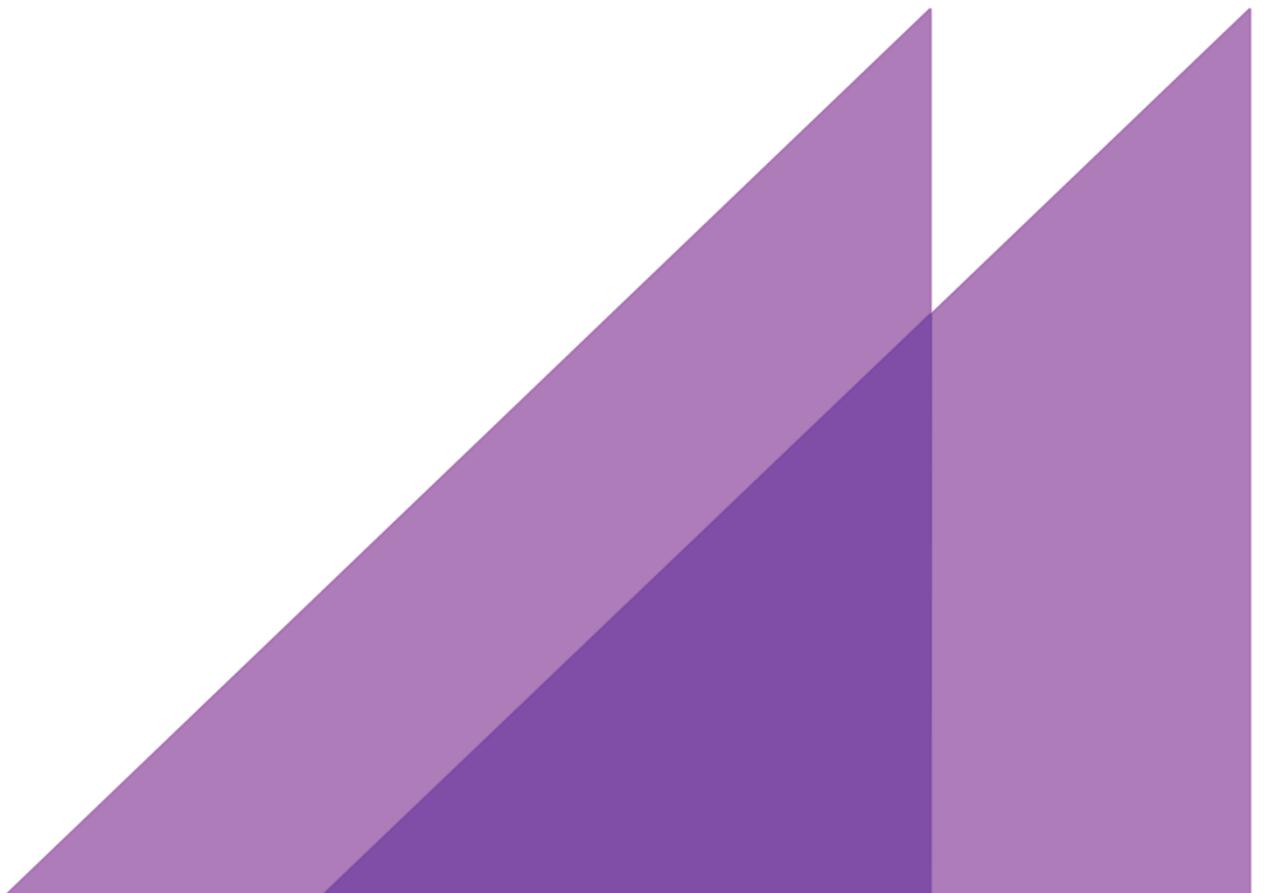


REPORT TO  
UNIVERSITIES AUSTRALIA

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6 DECEMBER 2013

# PRIVATISATION OF HECS DEBT





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PRIVATISATION OF HECS REPAYMENTS

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# 1 Introduction and key points

1. ACIL Allen Consulting has been engaged by Universities Australia to consider the arguments for and against recent proposals to privatise and/or securitise the tuition fee debt held by current and former tertiary students which they owe to the Australian Government.
2. This debt is commonly known as HECS debt, but this is slightly misleading. Loans to students are made under the Higher Education Loan Program which encompasses the Higher Education Contribution Scheme HECS-HELP, FEE-HELP, SA-HELP, VET FEE-HELP and OS-HELP. For the purposes of this report, however, all of these programs are aggregated under title HECS Debt. Nothing is lost in the analysis by this aggregation.
3. The clarity of the discussion in Australia to date on the matters covered in this report has been hindered by the use of different definitions of privatisation and securitisation, and by a conflation of (i) the purely financial transaction aspect of privatisation/securitisation of HECS Debt with (ii) higher education loans policy (covering such questions as the interest rate charged, the level of income at which loan repayments start to be repaid) and (iii) higher education policy (such as whether the Australian Government should cap the number of places in universities).
4. As this Report discusses, these matters should all be considered separately. In particular, there should be no necessary connection between sale of a financial asset (the debt owed to the Australian Government) and either higher education loans policy or higher education policy generally.
5. The Report discusses, at a high level based on financial modelling, the price that the Government could be expected to receive should it choose to sell the HECS Debt. Not surprisingly, this depends on who (the Government or the private buyer) will hold the repayment risk (in various forms) after the sale. This modelling is not, it should be emphasised, the kind of detailed analysis that both the Government and potential buyers would undertake prior to a sale, but it does point to the critical issues that will determine the price.
6. In considering whether it is a good idea for the Government to privatise HECS debt, there are three stakeholders whose welfare should be taken into account: the Government, universities (where 'universities' is taken to mean educational institutions whose students receive loans from the Government) and students.
7. There are two broad cases, one where the Government retains repayment risk, and one where it is passed onto the buyer(s) of the HECS Debt.

8. Where the Government retains the repayment risk the sale of HECS debt is a marginal proposition at best, unless it places a very large weight on getting cash up-front for an asset that will likely yield the same amount of cash, in present value terms, over a relatively short period.
9. For universities, in these circumstances, it should make no difference to them. What matters for universities is the money they receive from the Government, the number of students they are allowed to admit and the fees they are allowed to charge these students. None of these things ought to be affected by whether loans that have been taken out by past and present students to pay for fees are owed to the Government or to anybody else, such as a superannuation fund.
10. For students, the answer is the same as for the universities, unless the Government agrees, as part of the sale, to allow the new owners of the HECS Debt to vary the terms and conditions of existing loans. Assuming that this doesn't happen then the past and present students will not be affected.
11. In fact, assuming that the HECS debt repayments are still income-contingent, and still made through employer payroll deduction as a supplement to income tax deductions then the former students who are paying back their loans might not even be aware that their debt is actually owned by someone other than the Government. The money will be passed by the Government to the owners of the HECS Debt, but that will not affect the former students in any way.
12. Where the Government passes repayment risk to the buyer(s) it will most likely receive a highly discounted up-front payment for the HECS Debt. Even if this discount is worthwhile from the Government's point of view (because it has passed on financial risk), the Government will likely be constrained in terms of what it can do with higher education policy.
13. For example, it might (or might not) want to consider changing the minimum income at which HECS loans become repayable, but might be constrained from doing so. This will affect students. Other constrained-policies will affect universities.
14. Changes to higher education policy should be considered on their own merits, which means that any sale of HECS Debt should be structured purely as a financial contract. The private buyer would be purchasing a future stream of Government revenue. If the net present value of this future income stream differs between the Government and buyer then this could provide an opportunity for both parties to profit from the sale. (This is actually not very likely to be the case, but this is the conceptual framework for thinking about it.) In this sense, there is nothing special about the Government selling a future stream of HECS Debt repayments. It could do the same for any future stream of revenue, such as income taxes, GST, parking fines etc.
15. As discussed in this report, there are very good reasons for the Government (i.e. the ATO) to be the collector of the debt from the former students, even after it is privatised. These relate to the efficiency of the collection of the repayments when the repayments are income-contingent.

16. The Government could be expected to charge a collection fee to the private owner(s) of the debt for this service, say around \$50 million. This is likely to be less than it would cost the new owners of the debt to collect the money themselves.
17. In very short summary, if the Government keeps the HECS repayment risk, the sale of the HECS Debt will be largely pointless (and may be worse than pointless given the legal and other transaction costs involved). If the Government passes on the HECS repayment risk, then it will receive a smaller payment up-front, which might or might not be equivalent to the passing off of the risk, and its policy making ability will probably be compromised, to the likely detriment of universities and students.
18. **The likely problems of a HECS Debt sale, where the buyer takes on repayment risk are:**
  - (i) for government, it will receive an amount for the debt which will be too low, and it won't be able to implement higher education policies as it sees fit**
  - (ii) for universities, growth in the system may be slower**
  - (iii) for students, growth in the system may be slower, and they face the risk of less generous HECS repayment terms.**
19. Selling HECS Debt is therefore, from a public policy perspective, neutral at best and a bad idea at worst.
20. In the preparation of this Report, consultations were held with Professors Bruce Chapman and Glenn Withers of the ANU and Professors Stephen King and Rod Maddock of Monash University. Dr Tim Higgins of the ANU was instrumental in the preparation of the material in Appendix A.

## 2 The basic parameters of HECS Debt

21. The key characteristic of HECS Debt is that it is income-contingent. This means that for debtors repayments do not begin until their HELP repayment income (HRI) meets a minimum level.<sup>1</sup> In 2013-14, that level is \$51,309 at which point that income is taxed at a rate of four per cent with this being used to repay the debt. The repayment rate climbs in 0.5% increments until reaching eight per cent when HRI reaches \$95,288 and above. The HRI bands for each repayment rate are about 4.5 per cent higher than in 2012-13.
22. Another key characteristic of HELP Debt is that individual debts attract a zero real interest rate i.e. they are indexed each year by the annual increase in the CPI, but no interest is payable otherwise. In other words, the nominal interest rate on the debt is equal to the inflation rate.
23. Further relevant characteristics are that if debtors move overseas no repayments are due while they are overseas, even if they are earning a large income, but they do accumulate during this time, and if debtors die their estates are not liable for the unpaid debt, except for the repayments that are due but not yet paid in the year of death.
24. These characteristics mean that a certain proportion of the debt (around 20 per cent) will probably not be repaid.
25. Table 1 shows key HECS data. While not entirely up to date, they give a good perspective of the magnitude of key parameters of the system.

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<sup>1</sup> HRI is defined as taxable income plus any total net investment loss (which includes net rental losses), total reportable fringe benefits amounts, reportable super contributions and exempt foreign employment income.

TABLE 1 KEY HECS DATA

Variable	Size	Notes
Total HECS Debt	\$26.3 billion	As at 30 June 2012. Source: Andrew Norton, Grattan Institute report, Mapping Australian Higher Education, January 2013.
'Fair Value' of HECS Debt	\$19.3 billion	Fair value is an accounting concept where total value is discounted for doubtful debts and the fact that no (real) interest is charged. Source: Norton (2012)
Proportion of total debt that is doubtful debt	20%	Based on Table 24 in Department of Education, Employment and Workplace Relations, Higher Education Report 2010 and Industry, Innovation, Climate Change, Research and Tertiary Education Portfolio Budget Statements 2013-14, p93.
Average amount of debt	\$16,800	Portfolio Statements , p93.
Number of debtors (approx.)	1,500,000	Derived by dividing total debt by average debt
Average number of years to repay debt	8.6	Portfolio Statements, p93. Expected to grow to 9.1 years by 2016-17.

## 3 Privatisation and securitisation scenarios

26. This chapter describes various privatisation and securitisation scenarios for the existing HECS Debt. The objective is to derive the price that a private buyer would be willing to pay for this debt. A key issue is which party bears the various repayments risks.

### 3.1 Scenario 1: simple privatisation and securitisation

27. In Scenario 1 the Government sells the existing stock of HECS Debt (or a proportion of it, given the existence of doubtful debts) and guarantees to the buyer a stream of payments over, say, 10 years (corresponding, as it happens, to roughly the average repayment time for individual debts).
28. The mechanics of this process are as follows. The stock of non-doubtful HECS Debt is  $80\% \times \$26 \text{ billion} = \$20.8 \text{ billion}$ . 'Interest' on this debt is the expected inflation rate, assumed to 2.5 per cent, the mid-point of the RBA's inflation target. Assuming that the debt is paid in full over 10 years at this interest rate, yields the following stream of payments.

Table 2 **STREAM OF PAYMENTS ON \$20.8 BILLION ASSET (\$B)**

Year	Interest	Principal	Total
1	0.52	1.86	2.38
2	0.47	1.90	2.38
3	0.43	1.95	2.38
4	0.38	2.00	2.38
5	0.33	2.05	2.38
6	0.28	2.10	2.38
7	0.22	2.15	2.38
8	0.17	2.21	2.38
9	0.11	2.26	2.38
10	0.06	2.32	2.38
	<b>total</b>	<b>20.80</b>	<b>23.80</b>

29. What would a private buyer be willing to pay for this stream of income? The key characteristic of this income stream is that it is guaranteed by the Government. There is no risk (other than the risk of government default) for the buyer. The income stream is therefore exactly like a government bond. The interest rate (at present) on 10 year Commonwealth Government Bonds is 4.3 per cent. The buyer should therefore be willing to pay the present value of this income stream discounted at 4.3 per cent, which amounts to \$18.99 billion.
30. The private buyer therefore pays \$18.99 billion up-front for an asset which has the same risk characteristics as a 10 year bond, and over 10 years receives interest and repayment of its principal. Thus the transaction can be thought of as either a 10 year loan to the Government, with principal repaid progressively over the life of the loan, or the purchase of an asset, with a guaranteed income stream, with the Government re-purchasing the asset progressively over 10 years.
31. For the private buyer, the benefit is that it has an interest-earning asset to add to its portfolio. Of course it has to give up another asset to make the up-front payment, but it can still be better off in a risk-return basis given the composition of its total portfolio.
32. The Government receives \$18.99 billion in cash up front, but makes payments over 10 years with exactly the same present value.
33. Thus, the transaction is financially neutral for the Government. It might be able to use the cash received to reduce its cash budget deficit, but the deficit will be unaffected in accrual terms, and the cash budget position will be correspondingly worsened in future years. Thus any apparent improvement in the Government's budget position, under this scenario, would be entirely illusory.
34. Where does the money come from for the Government to make the repayments? From the repayment of the student loans. In this respect, the Government is taking on the repayment risk. The interest paid to the buyer is based on the *expected* inflation rate of 2.5 per cent, which is the expected interest rate paid by holders of HECS Debt. However, the inflation rate might not be, and probably won't be, exactly 2.5 per cent every year.
35. For example, in the 10 years to 2012-13, the inflation rate (measured as the June to June percentage change in the CPI) varied between 1.2 per cent and 4.4 per cent, averaging 2.7 per cent. In only two years was it exactly 2.5 per cent.
36. If the inflation rate is higher (on average) than 2.5 per cent, then the Government will take in more in interest from holders of student loans than it will pay to the buyer of the HECS Debt asset, and vice versa. If it is lower, then it will take in less. The inflation risk is somewhat asymmetric, since it is more likely (though not very likely in absolute terms) that the inflation rate will be significantly above 2.5 per cent than significantly below.

37. If inflation is significantly above 2.5 per cent over the 10 year life of the asset the buyer will incur a significant loss, because it will have discounted the prospective stream of income at the current bond rate which (in all likelihood) does embody expectations that inflation will be (about) 2.5 per cent, on average, over the next 10 years.
38. However, whatever the magnitude of this inflation risk, it is exactly the same risk faced by the holder of an ordinary 10 year government bond. If inflation becomes unexpectedly higher and bond rates rise, holders of existing bonds suffer a capital loss. There is no reason to believe that there would be additional inflation risk created if the Government sells its HECS Debt, so inflation risk is a non-issue for purchasers of this debt, or at least no more of an issue than if they were to purchase a near-identical asset, a 10 year bond.
39. Another risk held by the Government in this scenario is repayment risk. The estimate that 20 per cent of HECS Debt is doubtful is the result of a long and complex actuarial calculation. Appendix A provides a discussion. If the proportion of debt that is not repaid turns out to be greater than (or less than) 20 per cent, the Government will take in less (or more) revenue than it estimated when initially setting the amount of HECS Debt to be sold.
40. There is no non-repayment risk, however, borne by the buyer of the HECS Debt. This is because the stream of payments (in this scenario) is fixed.
41. It would be in principle possible to structure the sale of HECS Debt so that the buyer does take on repayment risk. Such scenarios are discussed below. However, as discussed in Appendix A, the estimated size of doubtful debts is very sensitive to the assumptions of the analysis, so if buyers are going to take on repayment risk, they will be likely to apply a large discount to the price they are willing to pay.
42. The implications for universities and students (including former students) of Scenario 1 are very simple: there aren't any. This is because the Government and buyer are undertaking a simple financial transaction that is unaffected by, and does not affect, higher education loans policy or higher education policy in general. The stream of payments that the Government makes to the buyer is notionally backed by repayment of loans by former students, but the key word here is 'notional'. Given that the payments are guaranteed by the Government, they could just as well be backed by other sources of revenue to the Government.
43. **Conclusion:** the Government could sell HECS Debt in the manner described in this scenario, but it would be a fairly pointless transaction, as it would be no better or worse off financially. The buyers of the debt would be able to invest in an asset not otherwise available to them, so they would be better off in that sense, though given the similarity between the HECS Debt asset in this scenario and government bonds, which are in plentiful supply<sup>2</sup>, it is not clear how much of

<sup>2</sup> According to Professor Rod Maddock (personal communication), government bonds are not in fact in plentiful supply for superannuation funds and similar investors, notwithstanding the Australian Government's liabilities of \$300 billion. This is because of the bonds held by foreigners and because of the bonds that must be held by banks as part of their regulatory

an advantage this would be. Universities and students would be unaffected, as would the Government's ability to formulate higher education policy.

## 3.2 Scenario 2: Buyer takes on the risks

44. In contrast to Scenario 1, in the following scenario the purchaser of the HECS Debt receives all the repayments that happen to be made over a 10 year period. The buyer, in this scenario takes on inflation risk and non-repayment risk.
45. What are the likely magnitudes involved in this scenario? The Department of Education Portfolio Statements inconveniently don't say how much is repaid in each year. However, with suitable assumptions, it is possible to make some estimates.
46. From Table 1 above, the number of debtors is about 1.5 million. Assuming that 55 per cent are not currently repaying debt (because they are still studying, or not earning enough income, or living overseas) then the number of repaying debtors is about 700,000. Assuming an average income amongst debt re-payers of \$67,000, the average amount of repayment in 2013-14 will be about \$3500, giving total repayments of around \$2.4 billion.
47. These seem like reasonable assumptions but even if they are incorrect the essential conclusions of the following analysis still hold.<sup>3</sup>
48. Assuming further that debt repayments grow at a rate of 5 per cent per annum (comprising 2.5 per cent for inflation and 2.5 per cent for real economic growth), then the present value, discounted at the 10 year bond rate, of the stream of repayments over 10 years will be \$24.1 billion.
49. However, it is very unlikely that private buyers will be willing to pay that much, as they will use a higher discount rate, because they will be taking on all the repayment risk: not just of individuals not paying because they don't earn enough, move overseas, or die, but because the economy might not grow strongly enough to grow the repayment stream by five per cent per year.
50. Table 3 shows the present value of a 10 year stream of payments that begins at \$2.4 billion and grows at five per cent, using different discount rates.

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requirements. Professor Maddock believes that for this reason there would be a substantial appetite for HECS Debt by superannuation funds.

<sup>3</sup> There is a puzzle in the HECS repayment data. In the last year of published repayments, 2009-10, total repayments were \$1.4 billion. Applying a growth rate of 10% p.a gives total repayments of \$1.8 billion for 2013-14, below the \$2.4 billion used in Scenario 2. However, this implies either an improbably large fraction of HECS debtors who aren't repaying at all, or an improbably small average income for those who are; in fact an income below the minimum repayment threshold.

Table 3 PRESENT VALUE OF PAYMENT STREAMS (\$B)

Bond rate (4.3%)	8%	11%	14%
21.6	19.9	17.3	15.2

51. It might be tempting to compare the numbers in Table 3 to the 'fair value' estimate of the HECS Debt (\$19.3 billion) but this would be methodologically unsound, because the fair value estimate is calculated in a much different way.
52. However, Table 3 does show the effect of passing the repayment risk onto the buyers. The central estimate ( $r=11\%$ ) shows that the likely up-front price will be over \$4 billion less, relative to a price calculated using the bond rate.
53. It could be argued that since the Government has passed off the repayment risk to the buyer, it should be willing to accept a lower up-front price for the HECS Debt. While this is possibly true, the extent to which it is true depends on the relative risk preferences of the Government and the buyer. Arguably, as the larger entity, the Government has more opportunities to diversify risky streams of income and so will be less risk averse than the private buyer of the HECS Debt.<sup>4</sup> This means that the reduction in up-front payment required by the buyer will be greater than it is worth to the Government to rid itself of the risk. Thus the Government will be worse off by selling the HECS Debt for a heavily discounted price.
54. Even if this is not the case, and the swapping of risk for a lower up-front payment is financially neutral in risk adjusted terms, the Government, as discussed below, will likely face the problem of constrained policy choices if it passes on repayment risk.
55. Under Scenario 2, given that the private buyers of the HECS debt receive all the repayments, should the Government still continue to collect the debt from former students?
56. The answer, unequivocally, is yes, because the repayments will still be income-contingent, and the ATO will be in a much better position to know the income (specifically, the HELP repayment income) of debtors, and because the appropriate amount can be taken from a debtor's gross income, along with income tax.
57. When someone applies for a tax file number, they fill in a simple ATO form for their employer. One of the questions asked is whether they have an accumulated Higher Education Loan Program (HELP) debt. If yes, the form says

<sup>4</sup> This discussion is related to a venerable idea in the public finance literature, the Arrow Lind theorem (K. Arrow and R. Lind, "Uncertainty and the Evaluation of Public Investment, *American Economic Review*, June 1970). This theorem states that under certain reasonably broad conditions the government can ignore risk. In particular, if the returns on a government project are distributed independently of national income, and the benefits and costs of the project are each spread over a sufficiently large population, then the value of a project is accurately measured by its expected value. The risk premium that society in the aggregate would be prepared to pay to convert a stream of uncertain returns into a certain return goes to zero in the limit. If the conditions to satisfy the Arrow Lind theorem are met only partially, it follows that the risk premium that the government requires would be positive, but still less than a private sector buyer of the debt would require.

that their employer will withhold additional amounts to cover compulsory repayments.

58. This is not difficult for employers. Standard payroll software does it automatically for them.
59. In contrast, if private owners of HECS debt were to deal directly with debt holders, they would have to find out each individual's income. That is, they would duplicate what the ATO already does for income tax collection purposes. This would be hopelessly inefficient.
60. Recent academic work confirms this conclusion.<sup>5</sup>
61. The cost to the ATO of administering HECS repayments is estimated to be about \$50 million per year, at most, or about \$33 per HECS debtor.<sup>6</sup> With the ATO continuing to collect the repayments, this could be charged to the buyers of HECS debt. This would most likely be much less than it would cost to buyers of the debt to collect the repayments.
62. Unlike in Scenario 1, it is likely in Scenario 2 that universities and students could be affected.
63. To begin with, since the buyers will receive all the HECS Debt repayments, during the sale process they would be incentivised to lobby the Government to alter the terms of the loans, such as by charging a positive real rate of interest, or lowering the income repayment threshold, or increasing the repayment rate at different income levels.
64. Even if the Government does not alter the terms of the loans prior to (say) an auction of the HECS Debt, if the prices revealed at auction are disappointingly low (i.e. at a large discount to the book value) the Government might be tempted to change the terms to get the sale away at or above the book and claim a win. (This would be entirely illusory because under different loan terms the old book value would be inapplicable.)

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<sup>5</sup> Joseph Stiglitz, "Remarks on Income Contingent Loans: How effective can they be at mitigating risk", and Richard Denniss. "Utilising the low transaction costs of contingent loans – a general policy framework for policy application". In Bruce Chapman, Timothy Higgins and Joseph Stiglitz (eds) *Income Contingent Loans: Theory, Practice and Prospects*, Palgrave 2014. Stiglitz argues that income contingent loans are an efficient (low transactions cost) way of implementing equity contracts for human capital. Government provision lowers transactions costs because of the joint product of income reporting for income tax purposes. In countries where a large fraction of transactions are electronic and top income tax rates are relatively low, there is ample scope for the use of income contingent loans. (Low income tax rates are important because loan repayment rates add to the effective tax rate at a given income). Denniss argues that the costs of contingent loans are likely to be substantially lower than the costs of providing traditional financial products via the private banking system. Further, he argues that there are unique opportunities to extract economies of scope by utilising the information, administration and debt collection assets associated with the tax system of a developed nation state as the 'infrastructure' needed to provide low cost loans to individuals in a wide range of circumstances.

<sup>6</sup> Personal communication with Professor Bruce Chapman.

65. It might be argued the Government is unlikely to change loan terms to the clear detriment of students, in these circumstances, and (perhaps) this can be ruled out (by assumption).
66. However, what cannot be ruled out is that a condition of the sale would be that the Government would be precluded from changing the HECS loan terms and conditions to make them more favourable to debtors, which would have the effect of slowing the rate of growth of HECS repayments (perhaps even reducing them).
67. Conditions which rule out policies that are unfavourable to buyers' future revenue are common in privatisations e.g. the preclusion of future transport options that compete with privately owned toll roads.
68. Such conditions would not be unreasonable, given that the buyers would be paying the Government up-front in expectation of a certain stream of revenue.
69. Alternatively, if the Government were to insist on its right to make possible future changes to HECS loan conditions, potential buyers would be likely to substantially reduce the amount they would be prepared to pay. This would be in addition to the high discount rates discussed above, for these relate only to market risk. Policy risk would be additional.
70. More subtly, buyers of HECS debt might also lobby the Government to expand the number of university places. The more students there are, the more HECS loans there will be (presumably) and then the HECS debt buyers will receive windfall revenues from HECS repayments that were not factored in to their purchase price.
71. It might or might not be a good idea to increase the number of university places, or for the Government to fund an increased number of places (not quite the same thing) but this decision should not be affected by a previous decision to sell HECS Debt.
72. For example, suppose at some time in the future the Government does decide to increase the number of places, for reasons motivated by higher education policy. It should not be constrained from doing so by the argument that doing so would confer a windfall benefit because of a previously struck financial contract with the buyer of HECS Debt.
73. Equally, the Government might decide, as a matter of higher education policy, to increase the fees paid by students, or to allow universities to set their own fees. Such a policy could increase the HECS repayments to the buyers of HECS debt, and the Government could feel constrained from introducing this policy because it does not want to be seen to conferring a windfall benefit on whoever had previously bought HECS debt, in the manner set out in this scenario.

74. In summary, if the HECS Debt is sold, the Government will have uneconomic incentives to constrain growth, such as fear of being seen to confer windfall gains on the buyer of the debt. Furthermore, if HECS Debt is **not** sold and the system grows faster than expected, the Government is at least partially compensated by higher future HECS repayments. If HECS Debt is sold, the Government will not gain this benefit, and so may take steps to stop this growth.
75. Uneconomic restrictions on the growth of the system which follow from the sale of HECS Debt will be to the detriment of both universities and students
76. **Conclusion:** to the extent that potential buyers of HECS debt bear the risk of variable HECS repayments, they will reduce the amount that they will be willing to pay up front for the right to receive those repayments. Furthermore, they will be incentivised to lobby for higher education policies that increase HECS repayments and insert as part of the sale conditions constraints on policy that could reduce these repayments (or the Government might offer this concession to increase the sale price). Aside from this, the Government could feel constrained from introducing higher education policies that (it believes) are in the public interest because of their effects on the revenues of the buyers of HECS Debt.

### 3.3 Scenario 3: Splicing the repayment risk

77. The discussion to date has implicitly assumed that repayment risk is equal for all HECS debtors. But that is not true. For example, dentistry graduates are highly employable and have the highest median graduate starting salaries (\$80,000 in public practice, \$63,000 in the public health sector)<sup>7</sup>. They are also, perhaps, less likely to move overseas than other graduates, especially to countries where their qualifications are not recognised.
78. At the other end of the spectrum, people who do not complete their university studies have HECS loans but don't earn more, on average, than people who have never attended university.<sup>8</sup>
79. If a private buyer takes on the repayment risk, it might be possible to divide the HECS debtors into more and less risky groups, and to apply different discount rates to each.
80. Suppose, for illustrative purposes that expected repayments in the first year are equal for each group (\$1.2 billion each) and each is expected to grow by five per cent per year (as per Scenario 2). Instead of discounting the aggregated payment streams by 11 per cent (the central estimate of Scenario 2) the two equal sized smaller streams are discounted by 9% (less risky) and 13% (more risky). The present value of the less risky stream is \$9.5 billion and for the more risky stream is \$7.9 billion, for a total of \$17.4 billion, which compares favourably

<sup>7</sup> <http://www.graduateopportunities.com/free-downloads/eazines/graduate-salaries/>

<sup>8</sup> Personal communication with Professor Glenn Withers.

to the present value of the aggregated stream discounted at 11 per cent (\$17.3 billion), but not by much, at least on these figures.

81. **Conclusion:** In principle some value could be created by dividing HECS debtors into different risk classes, though whether this would be sufficient to overcome to problems associated with passing on risk to private buyers, as discussed above, is doubtful.

### 3.4 What discount rate would a buyer use?

82. If a buyer were to take on repayment risk (as in Scenario 2), what discount rate would they use when valuing the HECS Debt?
83. This would depend on their assessment on the various risks of non-repayment (see the Appendix for a detailed discussion).
84. Overseas experience might not be very helpful here, because the terms and conditions of student loans vary from country to country.
85. Some guidance might be gained from the rates that banks charge for unsecured personal loans. Currently, the NAB charges an effective rate of 15.31 per cent for an unsecured loan of more than \$10000.
86. While HECS Debt is also unsecured, this rate possibly overstates the discount rate that potential buyers would use. HECS Debt is a composite of about 1,500,000 individual debtors, and if the non-repayment risks are random and off-setting, then the pooling of idiosyncratic individual risks will reduce the risk of the portfolio. To the extent that individual bank loans reflect idiosyncratic non-repayment risks that do not exist with pooled debt, then the interest rate on an individual loan will be larger than the discount rate applied to HECS Debt.
87. Furthermore, there is a nearly 25 year history of HECS Debt repayments which can be drawn on to infer the probability of non-repayment (to the extent that the future will look like the past).<sup>9</sup> There is typically no such history in the case of unsecured personal bank loans.
88. The discussion of Scenario 2 used as a central estimate a discount rate of 11 per cent. In the light of market interest rates prevailing today, and this discussion, this might be reasonably close to what a prospective buyer could use to value HECS Debt. But, obviously, what they would actually use would depend on comprehensive financial modelling which is well beyond the scope of this Report.

<sup>9</sup> The future might not look like the past. A feature of the history of HECS Debt repayments has been two decades of uninterrupted economic growth, with no surges in unemployment. A long and deep recession, should it occur, would likely materially affect HECS Debt repayments.

89. If the Government were to sell HECS debt with repayment risk passed to the buyer and retain policy flexibility then a higher discount rate would be in order, perhaps around the 15 per cent that is currently charged for unsecured personal loans.

### 3.5 Old debt and new debt

90. The discussion to date has made no distinction between HECS Debt accrued prior to its sale, and HECS Debt accrued following the sale.
91. Under Scenario 1 this distinction should not present any substantial difficulties. Scenario 1 showed how the entire stock of existing debt (that is expected to be repaid) could be sold to a private buyer. There would be nothing to stop the exercise being repeated in the future when a sufficiently large new stock of HECS Debt has been accumulated.
92. In Scenario 2, any such distinction would not be meaningful, because the buyer would be receiving HECS repayments regardless of when the corresponding obligation was incurred.
93. It could be argued that old and new debt could be separated as follows. Old debt is debt incurred up to 2013 and new debt is debt incurred from 2014 onwards. Only the old debt is sold (in the manner of Scenario 2, with the buyer taking on all the risks). For the new debt, the Government would retain flexibility over repayment terms and policy flexibility with a demand driven system, and so on. In this way, it could be argued, the Government would get the best of both worlds.
94. Unfortunately, this would not be practical for the following reasons.
- i) Some students would have a combination of old debt and new debt. Presumably there would need to be a rule which said that old debt was to be repaid first. Perhaps this could be done, but it would be administratively difficult.
  - ii) If the old debt (which has been sold) is repaid first, the Government would have to wait until it gets any repayment on its new debt. This would add costs to the Government.
  - iii) Furthermore, extra difficulties would be created be if income repayment thresholds, or repayment rates, were different for old and new debt. This means that the amount withdrawn from a person's gross income would depend not just on the yes/no question of whether they have HECS Debt, and the size of their income, but on whether they have old or new debt. This would be administratively difficult. If individuals were to have a mix of old and new debt, it would be very difficult

95. **Conclusion:** dividing debt into old debt and new debt is not practical in a scenario where the private buyer is taking on the repayment risks of the old debt. This means that if the private buyer is to take on the old debt, it would have to take on new debt as well. But this is undesirable because the Government would lose policy flexibility.

## Appendix A: Determining a fair market value for HECS Debt

The Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) is responsible for administering the Higher Education Loan Program (HELP). Among other things, this includes reporting annually on the profit and loss, and the HELP debt receivable.

In the 2012-2013 DIICCSRTE Annual Report the 'fair value' of the HELP loan is reported. The fair value is calculated annually by the Australian Government Actuary (AGA). The AGA uses a microsimulation model to project the outstanding debt, future income, voluntary repayments, and compulsory repayments for all persons with an outstanding debt. The fair value of the HELP debt is calculated as the present value of the future projected repayments of all debtors, where debt is indexed at CPI and the repayments are discounted at a rate based on reported yields on Commonwealth securities.

The AGA model takes into account the debt not expected to be repaid (DNER) in the calculation of the fair value. The DNER arises because debt is forgiven on death, and some debtors will not repay their entire outstanding debt prior to dying. This can be due to debtors moving abroad, though it is predominantly due to the income contingent feature of HECS<sup>10</sup>. Because the loan accrues interest at CPI, which is below the Government's cost of borrowing, there is also an opportunity cost to the Government. This cost is known as the 'deferral cost' or 'concessional loan discount'. The fair value of the debt can be shown to equal to the nominal debt amount minus the DNER and deferral cost:

$$\text{Fair value of debt} = \text{nominal debt} - \text{DNER} - \text{deferral cost}$$

A simplified example is given below for illustration of the valuation method used and the numbers reported. In this example we assume a debtor has a debt of \$20,000 at time 0, compulsory repayments are made at the end of the year (for simplicity)<sup>11</sup>, and debt indexation of CPI (assumed to be 2.5%) is calculated and added to the debt immediately before repayments are made. An arbitrary income profile is used for illustration.

<sup>10</sup> For an estimate of the cost of lost debt from debtors moving abroad, see Chapman, B. and Higgins, T. (2013) "The costs of unpaid HECS debts of graduates working abroad", Australian Economic Review, 46(3), 2013, 286-299. doi: 10.1111/j.1467-8462.2013.12014.x

<sup>11</sup> We assume that HECS-HELP income thresholds and repayment rates for 2013-14 apply. See: <http://www.ato.gov.au/Rates/HELP-repayment-thresholds-and-rates/>

Table A1 VALUATION METHOD

Year	Income (in 2013 dollars)	Outstanding debt (beginning of year)	Debt indexation (CPI)	Repayments (end of year)	Outstanding debt (end of year)
2013	\$55,000	\$20,000	\$ 500	\$2,200	\$18,300
2014	\$60,000	\$18,300	\$458	\$2,700	\$ 16,058
2015	\$ 70,000	\$16,058	\$401	\$3,850	\$12,609
2016	\$ 35,000	\$12,609	\$315	\$ -	\$ 12,924
2017	\$35,000	\$12,924	\$323	\$-	\$13,247

In this first example we also assume that the person dies at the end of 2017. The nominal value of the debt for this hypothetical individual is \$20,000. The fair value in this case is the present value of the repayments where we assume a discount rate of 3.1%<sup>12</sup>. In the example above, this is \$8,187, which is substantially less than \$20,000. This is due predominantly to the person dying prior to repaying their debt.

In this example, the DNER is equal to \$11,709 (the remaining debt upon death of the individual of \$13,247 discounted to the present at CPI), and the face value of repayments is equal to \$8,291 (being the present value of repayments, also discounted at CPI). These values sum to the nominal outstanding debt of \$20,000.

The deferral cost is equal to the difference between the present value of repayments at 3.1% and the present value of repayments at CPI. In this example this is equal to \$104.

The fair value of the debt can be shown to be equal to the nominal debt minus the DNER, minus the deferral cost:

$$\text{Fair value of debt} = \$20,000 - \$11,709 - \$104 = \$8,187$$

Continuing the example above, consider now that the individual survives long enough to completely repay their loan. Table A2 shows the repayments, and present values, under three different discount rate assumptions. In the event that the debt is repaid entirely, the present value of repayments is still less than the nominal value of the debt. This is because of the gap between the rate of loan indexation and the discount rate used to value the loan.<sup>13</sup> As seen in Table A2, the discount rate can have a significant impact on loan valuation.

<sup>12</sup> The AGA uses the yield curve for Commonwealth securities to discount repayments in order to estimate the fair value. The calculations here have been based on 3.1 per cent, being the reported yield on 10 year Commonwealth bonds at 30 June 2012.

<sup>13</sup> If the rate of debt indexation was identical to the discount rate used, and if the debt was entirely repaid (i.e., there was no DNER), then the fair value of the loan would simply be equal to the nominal value of \$20,000.

Table A2 **IMPACT OF DIFFERENT DISCOUNT RATES**

Year	Income (in 2013 dollars)	Outstanding debt (beginning of year)	Repayments (end of year)	PV Repayments (@ 3.1% discount)	PV Repayments (@ 6% discount)	PV Repayments (@ 9% discount)
2013	\$55,000	\$20,000	\$2,200	\$2,134	\$2,075	\$2,018
2014	\$60,000	\$18,300	\$2,700	\$2,540	\$2,403	\$2,273
2015	\$70,000	\$16,058	\$3,850	\$3,513	\$3,233	\$2,973
2016	\$35,000	\$12,609	\$-	\$-	\$-	\$-
2017	\$35,000	\$12,924	\$-	\$-	\$-	\$-
2018	\$70,000	\$13,247	\$3,850	\$3,206	\$2,714	\$2,296
2019	\$75,000	\$9,728	\$4,500	\$3,634	\$2,993	\$2,462
2020	\$75,000	5,472	\$4,500	\$3,525	\$2,823	\$2,258
2021	\$75,000	\$1,108	\$1,136	\$863	\$672	\$523
			<b>Sum</b>	<b>\$19,415</b>	<b>\$16,914</b>	<b>\$14,803</b>

Determining a market value for the HELP debt requires discounting the expected repayment streams for each individual with an outstanding debt (allowing for DNER and indexation at CPI) at an appropriate market determined discount rate.

Projections of future repayments are not reported publicly by the AGA or DIICCSRTE. Instead, we can approximate future repayment streams by reverse engineering the available reported data. The following data was obtained for the HELP scheme as at 30 June 2012:

Table A3 **KEY DATA**

Variable	Value
Nominal value of outstanding debt	\$26.3 b
DNER of outstanding debt	\$6.2 b
Face value of repayments against outstanding debt	\$20.1 b
Deferral cost (@yield on government securities)	\$0.7 b
Fair value of outstanding debt (@yield on government securities)	\$19.4 b
Deferral cost (@6% discount)	\$3.2 b
Fair value of outstanding debt (@6% discount)	\$16.9 b

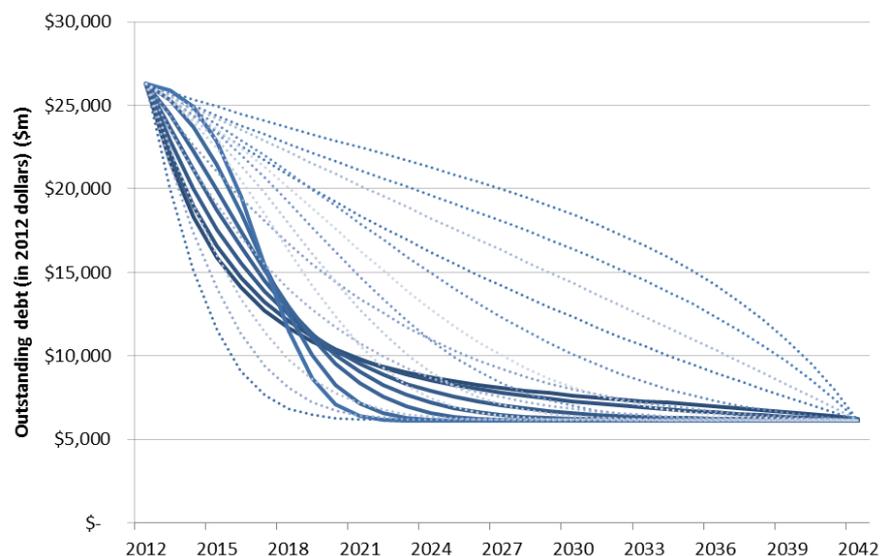
As described in the example above, the DNER is equal to the present value of debt that is not expected to be repaid, discounted at the rate of CPI growth. The face value of repayments is equal to the present value of expected repayments, also discounted at CPI. Together the DNER and face value of repayments sum to the nominal value of outstanding debt. This can be seen from the table above, where:

$$\$26.3b = \$6.2b + \$20.1b$$

The deferral cost and fair value of the outstanding debt have been calculated with two discount rates: the yield on government securities (approximately 3.1 per cent), and 6 per cent. The reported fair value in the DIICSRTE financial statements is based on 3.1 per cent.

We use this information to generate future streams of repayments which were then discounted at a range of discount rates to illustrate the possible value that the market would place on the loan portfolio<sup>14</sup>. The patterns of outstanding debt under different repayment scenarios are given in Figure 1 (in 2012 dollars). Scenarios that satisfy the constraints of Table 3 are given as solid lines, whereas examples of scenarios that do not satisfy the constraints are given as dotted lines. Notably, the curves that satisfy the constraints of Table 3 also conform to patterns observed in the literature based on analysis and modelling of graduate longitudinal income data<sup>15</sup>.

FIGURE 1 OUTSTANDING DEBT UNDER DIFFERENT SCENARIOS



SOURCE:

<sup>14</sup> The process used was as follows: 1 – The loan amount of \$26.3 billion was used as the starting amount and was indexed at a rate of CPI of 2.5% per annum (corresponding with the rate used by the AGA in their estimates); 2 - An exponential formula with three parameters was used to model the pattern of decline in repayments over time. The formula was sufficiently flexible to allow for a very wide range of possible repayment patterns; 3 – The optimization process for choosing the parameter values was subject to the following four constraints from Table 3: PV repayments @ CPI = \$20.1b, PV repayments @ 3.1% = \$19.4b, PV repayments @6% = \$16.9b, and the DNER (the PV @ CPI of unpaid debt remaining after 30 years) = \$6.2b. The parameters were chosen so that each of these constraints was satisfied to within 1 per cent of their target values; 4 – A range of different starting values for the parameters were selected. This resulted in different fitted repayment patterns that satisfied the constraints.

<sup>15</sup> For example, see Higgins and Sinning (2013) "Modeling Income Dynamics for Public Policy Design: An Application to Income Contingent Student Loans" *Economics of Education Review*, doi:10.1016/j.econedurev.2013.08.009

We take the repayments under the repayment scenarios that satisfy the constraints and apply a range of different discount rates to find present values. The results are given in Table A4. Despite the variability in the different scenarios, similar results are obtained<sup>16</sup>.

Table A4 **MODELLING RESULTS**

Discount rate (per cent)	Amount (\$billion)
3.1	19.4
6	16.9
8	15.3 - 15.6
10	14.0 - 14.4
12	12.8 - 13.5

It is apparent that an increase of only 2 per cent in the discount rate can reduce the market value of the debt portfolio by over \$1 billion.

An appropriate market discount rate will reflect the required rate of return of the investor and the risks associated with the valuation of the repayments.

Risks of valuation arise for a number of reasons. The values reported each year by DIICSRTE are 'best estimates' as calculated by the AGA, however, there is considerable uncertainty in these estimates. This is in large part due to the variability in an individual's future income. Variability can arise from career and job mobility, heterogeneous wage inflation, life events (such as child birth, parental leave, illness and disability), economic cycles, and uncertain future government policy (which may, for example, affect employment prospects and retirement decisions).

The AGA model allows for quantification of some of this variability. Specifically, the model utilizes stochastic income processes, and performs thousands of repeated simulations of these processes. This provides a range of fair value estimates for the HELP debt, though only a central estimate of these values is reported in the DIICSRTE financial statements.

The range of outputs from the AGA model is not publicly available information, and so we are unable to quantify the uncertainty in the reported fair value. Recognising that there is a range of 'fair values', rather than a point estimate, has the effect of increasing the uncertainty in the market values associated with each particular discount rate.

Even in the event that the range of AGA model outputs was publicly available, there are additional sources of uncertainty that are not captured in the AGA model. These include the following<sup>17</sup>:

- The model used by the AGA is applied to all cohorts, but cohort experience is unlikely to be consistent.
- There may be estimation errors in the model due to misspecification of the functional forms used.

<sup>16</sup> Note that in the calculations we have imposed an assumption that debt that is not repaid after 30 years will not be repaid in the future (and therefore, this amount discounted to 2012 is equal to the DNER). Extending this assumption to longer durations does not change the conclusions.

<sup>17</sup> See "The Higher Education Loan Programme (HELP/HECS) – Microsimulation Modelling of Individual Repayment Prospects" by M.O'Neill and S.Antcliff, presented to the Institute of Actuaries Biennial Conference 2009. [http://www.actuaries.asn.au/Library/Con09\\_Paper\\_O'Neill%20and%20Antcliff.pdf](http://www.actuaries.asn.au/Library/Con09_Paper_O'Neill%20and%20Antcliff.pdf)

- The model doesn't attempt to incorporate the effect on graduate incomes of potential changes to the macroeconomy. That is, the future development of graduate incomes may differ from patterns observed in the past.

While these and other sources of uncertainty in the reported fair value would lead to selection of a higher discount rate among prospective investors in the debt portfolio, this would be offset to an extent by the potential diversification benefit derived from investing in the loan portfolio. We have not tried to quantify this benefit here.

The nominal value of HELP loans at June 2013 is \$30.1 billion, and the reported fair value is \$21.7 billion, as compared with a fair value of \$19.4 billion at June 2012<sup>18</sup>. While the values reported in Table 4 are based on the June 2012 figure, the conclusions about the relative value of the debt at different discount rates would still apply if we had instead based these calculations on the June 2013 figure.

It is noteworthy that the nominal debt has increased by over 14% in the last year. A high rate of increase is likely to continue in the near future. The average amount of debt for all debtors in 2012-13 is \$16,000, but this is projected to increase to \$19,500 by 2016-17<sup>19</sup>. The increasing average debt amount will lead to greater chance of non-repayment. Consequently it is critical that valuations prior to consideration of debt purchase are performed based on the most current information.

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<sup>18</sup> See DIICSRTE Annual Report 2012-13.

<sup>19</sup> DIICSRTE 2013 Budget Statements ,p.93