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The costs of unpaid HECS debts from graduates going overseas

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Abstract

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HECS is an income contingent loan designed to collect tuition from Australian university students. The debt is collected on the basis of recorded incomes and as a consequence, debtors living overseas will not repay. Using various data sources and assumptions, multiple scenarios are considered in order to estimate the extent of uncollected overseas debt. A conservative estimate of the amount of foregone HECS revenue for the 1989 to 2011 graduate cohorts working overseas is over \$400 million, but it is shown that under other plausible assumptions the foregone revenue may be close to double this amount.

1. Introduction and motivation

The Higher Education Contribution Scheme (HECS¹) was introduced in Australia in 1989 as a way of facilitating the re-introduction of charges for Australian higher education undergraduate students. Important features of HECS are: loan repayments are made depending on debtors' future incomes; and the Australian Tax Office is responsible for collection. Since the ATO has no international jurisdiction this second issue implies that an unintended consequence of the scheme's design is that loans are unable to be collected from debtors who leave Australia.

This issue could matter significantly if a large number of graduates leave Australia permanently with unpaid debts and are subsequently never part of Australian income tax arrangements. As well, because HECS debts (once incurred) have a real interest rate of zero there will be implicit interest rate subsidies associated with debtors leaving Australia temporarily, such as for a working abroad holiday.

¹ Following the deregulation of university fees in Australia in 2005, post-2005 debts became known as HECS-HELP debts. HECS-HELP follows the same principles as HECS. For the sake of brevity, when we refer to HECS in this paper we are referring to both the HECS and HECS-HELP loan schemes.

Occasionally the issue is raised as a matter of public concern², but little rigorous attention has been given to it and there is no information available to ascertain the extent to which foregone HECS repayments are adversely affecting government revenues. This paper is motivated by the value to public policy discourse of finding out the extent to which this matters.

Not long after beginning this project in December 2011 it became clear why little research attention has been directed to this question. A major factor is that the data available to estimate the foregone revenue from HECS debtors going overseas is sparse, even by the standards that apply to most social science investigation. As a consequence it has been necessary to impose a number of specific and varied modelling assumptions on the information that is available to allow estimates to be made of the figure. We have endeavoured to be conservative in the application of the modelling so that the figures reported can be considered to be understatements of the true foregone HECS revenue collection as a result of debtors leaving Australia.

With this caveat in place we find that for graduating cohorts from 1989 to 2011, a conservative estimate of the amount of foregone revenue as a result of HECS debtors going overseas is over \$400 million. There is considerable variability in the results of the scenarios presented in this paper, predominantly due to uncertainty in the rates of graduate long-term and permanent emigration; it is shown that the foregone revenue may be as high as \$800 million under certain plausible assumptions. It is also shown that there is additional lost HECS revenue of \$20 million to \$30 million from each new graduating cohort. Some suggestions are offered as to how the issue might be addressed.

² For example, one of the authors of this paper has raised it several times in the context of parliamentary enquiries into Australian higher education policy issues.

2. Costing lost HECS repayments from graduates moving overseas

We estimate the cost of lost HECS repayments by comparing the repayments that would have been paid by graduates who spent time working overseas, with the repayments that would have instead been paid had these same graduates worked exclusively in Australia. The difference between these two values provides an estimate of lost HECS revenue due to existing policy.

Estimating the repayments requires a range of data sources and assumptions. Among other things, it is necessary to estimate the proportion of deferred HECS debtors who have worked or will work overseas. This proportion can then be applied to each cohort of deferred HECS debtor graduates from 1989 to the present, and specifically, to those who have exceeded, or are expected to exceed, the minimum repayment threshold. We apply estimates of average deferred HECS debt for each cohort, and by applying income assumptions and HECS scheme rules, we generate estimates of the present value of repayments.

This process requires access to multiple data sources and a number of simplifying assumptions which are described and explained in Sections 3 to 5. The process of costing is explained in more detail with examples and results given in Section 6.

3. What proportion of HECS debtors work overseas?

Our interest is in just those HECS debtors who work overseas for extended durations, rather than those who pursue further education overseas. It is reasonable to assume that those who move overseas to study would have pursued further study in Australia had they not moved abroad, and thus would have not generated sufficient income during this period to exceed the minimum HECS repayment threshold. Thus, for these graduates, moving overseas would not

lead to foregone HECS repayments.³ In contrast, we assume that those who work overseas would otherwise have worked in Australia, and thus the act of moving and working overseas leads to foregone debt repayments.

To estimate how many HECS debtors move and work overseas, data are needed on travel and emigration, specifically with respect to when graduates leave Australia and how long they remain overseas. The primary data source used was the 2010 Beyond Graduation Survey (BGS) conceived by Graduate Careers Australia (GCA). This is a longitudinal survey of approximately 10,000 graduates who completed a course of study at an Australian higher education institution in 2006 with the survey recording their activities in 2007, 2008, 2009 and 2010⁴. While GCA has released a summary of the results of the survey (GCA, 2011b), the data were examined to extract further information necessary for this paper (GCA, 2011c).

It was found that there were 3,343 graduates with deferred HECS debts in the BGS who provided responses about their activities in 2007, 2008, 2009 and 2010, and who were employed at some time between 2007 and 2010. Of these, 77, 162, 197 and 179 were working overseas in 2007, 2008, 2009 and 2010 respectively. To explore this further, the numbers of transitions to and from periods of overseas work are presented in Table 1.

[Table 1]

³ This is a conservative assumption because it is not unreasonable to assume that those who study overseas develop increased opportunities for overseas work, and thus the rate of longer term emigration for these graduates may be higher than for graduates without a history of overseas study.

⁴ The BGS survey involved surveys of 31 Australian higher education institutions. Graduates who completed study in 2006 and who responded to the 2007 Australian Graduate Survey (AGS, also conducted by GCA), were asked to complete the BGS online survey in 2010 which reported on their activities on 30 April in 2008, 2009 and 2010. This was merged with their responses to the 2007 AGS. The sample of responses to the BGS is representative of the 2008 graduate population in terms of age, sex and broad field of education (GCA, 2011b).

Table 1 illustrates that approximately 10 per cent of 2006 graduates with deferred HECS debts had worked overseas within approximately 3½ years of graduation. Close to 5 per cent had been working overseas for at least two different yearly reference periods, indicating extended duration of time overseas. Based on these values, the percentage of 2006 deferred HECS graduates who were working overseas for one reference date is 5.7, for two reference dates is 2.3, for three reference dates is 1.7 and for four is 0.8.

Because the data are limited to four periods (2007 to 2010 inclusive) the end duration for those still abroad is unknown (the data is right-censored). Thus we would expect that some of those who have already worked overseas may continue to do so – this is particularly likely for those who were working overseas in 2010. As well, some unknown proportion of the 2,995 who had to that point in time not worked overseas will do so at some future period. Consequently assumptions have to be imposed on the data to reflect these shortcomings of the restricted survey length.

The small sample size of the BGS data implies potentially considerable statistical variation. Further, there is the possibility that graduates abroad may be less likely to be contactable and respond to the survey than graduates in Australia. That is, response bias may exist. A consequence is that the true proportions that work overseas may be higher than reported in Table 1.

In order to improve the credibility of our assumptions for the duration of overseas migration, emigration data were obtained from the Department of Immigration and Citizenship (DIAC) to supplement the BGS analysis. Rather than using passenger intentions⁵, we analysed actual travel behavior through the ‘Travellers Characteristics Database’ (TCD).

⁵ While the number of Australian citizens who have been recorded as permanent or long term resident departures is available (DIAC, 2011), this data is obtained from outgoing passenger cards, and there is a serious

Unit record movement data were obtained for Australian citizens between January 2004 and December 2009. We extracted those citizens who departed Australia and were considered as Net Overseas Migrant departures (NOM departures) according to DIAC definitions⁶. Because data were available only up to the last quarter of 2009, like the BGS data, the TCD suffers from right censoring. However, there are six years rather than three years of data, and the size of the dataset is substantial (the TCD consists of over 34 million movement records). Despite the size and duration of the dataset, there are limitations beyond right censoring: the data are for all Australian citizens and not just university graduates; and we do not have information on whether the individuals studied, holidayed or were employed during their time overseas. As a consequence, rather than using the TCD to estimate the proportion of graduates who move overseas, we used it to aid in estimating the *duration spent overseas for those who moved abroad*. Specifically, we analysed the data to obtain the proportion of NOM departures of different age groups (ages 20-22, 20-25 and 20-30) who remained abroad for different durations. By using this data to inform our choices in this paper, we are assuming that the distribution of durations spent overseas from the TCD is consistent with that experienced by HECS debtors. Further, we are implicitly assuming that those who are NOM departures are not liable for HECS payments until they return to Australia as NOM arrivals. Results are given in Table 2.

[Table 2]

limitation with using passenger intention data for our purposes. For example, using TCD data, Healy and Birrell (2010) show that the majority of persons intending to leave Australia for the long term or permanently, return within 12 months.

⁶ Individuals who spend 12 months or more overseas over a 16 month period are classified as NOM departures. NOM departures are classified as 'visitors' in Australia, rather than residents, if they subsequently return to Australia for only short or medium durations (less than 365 days). If they return to Australia and remain in Australia for 12 months or more over a 16 month period then they are considered a NOM arrival, and return to 'resident' status under DIAC definitions.

There is a clear reduction in the proportion remaining abroad as one moves down Table 2 to 6 years duration. Extrapolating from this rate of decline, it is not unreasonable to infer that the majority of the proportion who remain overseas at the end of the period of analysis will continue to remain overseas for a substantial time. Indeed, many of these may remain abroad permanently.

This is supported by Hugo et al. (2003) who conducted a survey of expatriates in 2002. They found that approximately 17 per cent of expatriates did not intend to return to Australia in the future, and that a further 30 per cent were undecided. Furthermore, they found that as age (and duration abroad) increased, the proportion intending to not return rose substantially.

The 2010 BGS and TCD data are used to come up with a number of plausible scenarios for transition rates to working overseas. As the analysis of the BGS data is for the direct population of interest - deferred HECS debtors – despite the survey limitations, the proportions obtained in Table 1 form the basis of all the scenarios; specifically, it is assumed that 10 per cent of graduates spend one or more years working overseas. Scenario 1 in Table 3 is based on the BGS data⁷, while the proportions overseas for different durations under Scenario 3 are based on the 20-25 age group of the TCD. Scenario 2 is an average of these two scenarios.

⁷ Scenario 1 is generated from Table 1 by generally assuming that half of those overseas at the end of 2010 (the end of the period of observation) will continue to remain abroad in 2011, with the balance returning to Australia. For those with three consecutive periods overseas ending in 2010, it is assumed that half will remain abroad for between 3 and 6 years, with the balance remaining permanently overseas. The majority of those who had spent four consecutive periods overseas are also assumed to remain permanently abroad. For example, the value of 4.6 for '1 year overseas' under Scenario 1 is derived by taking half of 1.8 and adding this to 1.7, 1.4 and 0.7. This was rounded down to 4.6 to allow for our assumption that 90 per cent of working graduates (taken by rounding up the empirical result of 89.6 per cent from Table 1) do not spend time abroad for work.

[Table 3]

In the absence of additional information, the scenarios in Table 3 are considered to represent a reasonable range for the actual proportions of graduates working overseas.

Calculating how many graduates have foregone HECS repayment due to overseas work requires multiplying these proportions by the actual number of graduates with deferred HECS debts in each graduating year.

4. How many deferred HECS graduates from each cohort exceed the minimum HECS repayment threshold?

For our cost estimates we assume that it is only graduates who are employed full-time who will exceed the minimum HECS repayment threshold and repay their debt. As reported in the Beyond Graduation 2010 survey, not only do current full-time median graduate salaries exceed the minimum threshold, but median salary growth for graduates is considerable – between 2007 and 2010, median salary for full-time 2006 graduates had increased from \$45,000 to \$60,800 (an increase of 35.1 per cent over the 3 years following completion of their studies, compared to CPI of 9.3 per cent over the same period) (GCA, 2011b). On this basis it is not unreasonable to expect that the vast majority of graduates employed full-time will exceed the minimum threshold.

According to the report on the 2010 BGS by Graduate Careers Australia (GSC, 2010), 74 per cent of 2006 graduates were in full-time employment, 6 per cent were available for full-time employment by 2010, 9 per cent were in full-time study, and 11 per cent were not seeking full-time employment or were unavailable for work. For our calculations we assume that 74 per cent of total deferred HECS graduates are employed full-time, and will continue to be employed for a sufficient duration to pay off their debt (in the event that they remain in Australia). That is, we exclude 26 per cent of graduates from the calculations. This is a

conservative assumption as it is reasonable to expect a large proportion of the 9 per cent who are engaged in further full-time study will ultimately engage in full-time work and repay their debts. Further, we might expect that some of the 6 per cent seeking full-time work will be successful and subsequently repay their debts.

Estimates of the total number of deferred HECS graduates were derived from the Australian Graduate Survey (AGS)⁸. The process of deriving the number of graduates is described in Appendix 1 and results are given in Table A1. Estimates of the number of full-time workers are given in Table A2 in Appendix 2.

5. What is the average deferred HECS debt for graduates from each cohort?

To estimate the average deferred HECS debt for graduates from each cohort we multiply the charge rates from 1989 to 2011 (see Tables A3 and A4 in Appendix 3) by degree length. For comparison, both three year and four year degrees were used in the calculation of the debt. The method of calculation for average annual debt for graduates subject to differential HECS involved additional steps which are given in the Appendix 3 (the charge rates of the corresponding differential HECS bands are given in Table A4). The resulting estimates of average annual debt for a student commencing in each year are given in Table A5. This information was used to estimate the average charge for a 3-year and 4-year degree for students completing from 1989 to 2011. Results are given in Table A6.

6. How much HECS has not been repaid due to graduates moving overseas?

As outlined in Section 2, costing the lost HECS involves undertaking a number of calculations. First, we calculate the present value of HECS repayments for the number of graduates (estimated in Section 4 and given in Table A2), using debt levels (as estimated in Section 5 and given in Table A6) and *assuming debtors had remained in Australia*. Next, we

⁸ The AGS is a survey of Australian graduates conceived by Graduate Careers Australia.

calculate the present value of repayments for the same graduates, but *assuming that the graduates spent time overseas* (using the proportions proposed in Section 3 and given in Table 4). The difference between these present values provides an estimate of the amount of HECS repayments lost due to graduates working overseas.

Further assumptions are required for these calculations which include wage growth (assumed to be 4 per cent), CPI (2.5 per cent), loan indexation (2.5 per cent), the discount rate used when calculating the present value of the repayments (5.5 per cent, being the approximate average 10-year government bond rate), the starting graduate age (22), and the time working in Australia prior to the graduates working overseas (both 1 and 2 years are considered as assumptions). In addition, HECS income thresholds and rates are used in the calculations (ATO, 2012), and it is assumed that income thresholds are indexed at wage growth.

The method is illustrated for a graduate completing a four year degree in 2008, entering the workforce for the first time in 2009 and moving overseas for work in 2011 after working in Australia for two years. Their assumed debt, as taken from Table A6, is \$21,225. The results of the present value repayment calculations for a graduate whose income would have been at the 6 per cent threshold rate (\$59,944 in 2009 and indexed with wage growth thereafter) are given in Table 4.⁹ The 'NPV difference' gives the lost revenue for government (in 2011 dollars) in the event that the graduate works overseas for different durations as given in the first column of Table 4. In all cases the results are expressed in terms of 2011 dollars. The method used is equivalent to calculating the foregone funds when the graduate moves overseas for work and then investing these funds at 5.5 per cent (the assumed government yield) up to 2011. The accumulated value of these foregone funds at 2011 (taking into

⁹ Under HECS, repayments are contingent on income, and the proportion of income that is repaid varies discretely in 0.5 per cent intervals from 4 per cent to 8 per cent depending on one's income. For example, in 2011, debtors with incomes under \$47,196 were not required to repay, while those with income between \$47,196 and \$52,573 repaid at 4 per cent; those between \$52,573 and \$57,948 repaid at 4.5 per cent, etc.

account any future repayments) is the estimated cost to the government of not seeking repayments from debtors who have moved overseas.

The information in Table 4 can be combined with the proportions proposed in Section 3 to come up with an estimate for the expected present value of repayments (see Table 5). That is, we first estimate the possible range of values of lost revenue, and then multiply these values by their probabilities of occurrence, thereby producing an expected value for the foregone amount. While under these assumptions a single graduate will have lost revenue of nil, \$408, \$814, or another amount up to \$14,372 (as given in Table 4), by applying the probabilities of occurrence (the transition probabilities from Table 3) we come up with an estimate of the average foregone amount.

[Table 4]

[Table 5]

That is, the lost revenue to government is likely to be somewhere between \$236 and \$483 *on average* for every graduate based on the specific assumptions used. It is important to note that the variability in results across the three scenarios is due predominantly to the different assumptions about permanent emigration.

For those falling under the minimum repayment threshold the difference between those remaining in Australia and those going overseas will be zero, since in both cases no repayments will be made.

To estimate the overall cost we can multiply the figures for the difference (from Table 5) by the number of 2008 deferred HECS graduates who are expected to work full-time (see Table A2).

We now calculate the total lost revenue across all graduating cohorts since 1989 under the methodology and assumptions outlined above. This is carried out for three and four year degrees, and under the assumption that graduates work in Australia for one or two years full-time following graduation prior to going overseas. The results are presented in Table 6, where the three scenarios refer to the different transition probabilities as given in Table 3, and are just given assuming that income would have been at the 6 per cent income threshold.

[Table 6]

The results for Scenario 2, for a four year degree, and two years working in Australia before moving overseas, are plotted in Figure 1 for each year of graduation. The results are plotted separately for three different income assumptions. Cumulative results across all cohorts are given in Figure 2.

It is clear from the figure that the cost of ignoring debtors who move overseas for the early years of HECS is small, as both the amount of debt and the estimated number of full-time workers is relatively low. As HECS charges increase in the 1990s, the cost for each cohort increases. A substantial jump occurs for year 2000 graduates, since graduates commencing prior to 1997 (that is, who complete before 2000) were charged substantially lower HECS fees than the differential fees faced by those commencing in or after 1997 (who complete in 2000 or thereafter). The costs for each cohort of graduates rises in 2008, as this corresponds with students commencing a four year degree in 2005, the first year of partial fee deregulation resulting in substantial increases in differential HECS amounts.

[Figure 1]

[Figure 2]

The results in Table 6 suggest that an estimate of over \$400m (with a plausible upper estimate of nearly \$800m) is credible for the amount of debt foregone to date, and every additional cohort of future graduates will result in this cost increasing by an amount in the order of \$20m to \$30m.

We note that our estimates are conservative for a number of reasons:

- (i) Postgraduates with deferred HECS debts have not been included;
- (ii) It is plausible that the true proportion of HECS debtors who work overseas is greater than reported in Table 1 due to the possibility of response bias;
- (iii) The number of full-time graduates used in the calculations is conservative for reasons given in Section 4;
- (iv) Ex-students who had accrued HECS debts but who did not complete their studies and did not graduate have not been included in the cost estimates; and
- (v) Importantly, FEE-HELP¹⁰ recipients have not been included, yet total FEE-HELP liabilities are substantial. For example, in 2009 there was a \$759 million liability for 55,536 domestic FEE-HELP recipients, and since 2009 the number of FEE-HELP students has grown markedly. Further, recently announced increases to VET FEE-HELP will add to the costs.

¹⁰ Students who are unsuccessful in securing a Commonwealth supported university place may be able to obtain a fee-paying place. These students may be able to obtain an income contingent loan that follows the same principles as HECS, called FEE-HELP, to cover all or part of their fees. VET FEE-HELP provides a similar loan for tuition fees for vocational education and training (VET).

7. How could the debt of future HECS debtors be recovered?

The Australian government is not the only institution that carries the cost of unpaid student loans from debtors travelling to or moving overseas, nor is this an issue confined to income contingent loan systems such as HECS. Indeed periods of non-repayment, and defaults, are a characteristic of all student loans including the bank-financed systems of the US and Canada. However, HECS seems to be the only income contingent loan policy which does not include any regulations designed to minimise losses for taxpayers from graduates going overseas.

The issue has been a particularly significant concern for New Zealand student loan policy-makers, with different approaches having been adopted to address the issue since the introduction of their income contingent loan policy in 1992. This attention is apparently warranted given the strong evidence of the high costs to New Zealand taxpayers from debtors moving overseas. The following data¹¹ illustrate the extent of the problem for that country:

- (i) In 2011 around 90 per cent of all debt with current non-repayments in excess of five years is attributable to overseas-based borrowers;
- (ii) In 2011 overseas-based debtors made up 14 per cent of all borrowers but were 58 per cent of all borrowers with overdue payments; and
- (iii) The median repayment period for the 2008 student cohort is projected to be respectively 5.5 and 12 years for borrowers who do not go overseas and borrowers who are expected to be abroad, respectively.

¹¹ All the data are taken from the most recent New Zealand government report on student loans, available from http://www.educationcounts.govt.nz/publications/series/student_loan_scheme_annual_reports/114630..

Barr (2001) considers in detail possible means of dealing with these costs for all countries with income contingent loans, beginning with what he describes as a “minimalist” approach. This basic step involves a government converting income contingent loan debt into mortgage-type debt for borrowers who go overseas. This policy is a recognition that it would be extremely unlikely that other countries’ tax authorities would agree to adopt an income contingent collection mechanism for immigrants, which is realistic particularly when it is the case that only a handful of countries have any form of income contingent debt collection. This means that overseas based debtors are obliged to repay part of their debt on the basis of time rather than income, and is the approach adopted for the English, Swedish and New Zealand income contingent loans.

There are many different ways of helping to ensure that overseas-based debtors are repaying. For example, the New Zealand government has set annual repayments to be roughly 10 per cent of a borrower’s total debt, and has now also made it a requirement that borrowers leaving the country leave contact details with a designated relative to allow the authorities to keep in touch with debtors. As well, since 2006 New Zealand student loans have a zero nominal rate of interest for those remaining in the country, but a nominal rate of interest of 6.4 per cent per annum for those going overseas¹².

Barr (2001) goes on to suggest more radical ways of attempting to recover unpaid ICL debts from those leaving the country. One possibility would be for a government to come to agreements with other countries in the use of their internal revenue services to collect the debts with the use of the same income contingent parameters in operation as in the country of origin. But this seems unlikely to be successful in a broadly-based way given that only

¹² Presumably the differential is designed to discourage debtors from leaving the country, although it seems very unlikely that this would have significant behavioural effects. It has become clear with respect to HECS for example, that parameter changes to the scheme have invariably had no discernible consequences for student education or labour market choices (Chapman, 2006).

Australia, England, New Zealand, Hungary and South Africa currently have income tax-based student loan collection systems, although many other countries seem likely to move in this direction over time¹³.

Ideally, and accepted by Barr as being far in the future, would be the establishment of an international agency with the capacity to distribute and collect loans on an income contingent basis in all countries. In the meantime, the fact that the Australian government has not enacted any policy steps to address the costs of unpaid HECS debts from those going overseas is both a curiosity and a policy indictment. The costs reported in this paper illustrate that the problem is both non-trivial and becoming increasingly significant.

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Appendix 1 Estimating the number of deferred HECS graduates

We extracted the number of domestic undergraduate graduates with deferred HECS debts from the AGS surveys (GCA, 2008, 2009, 2010, 2011a). Results are given in Table A1. The 'Total' column values in Table A1 are estimated by dividing the sample numbers by 61 per cent, being the approximate response rate of the survey according to Graduate Careers Australia.

[Table A1]

Appendix 2 Estimating the number of HECS debtors engaged in full-time work

While we can estimate the number of full-time workers from each cohort of graduates for 2006 to 2010 using the assumption of approximately 74 per cent full-time employment (see Section 4), we need additional assumptions for the earlier graduate cohorts back to 1989.

This is achieved by expressing the estimated number of full-time workers for the known cohorts (from AGS surveys) as a proportion of the average number of HECS debtors in the

four years preceding graduation. For example, the estimated number of full-time workers that will emerge from the 2006 cohort of graduating students is 61,998¹⁴. Expressed as a proportion of the average number of equivalent full-time undergraduate deferred HECS debtors between 2003 and 2006, this comes to 20 per cent. Under the assumption that this proportion is consistent for earlier cohorts, this was applied to estimate the number of full-time workers for cohorts from 1989 to 2005.

The numbers of deferred HECS debtors per annum for 1999 to 2010 were taken from higher education statistical tables provided by DEEWR (2000-2011). Prior to these dates figures are not available and the numbers were estimated. For years prior to 1997 estimates were obtained by dividing the deferred HECS liabilities (sourced from DEEWR, 2009b) by the average annual debt for students commencing in each year. Estimates of deferred HECS debtors for 1997 and 1998 were obtained by linear interpolation from the 1996 and 1999 figures. Estimates for the number of full-time workers for 2010 and 2011 were derived by applying the average annual growth rate between 2007 and 2009.

[Table A2]

Appendix 3 Estimating the average deferred HECS debt

[Table A3]

[Table A4]

For students commencing prior to 1997, the average annual debt can be directly obtained from the HECS per annum charge rates. Students commencing after 1996 are subject to

¹⁴ By graduating students we mean those undergraduate students who have graduated. Where we subsequently refer to graduating students, we mean graduates from undergraduate degrees only.

differential fee charges and transitional arrangements, and calculating an average annual debt therefore requires certain assumptions. For these cohorts annual debt was calculated as follows:

- (i) The average annual debt for a student in 2002, 2003, 2004, 2008 and 2009 was estimated by dividing the corresponding deferred HECS liability by the corresponding number of deferred HECS debtors.
- (ii) Due to transitional arrangements following the introduction of differential HECS in 1996 and further increases in 2005 due to fee deregulation, the approach (i) could not be taken for the years 1997-2001, nor for 2005-2007. Average annual debt for each year from 1997 to 2001 was estimated by expressing the 2002-2004 average annual debt as a proportion of the average of the three differential charge bands for 2002-2004, and then applying this proportion to the average of the three charge bands for each year from 1997 to 2001. This was repeated for the 2005-2007 years by using the average proportion from the 2008 and 2009 years.

[Table A5]

[Table A6]

Table and Figures

Table 1 2010 BGS: Activities of 2006 deferred HECS graduates from 2007 to 2010.

<i>Time overseas</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Number of cases</i>	<i>Proportion (per cent)</i>
4 periods overseas	os	os	os	os	26	0.8
3 periods overseas	-	os	os	os	43	1.3
	os	-	os	os	2	0.1

	os	os	-	os	4	0.1
	os	os	os	-	7	0.2
2 periods overseas	-	-	os	os	39	1.2
	-	os	-	os	4	0.1
	-	os	os	-	21	0.6
	os	-	-	os	2	0.1
	os	-	os	-	1	0.0
	os	os	-	-	10	0.3
1 period overseas	-	-	-	os	59	1.8
	-	-	os	-	58	1.7
	-	os	-	-	47	1.4
	os	-	-	-	25	0.7
0 periods overseas	-	-	-	-	2,995	89.6
	Total				3,343	100.0

Note: working overseas is denoted 'os'; not working overseas is denoted '-'. The figure of 2,995 is the number who worked at some period between 2007 and 2010, but who did not work overseas during this period. The total of 3,343 is the number of deferred HECS graduates who provided responses for 2007, 2008, 2009 and 2010, and who worked at some stage either within or outside of Australia during this period.

Source: Derived by the authors from 2010 Beyond Graduation Survey (GCA,2011c)

Table 2 Travellers Characteristics Database: Results from analysis. Proportion of 2004 NOM departures who remained overseas for different durations.¹⁵
(per cent)

<i>Duration overseas (years)</i>	<i>Age 20-30</i>	<i>Age 20-25</i>	<i>Age 20-22</i>
1	16	18	21
2	27	30	32
3	11	11	10
4	7	7	6
5	5	4	3
6	1	1	1
still abroad	33	29	27
Total	100	100	100

Source: Derived by the authors from the Department of Immigration and Citizenship Travellers Characteristics Database, 2012.

Table 3 Scenarios for transitions to overseas work (per cent).

¹⁵ If the analysis is performed for NOM departures in later years (e.g., 2005 or 2006) the proportions remaining overseas for different durations are similar to those presented in Table 2. Analysis is presented for 2004 departures only, as this allows up to six years of post-departure movement data.

<i>Duration overseas</i>	<i>Scenario 1</i>	<i>Scenario 2</i>	<i>Scenario 3</i>
Not overseas	90	90	90
1 year	4.6	3.2	1.8
2 years	2.5	2.8	3.0
3 years	1.0	1.1	1.1
4 years	0.4	0.5	0.7
5 years	0.2	0.3	0.4
6 years	0.1	0.1	0.1
permanently	1.2	2.0	2.9
TOTAL	100	100	100

Table 4 Example of foregone HECS repayments for a hypothetical graduate.

<i>Duration spent overseas</i>	<i>Nominal repayments (\$)</i>	<i>PV repayments (\$)</i>	<i>NPV difference (@5.5 per cent pa) (\$)</i>
not overseas	22,835	19,528	-
overseas for 1 yr	23,222	19,171	408
2yrs	23,628	18,816	814
3yrs	24,054	18,463	1,217
4yrs	24,463	18,143	1,583
5yrs	24,881	17,832	1,939
10yrs	27,127	16,403	3,572
20yrs	32,502	14,089	6,218
permanently	7,340	6,956	14,372

Note: It is assumed that the graduate completed a four year degree in 2008, earned income of \$59,944 in 2009 (indexed to wage growth thereafter), and moves overseas for work in 2011.

Table 5 Example of expected foregone HECS repayment for a hypothetical graduate.

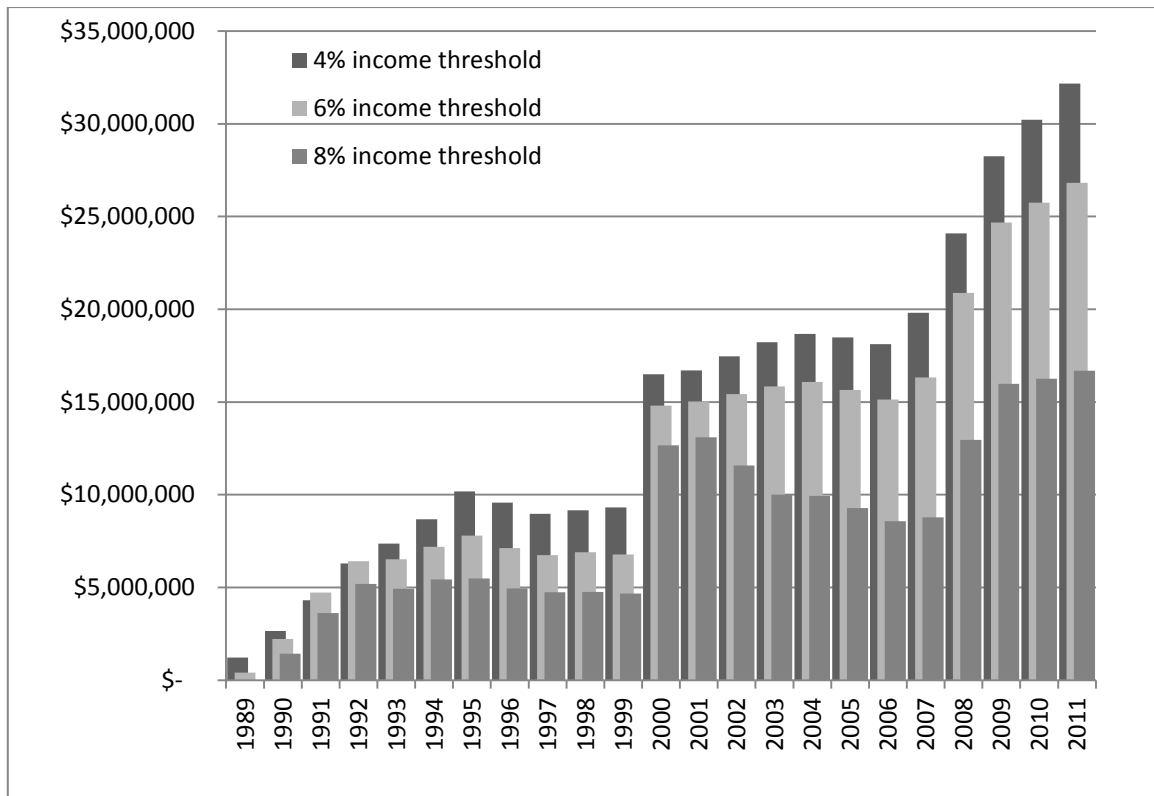
	<i>Scenario 1 (per cent)</i>	<i>Expected NPV difference (\$)</i>	<i>Scenario 2 (per cent)</i>	<i>Expected NPV difference (\$)</i>	<i>Scenario 3 (per cent)</i>	<i>Expected NPV difference (\$)</i>
Not overseas	90	-	90	-	90	-
1 year	4.6	19	3.2	13	1.8	7
2 years	2.5	20	2.8	23	3.0	24
3 years	1.0	12	1.1	13	1.1	13
4 years	0.4	6	0.5	8	0.7	11
5 years	0.2	4	0.3	6	0.4	8
6 years	0.1	2	0.1	2	0.1	2
permanently	1.2	172	2.0	287	2.9	417
TOTAL		236		353		483

Table 6 **Estimates of total lost HECS revenue for all graduating cohorts, 1989-2011.**

<i>Degree length (years)</i>	<i>Number of years working in Australia before moving overseas</i>	<i>Scenario 1 (\$m)</i>	<i>Scenario 2 (\$m)</i>	<i>Scenario 3 (\$m)</i>
3	2	210	310	430
3	1	290	440	600
4	2	300	440	610
4	1	380	570	780

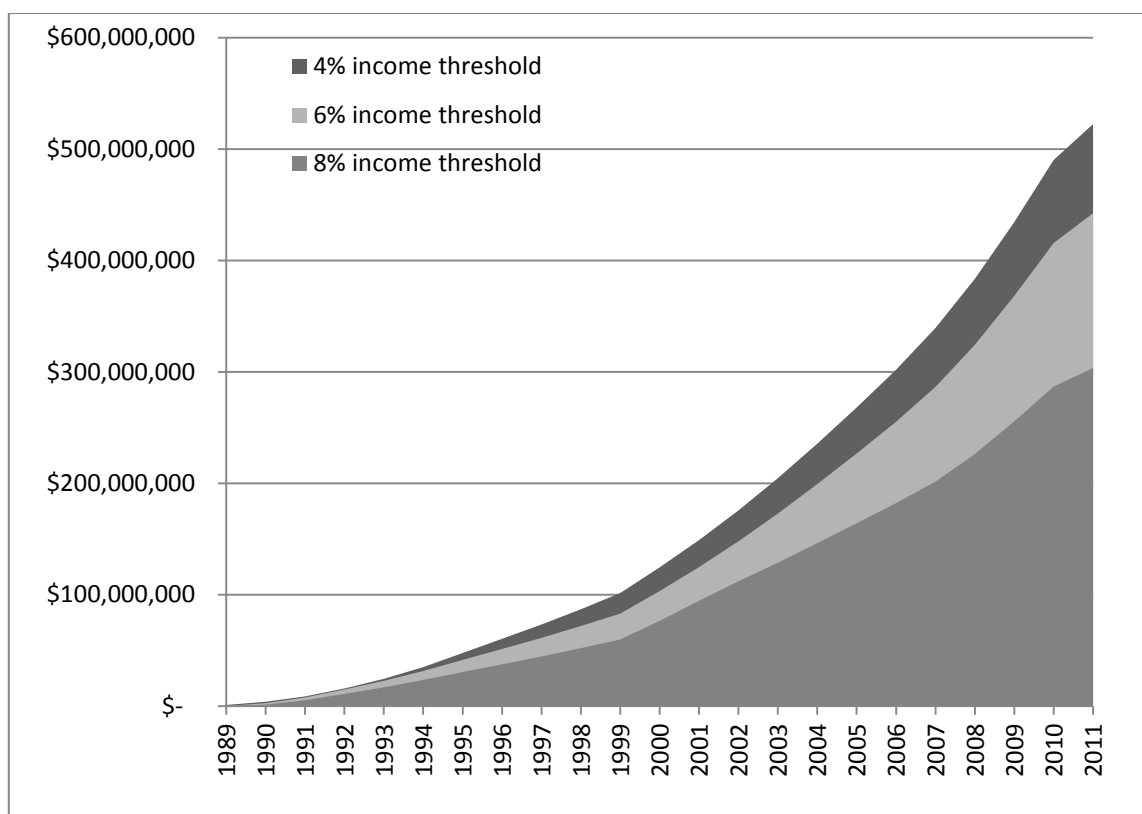
Note: In all scenarios it is assumed that income would have been at the level corresponding with the 6 per cent income threshold (that is, at \$48,622 for 2004 and \$65,564 for 2011. Income in years prior to 2004 was approximated by discounting at actual AWE).

Figure 1 **Year by year value of foregone HECS revenue - all graduating cohorts 1989-2011.**



Note: This assumes four year degrees, two years of work in Australia prior to moving overseas, and probabilities of transition overseas following Scenario 2. Dollar amounts are expressed in nominal terms at the date of graduation for each cohort.

Figure 2 The cumulative value of foregone HECS revenue - all graduating cohorts 1989-2011.



Note: This assumes four year degrees, two years of work in Australia prior to moving overseas, and probabilities of transition overseas following Scenario 2. The foregone amount for each graduate cohort is accumulated at the assumed government yield of 5.5 per cent per annum.

Table A1 Estimates of domestic undergraduate graduates with HECS debts.

<i>Year after graduation</i>	<i>Sample deferred HECS debtors</i>	<i>Total estimated deferred HECS debtors</i>
2010	60,443	99,087
2009	57,014	93,466
2008	55,440	90,885
2007	50,832	83,331

Source: Derived by the authors from the Australian Graduate Surveys from Graduate Careers Australia.

Table A2 Estimates of full-time workers from cohorts of deferred HECS debtors.

<i>Year after graduation</i>	<i>Estimated number of</i>
------------------------------	----------------------------

<i>full-time workers</i>	
1990	45,484
1991	47,880
1992	50,177
1993	51,643
1994	53,942
1995	55,414
1996	55,530
1997	56,182
1998	57,485
1999	58,725
2000	60,507
2001	61,470
2002	62,566
2003	63,795
2004	64,511
2005	64,682
2006	63,422
2007	61,998
2008	67,619
2009	69,538
2010	73,721
2011	76,984
2012	80,392

Source: Derived by authors.

Table A3 HECS charge rates: 1989 to 1996

<i>Year</i>	<i>Per annum charge (\$)</i>
1989	1,800
1990	1,882
1991	1,993
1992	2,250
1993	2,328
1994	2,355
1995	2,409
1996	2,442

Source: K. Jackson, 2003, *The Higher Education Contribution Scheme*

Table A4 HECS charge rates: 1997 to 2011 (\$ per annum)

<i>Year</i>	<i>Students commencing after 1996</i>	<i>Students commencing</i>	<i>Students commencing prior to 2005 (who are not pre-1997 students)</i>
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	<i>Group 1</i>	<i>Group 2</i>	<i>Group 3</i>	<i>prior to 1997</i>	<i>Group 1</i>	<i>Group 2</i>	<i>Group 3</i>
1997	3300	4700	5500	2478			
1998	3356	4779	5593	2520			
1999	3409	4855	5682	2560			
2000	3463	4932	5772	2600			
2001	3521	5015	5870	2644			
2002	3598	5125	5999	2702			
2003	3680	5242	6136	2764			
2004	3768	5367	6283				
2005	4616	6575	7696		3843	5474	6409
2006	4899	6979	8170		3920	5583	6535
2007	4996	7118	8333		3998	5694	6665
2008	5095	7260	8499		4077	5807	6798
2009	5201	7412	8677		5201	7412	8677
2010	5310	7567	8859		5310	7567	8859
2011	5442	7756	9080		5442	7756	9080

Note: See DEEWR (2012) for a detailed description of HECS charge rates. Fees for students who commenced in 2005 were fixed at the 2005 levels for the duration of the degree.

Sources: K. Jackson, 2003, *The Higher Education Contribution Scheme*; Department of Industry, Innovation, Science, Research and Tertiary Education, *Indexed Rates for 2007-2011*; *Higher Education Support Act 2003* (Cwlth).

Table A5 **Estimated average annual HECS debt**

<i>Year of student commencement</i>	<i>Average annual debt (\$)</i>
-------------------------------------	---------------------------------

1989	1,800
1990	1,882
1991	1,993
1992	2,250
1993	2,328
1994	2,355
1995	2,409
1996	2,442
1997	4,036
1998	4,104
1999	4,169
2000	4,235
2001	4,237
2002	4,385
2003	4,511
2004	4,617
2005	5,306
2006	5,632
2007	5,744
2008	5,989
2009	5,848

Table A6 **Estimated average 3-year and 4-year degree HECS debt.**

<i>Year of commencement of 3-year</i>	<i>Year of commencement of 4-year</i>	<i>Last year of degree</i>	<i>Average 3- year degree debt (\$)</i>	<i>Average 4- year degree debt (\$)</i>
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<i>degree</i>	<i>degree</i>			
1987	1986	1989	1,800	1,800
1988	1987	1990	3,682	3,682
1989	1988	1991	5,675	5,675
1990	1989	1992	6,125	7,925
1991	1990	1993	6,571	8,453
1992	1991	1994	6,933	8,926
1993	1992	1995	7,092	9,342
1994	1993	1996	7,206	9,534
1995	1994	1997	7,329	9,684
1996	1995	1998	7,440	9,849
1997	1996	1999	12,309	10,000
1998	1997	2000	12,509	16,544
1999	1998	2001	12,642	16,746
2000	1999	2002	12,857	17,026
2001	2000	2003	13,132	17,368
2002	2001	2004	13,513	17,750
2003	2002	2005	13,546	17,931
2004	2003	2006	13,541	18,052
2005	2004	2007	15,918	18,137
2006	2005	2008	17,366	21,225
2007	2006	2009	17,582	23,214
2008	2007	2010	17,807	23,552
2009	2008	2011	17,937	23,927

Note: Since 1989 was the first year of HECS charges, accrued debts for 3-year graduates in 1989 and 1990, and 4-year graduates in 1989, 1990, and 1991, are relatively low compared to the following years. Charge rates for pre-1997 commencers who study post-1997, for 2005 commencers, and for pre-2005 commencers who study post-2005, differ due to policy changes coinciding with these dates. These charge rates are incorporated when estimating the average debts for 3-year and 4-year degrees above. 2010 and 2011 average debts were approximated by inflating the 2009 averages at 2.1 per cent to 2010, and the 2010 values at 2.5 per cent to 2011 (corresponding to the charge band inflation between 2009-2010 and 2010-2011).