

Beyond HELP: Implementing Income-Contingent Loans in a Deregulated Environment

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1 Debate over the Reform Bill

1. Government position

- competition: expand places, improve quality...
- keep prices rises in check

“Thats not possible because the competition wont allow it to happen. If a University decides to charge exponentially higher fees they will have empty lecture theatres and empty tutorials because part of this of course is the expansion of competition, the capacity to compete on price. If a university charges fees that are too high, people wont go to that university and because we have so many universities and so many private providers, there will always be other options. Now there wont be these exponential rises in fees, not only because of competition but because universities have no reason to raise fees to that level. They should be able to value their courses so that they gain revenue based on what they do well, rather than what they are doing now which is cramming as many students in to as many courses as possible because they all get exactly the same.” (Pyne, 2014)

- Where markets have been deregulated, market competition has moderated fee rises

“Australian public universities have already been operating in open markets for international students and nationally for domestic fee-paying postgraduate students. In these markets the student chooses the university and the university sets prices for places and determines the number of places it is willing to provide. Australian universities set different fees among themselves and across the degrees they offer. They moderate fee increases consistent with their judgement of

what is appropriate and the market circumstances in which they find themselves. For example when the Australian exchange rate increased and with it the cost to many international students of the fees set by Australian universities, most universities moderated or reduced the fees or the fee increases proposed.” (Gardner, 2014)

2. Experience in the United states

- positional competition: status/prestige of university acts as a barrier to entry in the labour market and reduces access to HE

“Despite this massive choice, and despite difficult economic circumstances, fee levels have been rising at American universities at twice the rate of inflation for the past decade; an important point for those who think that expansion to private providers will keep an unregulated system in check.” (Milbourne, 2014)

- information issue: quality of the product is unobserved
- The result: For the elite sandstone universities much of the increased revenue will be used

“...to increase their research output in a quest for improved international rankings, which in turn will enable them to command higher fees, even though there might be no improvement in the quality of the teaching or student experience.” (Parker, 2014).

3. Curious effect of HECS on incentives

- Experience with deregulation the international student market
 - International students don't have access
 - HECS capped for fee paying students
- Expect positional competition to be underwritten by the taxpayer:

“Evidence suggests that university fees will rise if this measure is implemented. In 2005, when the Howard government allowed Australian universities to vary student fees by up to 25 per cent, within two years, every university charged the top rate. A similar measure in England recently led to fee increases of 300 per cent. In New Zealand, the government reintroduced price caps in higher education in 2003 after a decade of ballooning fee increases under its income-contingent loans scheme. While a sudden increase in course fees is clearly unfair to students, it is Australian taxpayers who will bear the brunt of the cost, because the government underwrites the full cost of every place to the provider when

a student enrolls. **While student contribution may be recouped later, via HECS repayments, the taxpayer foots the bill if HECS debts are not fully repaid.**" (Watson, 2015, my emphasis)

- Expect plenty of pain, but no gain!

"I expect most universities will initially increase their fees for most programs by about 50% to compensate for cuts in the Commonwealth contributions announced in the budget and to relieve pent-up cost pressures. At this point fees will be so high that the proportion of new HELP debt not expected to be repaid will far exceed the 23% the budget projects for 2017-18. At some point the government will decide that it should no longer absorb this unpaid debt, which would effectively be a subsidy for yet more fee increases. The government is likely to contemplate financial caps, but rather than recapping fees it may be more likely to reintroduce lifetime borrowing limits, which it is proposing to remove from Fee-HELP" (Moodie, 2014a)

- Back to the drawing board

"Pending a more sophisticated review of HELP and its finances, these limits should be preserved and extended to all HELP borrowing. The current limit of nearly \$100,000 for most categories of student is already at a level that many borrowers are unlikely to repay. Retaining and extending the limit would help control doubtful HELP debt." (Norton, 2015, p. 13)

4. My take

"The overall message is that at the heart of the issue of sustaining an income-contingent loan scheme under a deregulated higher education regime is an information problem; an information problem that can and should be addressed once the rules for successful implementation of an ICL are in place." (Me)

- positional competition is a significant concern
- an information problem
- ..but first, HECS needs fixing

2 HECS/HELP: Some shortcomings

1. Blank check

“There is no reason why a high-prestige university should not charge fees of \$1 million a year. Students would get a gold-plated education without ever having to repay much of the fee they have been charged and the university would get richer.” (Moodie, 2014a)

2. Cash-point colleges

3. Poor policy

Table 1: Interest subsidies (% loan) for Hybrid Model[†]

Income Category	\$30,000	\$60,000	\$90,000
Low	19%	37%	14%
Medium	10%	10%	10%
High	4%	4%	4%

Source: Chapman and Higgins (2014), Appendix

[†] The hybrid model assumes indexation at governments borrowing cost above the minimum repayment threshold and indexation at the CPI when income is below the threshold. All Subsidies represent the difference between the original loan and repayments arising from assumed lifetime earnings profiles as a proportion of the original loan.

“As another example we might imagine two very similar courses being offered by two different universities. One is a rural or outer-urban university and the other is an urban university, so travel costs will factor into the choice of university. Lets assume that both courses are expected to place the student on the low income stream. Further assume, that outer-urban university prices its course at \$30,000 while urban charges \$60,000 (so we are comparing columns 2 and 3 in row 2, using Table 2). For urban students, there is a substantial incentive to attend the outer-urban university before the subsidy. On the other hand, after the subsidy, the difference in course costs is less than \$13,500 which in many cases would not be enough to compensate for transport over a three year degree. If the Governments policy was aimed at promoting numbers at the outer-urban institution it would need to commit more funds than would otherwise be necessary.” (Me)

3 Theoretical analysis

3.1 Expected education costs and the *ex ante* subsidy

$$Z = \eta k \int_b^\infty f(w) dw + \int_a^b Z(w) f(w) dw \tag{1}$$

where the terms are defined as follows:

- b is the full repayment threshold. If the student's graduate wage b they will have fully repaid their debt by the time they retire at \bar{t}
- a is the partial repayment threshold. If the graduate wage is below a the student's earnings will not rise above \hat{w} by the time they retire at \bar{t}
- $Z(w)$ denotes the present value of repayments for a given graduate wage of w

$$\begin{aligned}
Z(w) &= 0 & 0 < w \leq a \\
&= \tau w \int_{t_0}^{\bar{t}} e^{-(r-\mu)(t)} dt & a < w < b \quad ; \quad w > \hat{w} \\
&= \tau \hat{w} \int_{t_0 + \frac{1}{\mu} \ln(\frac{\hat{w}}{w})}^{\bar{t}} e^{-(r-\mu)(t)} dt & a < w < b \quad ; \quad w \leq \hat{w} \\
&= \eta k & w \geq b
\end{aligned} \tag{2}$$

Definition 3.1 (Full Repayment Threshold: b). The full repayment threshold is the level of the graduate wage, b , that satisfies $Z(b) = \eta k$. This implies the following fundamental relationship,

$$g(b) = \frac{\eta k}{\tau} \tag{3}$$

where

$$\begin{aligned}
g(b) &= b \int_{t_0}^{\bar{t}} e^{-(r-\mu)t} dt & b > \hat{w} \\
&= \hat{w} \int_{t_0 + \frac{1}{\mu} \log \frac{\hat{w}}{b}}^{\bar{t}} e^{-(r-\mu)t} dt & b \leq \hat{w}
\end{aligned} \tag{4}$$

Definition 3.2 (Non-Repayment Threshold: a). The non-repayment threshold is given by $t_0 + \frac{1}{\mu} \ln(\frac{\hat{w}}{w}) = \bar{t}$, when $w = a$, yielding

$$a = e^{-\mu(\bar{t}-t_0)} \hat{w} \tag{5}$$

Definition 3.3 (Expected education costs).

$$Z = \eta k \left(\int_b^\infty f(w) dw + \frac{1}{g(b)} \int_a^b g(w) f(w) dw \right) \tag{6}$$

where $g(w)$, b and a are given in Definitions (??), (3.1) and (3.2).

Definition 3.4 (Contribution ratio or profitability ratio). The (gross) expected economic profitability or equivalently the graduates financial contribution is defined as follows

$$z = \frac{Z}{k} = \eta \left(\int_b^\infty f(w) dw + \frac{1}{g(b)} \int_a^b g(w) f(w) dw \right) \quad (7)$$

where $g(w)$, b and a are given in Definitions (??), (3.1) and (3.2). This will be referred to interchangeably as either the contribution ratio (of the student) or the profitability ratio (for investors).

Definition 3.5 (Effective *ex ante* subsidy and profit rate). The effective *ex ante* subsidy, s , for the graduate is given by:

$$s = 1 - z \quad (8)$$

This is the negative of *net* economic profit for the investor.

3.2 ICL under current arrangements

$$\frac{\partial Z}{\partial k} = \eta \int_b^\infty f(w) dw \quad (9)$$

Definition 3.6 (Elasticity of Expected Education Costs).

$$E_k^Z \equiv \frac{\partial \log Z}{\partial \log k} = \alpha(b) \quad (10)$$

$$\alpha(b) = \frac{\eta \int_b^\infty f(w) dw}{z} = \frac{\int_b^\infty f(w) dw}{\int_b^\infty f(w) dw + \frac{1}{g(b)} \int_a^b g(w) f(w) dw} \quad (11)$$

$$\frac{\partial^2 Z}{\partial k^2} = -\eta f(b) \frac{db}{dk} < 0 \quad (12)$$

where the sign of the last derivative can be obtained using Definition (3.1) and through total differentiation,

$$\frac{db}{dk} = \frac{g(b)/k}{g'(b)} > 0 \quad (13)$$

where

$$\begin{aligned} g'(b) &= \int_{t_0}^{\bar{t}} e^{-(r-\mu)(t-t_0)} dt \quad w > \hat{w} \\ &= \frac{1}{\mu} \left(\frac{\hat{w}}{b} \right)^{1-(r-\mu)} \quad w \leq \hat{w} \end{aligned} \quad (14)$$

$$\frac{\partial z}{\partial k} = -\frac{1}{k} \frac{1}{g(b)} \int_a^b g(w) f(w) dw \quad (15)$$

Alternatively, in terms of the elasticity of z ,

Definition 3.7 (Elasticity of Student Contribution or Economic Profit).

$$E_k^z \equiv \frac{\partial \log z}{\partial \log k} = E_k^Z - 1 = \alpha(b) - 1 \leq 0 \quad (16)$$

where E_k^Z and $\alpha(b)$ are given in Definition (3.6), above.

A negative sign for E_k^z would follow from $0 < \alpha(b) < 1$. A zero elasticity would occur if $a = b$, while an elasticity of -1 would occur if k , and therefore b , using (13), had risen to such a level that the probability of full repayment was virtually zero.

This result, more than any other, identifies a problem faced by policy-makers in implementing an ICL such as HELP when the caps are taken off higher education fees. We turn to this issue in the next section.

3.3 Neutrality, stability and adjustment rules

Definition 3.8 (Neutrality). An ICL scheme is said to neutral with respect to tuition costs if the student's expected contribution ratio, z , is invariant to tuition costs

Definition 3.9 (Stability). An ICL scheme is said to be stable if b , and therefore the form of the ICL contact, $\alpha(b)$, is invariant to tuition costs

Definition 3.10 (Adjustment rules). An adjustment rule, in the context of an ICL scheme, is a rule specifying the values of E_k^η and E_k^τ .

3.4 Neutrality and stability: necessary and sufficient conditions

$$E_k^z = \alpha(b)E_k^\eta - (1 - \alpha(b))(1 - E_k^\tau) \quad (17)$$

$$E_k^z = \alpha(b)E_k^\eta - (1 - \alpha(b))(1 - E_k^\tau) = 0 \quad (18)$$

$$E_k^g = E_k^\eta + 1 - E_k^\tau = 0 \quad (19)$$

where $E_k^g \equiv \frac{d \log g(b)}{d \log k}$.

Proposition 3.1 (The dichotomy). *For all b , such that $\alpha(b) \neq 0.5$, an ICL will be both stable and neutral if and only if*

1. *Elasticity condition: The repayment rate is unit elastic with respect to k :*

$$E_k^\tau = 1$$

2. *Invariance condition: the surcharge is independent of k ,*

$$E_k^\eta = 0$$

For sufficiency, simply substitute $E_k^\tau = 1$ and $E_k^\eta = 0$ into (18) and (19) to show that neutrality and stability hold. For necessity, assuming neutrality and stability we can use (18) and (19) to derive the following

$$E_k^\eta = \frac{1 - \alpha(b)}{\alpha(b)} (1 - E_k^\tau) \quad (20)$$

Given (20), the necessity of the dichotomy for neutrality and stability is easily shown by the fact that assuming $E_k^\eta \neq 0$ or $E_k^\tau \neq 0$ or both gives rise to a contradiction.

$$E_k^g = \frac{1}{\alpha(b)} (1 - E_k^\tau) \quad (21)$$

3.5 Setting \hat{w}

Set \hat{w} in relation to b .

- $\hat{w} = b$.
- aim to have anyone with a graduate wage higher than the repayment threshold full repay by their retirement.
- last step in closing the model

3.6 Outline of a reform

The implications of the theoretical analysis for reform are summarised as follows. From Definition 3.1

$$\tau = \frac{\eta}{g(\bar{b})} k \quad (22)$$

where

$$g(\bar{b}) = \bar{b} \int_{t_0}^{\bar{t}} e^{-(r-\mu)t} dt \quad (23)$$

- $b = \bar{b}$ to indicate the constancy of b under the dichotomy rule.
- τ varying proportionally with k is first leg
- Second leg: η needs to respond to prospective labour market conditions.
- fix *ex ante* subsidy $1 - \bar{z}$ (policy target)

$$\eta = \bar{z} \left(\int_{\bar{b}}^{\infty} f(w) dw + \frac{1}{g(\bar{b})} \int_{e^{-\mu(\bar{\tau}-t_0)\bar{b}}}^{\bar{b}} g(w) f(w) dw \right)^{-1} \quad (24)$$

4 Discussion

Reform proposal appears to offer a number of advantages but also some challenges.

- main benefit: signaling role of τ for students, faculty, employers and government
 - informing student decision
 - motivating academic engagement in T&L
 - undermining foundations of position competition
 - target assistance by setting the *ex ante* subsidy
 - anchor tuition fees to expected income so that government outlays rise with the tax base
- The main challenge:
 - information on graduate outcomes by institution and discipline