable more precise quantification of the distributional aspects of HECS canvassed in this paper. In addition, mature-aged students emerge in this study as having patterns of HECS repayments that differ from those of their younger counterparts. Mature-aged students have also emerged in some other studies (*e.g.*, Andrews 1999; Aungles *et al.*, 2002) as being of special interest when trying to understand the implications of HECS. Further study of this group seems warranted. In addition, there needs to be study of the wider range of issues that may be linked to HECS. Included here are attitudes to debt across socioeconomic groups, influences on the propensity among undergraduate students to engage in further study, subject choice at university, and a possible brain drain from Australia. While, the evidence presented in Dumont and Lemaître (2005) and Birrell *et al.* (2001) suggests that a loss of tertiary qualified workers is not a major issue for Australia at the present time, whether this will change as debt levels rise is a moot point.

Further analysis along these lines needs to reconcile the effects on the individual and the effects from the perspective of the family. Discussion of the efficiency aspects of HECS has predominately been from the perspective of the individual, whereas discussion of equity issues in higher education has been from the perspective of students' family backgrounds. The role of the family as a source of funding for tertiary education needs to be incorporated into the analysis. In this way the theoretical and empirical research would follow more closely the way policy is

currently formulated, and perhaps provide a more informative framework for the evaluation of the effects of HECS.

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¹ This amount refers to the amount that a student studying full-time for a full year paid. For the remainder of the section, all figures on the amount that students contribute to their HECS fees refer to students studying full-time for a full year. All figures on HECS repayments were obtained from the Department of Education, Science and Training (DEST) (see www.dest.gov.au).

² Scores for postcodes are calculated as weighted averages of the scores for their constituent Collection Districts.

³ The presentation of the following graphs is selective. In addition to the cross-classifications presented, the data base contains information on variables such as the basis of entry to university, field of study, course of study, semester location, institution of study and the location of the institution.

⁴ Data for this presentation are only for students who completed secondary school in 2001 or 2002 and had a TER. Students' tertiary entrance scores are based on the common index, defined by the Ministerial Council on Education, Employment, Training and Youth Affairs. For students living in South Australia, the Northern Territory, Tasmania and Western Australia, this variable is given by their Tertiary Entrance Rank (TER). For students living in New South Wales it is measured by the University Admission Index (UAI) and for students in Victoria it is measured by the Equivalent National Tertiary Entrance Rank (ENTER). For students in Queensland, their Overall Position (OP) score is converted to an equivalent value for the common index.

⁵ This 20 by 20 matrix was constructed using location and occupation data from the Longitudinal Surveys of Australian Youth, 1995 Cohort. Information on close to 10,000 students was used in its construction.