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EDUCATION: LESSONS FROM ECONOMIC THEORY AND OPERATIONAL EXPERIENCE

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Financing higher education: Lessons from economic theory and operational experience

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Financing higher education: Lessons from economic theory and operational experience¹

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This paper talks about how to pay for teaching at universities. It does not talk about financing research, nor about any particular country. Instead, its purpose is to offer a toolkit for policy makers thinking about reform.

The paper sets out lessons for policy design from economic theory (section 2) and the experience of developed countries (section 3). Economic theory, however, is not enough. Policy design that outstrips a country's capacity to implement it effectively is bad policy design. This paper therefore deliberately goes beyond theory to include lessons about implementation (section 4). The paper concludes with discussion of the resulting system.

1 The backdrop

Higher education matters – and always will – because knowledge for its own sake is important. But, in sharp contrast with 50 years ago, higher education now matters also for national economic performance and for individual life chances. Technological advance has driven up the demand for skills. To compete internationally, countries need mass high-quality higher education.

That immediately raises the question of how to pay for it. Countries typically pursue three goals in higher education: larger quantity with good access, higher quality, and constant or falling public spending. It is possible to achieve two but only at expense of the third. Systems can be

- Large and tax-financed, but with worries about quality (France, Germany, Italy);

¹ This paper is a shortened version of Barr (2008), which draws on earlier writing, notably Barr (2004a), much of it growing out of work over many years with Iain Crawford (see Barr and Crawford, 2005).

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- High-quality and tax-financed, but small (the UK till 1989);
- Large and good-quality, but fiscally expensive (Scandinavia).

There is nothing illogical about the last option, but it is unsustainable in most countries, not least because of competing fiscal pressures connected with population ageing (see Barr and Diamond, 2008), advances in medical care, and increased international competitive pressures ('globalisation'). Thus the only realistic way of achieving all three objectives is to supplement public finance with private finance. The scale of the task should not be underestimated. In South Korea the participation rate in tertiary education is 82 per cent; total spending on tertiary education is 2.6 per cent of GDP, double the average for the EU19 of 1.3 per cent; and *private* spending on tertiary education in South Korea is significantly higher than *total* (public plus private) spending in any OECD country except the USA and Canada (OECD 2006, Table B2.1b, all figures for 2003).

A related issue is how to promote quality. Part of the story is adequate finance; but there is also the issue of how to ensure that resources for higher education are used efficiently. As discussed later, competitive systems of higher education tend to produce higher quality, at least as measured by world rankings.

2 Lessons from economic theory

This section sets out three central lessons from economic theory for a system that seeks to strengthen the quality of higher education while simultaneously promoting access: competition is beneficial (section 2.1), graduates should contribute to the cost of their degree (section 2.2), and well-designed loans have core characteristics (section 2.3). Section 2.4 outlines the resulting policy strategy.

2.1 Competition is beneficial

The case for competition in higher education is not ideological, but rooted in the economics of information.

Fifty years ago, richer countries generally had small university systems offering degrees in a limited range of subjects. In that world it was possible, as a polite myth, to assume that all universities were equally good and hence to fund them broadly equally.

Today there are more universities, more students, and much greater diversity of subjects. As a result, the characteristics and the costs of different degrees at different institutions vary widely, so that institutions need to be funded differentially – a problem too complex for any central planner. A mass system in an increasingly complex world needs a funding mechanism that allows institutions to charge differential fees to reflect different costs and objectives. Central planning is no longer feasible.

Nor is central planning desirable. It is a standard proposition in welfare economics that competition benefits consumers where consumers are well-informed (Barr, 2004*b*, Ch. 4). Students (in sharp contrast with school children or people with complex medical problems) are potentially well-informed consumers, and thus able to make choices which conform with their interests and those of the economy. Though that proposition is robust, there is an important exception: people from disadvantaged backgrounds might not be fully-informed, emphasising the need for action to promote access. It should be noted that the same analytical approach can lead to very different conclusions for school education (Barr 2004*b*, Chs 13 and 14).

2.2 Graduates should contribute to the cost of their degree

Higher education creates benefits beyond those to the individual – benefits in terms of growth, the transmission of values, and the development of knowledge for its own sake, justifying continuing taxpayer subsidies. But there are also significant private benefits – in terms of higher earnings, more satisfying jobs and/or greater enjoyment of leisure – making it efficient and equitable that graduates bear some of the costs.

Though the previous paragraph is uncontentious as far as it goes, policy makers – especially in Ministries of Finance – are keen to know the answers to two questions:

- What is the efficient level of spending on education?
- What is the efficient level of taxpayer subsidy?

These questions are important but unfortunately can be answered only indicatively. The conclusion of a very different literature (Sen, 1999; Barr, 1999) is that it is not possible to quantify a value-free definition of poverty. Instead, the decision about where to pitch the poverty line depends on social choice constrained by fiscal realities. Analogously, problems

– of concept and of measurement – mean that the benefits to education cannot be quantified in any definitive way.

Quantitative arguments

In principle, it is efficient to devote resources to tertiary education to the point where their marginal social value equals their marginal social costs. Though it is possible to measure the costs of education, there are several reasons why there is no definitive way of quantifying social benefits: measuring outputs and inputs face major problems; and, even were these to be resolved, causality is problematic. The arguments summarised briefly below are set out more fully in Barr (2000).

First, output cannot be measured, because there is no single definition of a ‘good’ education. Test scores are imperfect measures even where output is defined narrowly as technical achievement; they fail to capture broader benefits of education to the individual; and they take no account of a range of external benefits, including shared values. That the broader benefits are largely unmeasurable does not make them unreal.

Second, there are problems connecting output to educational inputs. Measuring inputs is not easy. It is possible to measure the quantity of teachers’ and pupils’ time, buildings, etc., but much harder to measure the quality of teachers, natural ability and the quality of parenting. A second problem is establishing the production function that connects inputs and outputs. Studies tend to assume (since no other assumption is available) that schools have a single, simple objective – maximising pupils’ test scores. Though analytically tractable, this approach is flawed: it implies, for example, that a school should stop teaching children who are not capable of passing tests.

A third set of problems relate to establishing causality. The discussion above implicitly assumes that education increases individual productivity. What is known as the screening hypothesis questions the causal link, at least for post-primary education, arguing that education is associated with increased productivity but does not cause it.³ The argument has two elements.

³ The large literature on this and other aspects of the economics of education is surveyed by Blaug (1976, 1985) and Glennerster (1993).

- Individual productivity may be the result of natural ability rather than post-primary education (analogously, good health may be due more to a naturally strong constitution than to medical intervention).
- Firms seek high-ability workers but, prior to employing them, cannot distinguish high-ability from low-ability workers.

The two elements together suggest that there is no social benefit from post-primary education, but a private benefit for individuals, who face incentives to make themselves stand out. The screening hypothesis argues that post-primary education does exactly that: it gives a signal to prospective employers that it is in the individual's interest to acquire.

It is clear that the hypothesis does not hold fully. It fails where education includes professional training such as medicine. It also fails where there is more than one type of job: if skills and job characteristics are heterogeneous, education has a social benefit as a device for matching workers and jobs. The extent to which the hypothesis has some validity is an empirical matter, but clouded by the measurement problems already discussed, notably of such factors as natural ability and family background.

Qualitative arguments

Thus it is not possible to quantify external benefits; hence there is no definitive answer to questions about the optimal size of the sector or the efficient level of taxpayer subsidy.

However, there are powerful qualitative arguments for increasing investment in human capital. Technological advance is a key driver. Though technological change reduces the need for some skills (user-friendly computers), it mostly increases the demand for skilled workers. In addition, skills date more quickly. The 'information age' can be taken to mean a need for education and training that is larger than previously, more diverse, and repeated, given the need for periodic retraining.

Demographic change offers a second reason for increased investment in education. The rising proportion of older people foreshadows increased spending on pensions, medical care and long-term care. Part of the solution is to increase output sufficiently to meet the

combined expectations of workers and pensioners.⁴ If workers are becoming relatively more scarce, the efficient response is to increase labour productivity. Demographic change is thus an argument for additional spending on investment both in physical and human capital.

For these reasons, the qualitative case for expanding higher education and continued taxpayer support is strong.

Alongside the case for expansion is a strong case for cost sharing, given the evidence on the private benefits to higher education. It is a standard proposition in economic theory that it is efficient (and usually also equitable) if a person pays for the private benefits he/she receives. However, beneficiaries should bear those costs when they can afford them – when they are graduates – not as students, leading directly to the third set of lessons from economic theory.

2.3 Well-designed loans have core characteristics

Two lines of argument support widespread student loans. As noted, it is not feasible to rely on taxation to finance high-quality mass higher education. As well as being infeasible, tax finance also undesirable, for at least three reasons. First, in most countries it has not significantly widened access. The UK record in this regard is shameful: in 2002, 81 per cent of children with parents from professional backgrounds went to university; the comparable figure for children from poorer backgrounds was 15 per cent (UK Education and Skills Select Committee, 2002, p. 19). Second, tax finance has not generally been able to protect quality; the days are gone when the higher education sector was small and competing claims on public funds less powerful. Finally, tax finance is generally regressive; participating in higher education is a matter of choice, and that choice is highly skewed to the better-off.

Thus the case for loans is twofold: well-designed loans bring in private-sector sources (graduates' repayments) to supplement tax revenues; and they address the regressivity of tax finance.

⁴ On the analytics, see Barr and Diamond (2008).

Characteristic 1: income-contingent repayments

How should loans be designed? A central element is that they should have income-contingent repayments, that is, repayments calculated as $x\%$ of the borrower's subsequent earnings until the loan has been repaid, rather than \$X per month.⁵

There are both efficiency and equity gains from this approach. The equity argument is that loans with income-contingent repayments protect low earners because insurance against inability to repay is an integral part of their design. In efficiency terms, such loans address important imperfections in capital markets whose implications were first explored by Milton Friedman (1955).

To illustrate, when someone buys a house, she normally borrows from a private lender. Similar loans exist for cars. Why has the private market not provided analogous loans for borrowing to finance investment in human capital?

Home loans are relatively low-risk both for borrower and lender.

- (a) The person who buys a house generally knows what he is buying.
- (b) The house is unlikely to fall down and is, in any case, insurable.
- (c) The real value of the house will generally (though not always) increase.
- (d) The existence of a physical asset reduces risk for the borrower: if his income falls, making repayments impossible, he can sell the house and repay the loan.
- (e) The house acts as physical collateral, reducing risk for the lender, who can if necessary repossess the asset; thus loans are available with only a small risk premium.

Thus it is not surprising that a market solution exists. The contrast with human capital is clear. Though many applicants to university are well-informed, this is not the case in families where nobody has been to university (violating (a)). A qualification can 'fall down', violating (b), since students may fail exams. Though the real rate of return to a degree continues to be high, there is a variance around the average so that the same is not necessarily true for all students, violating (c). In addition, there is no collateral. Thus someone who has

⁵ For fuller discussion, see Barr, 2001, Chs 11 and 12, and for an early proposal with loan repayments based on social security contributions, Barnes and Barr 1988.

borrowed to finance a degree but then experiences low earnings, does not have the option to sell the qualification, violating (*d*), and can therefore borrow, if at all, only at a substantial risk premium, violating (*e*). One solution is to introduce collateral in the form of a guarantee, say from a parent, but this runs counter to the drive to widen access.

Friedman (1955) recognised these capital markets imperfections explicitly:

‘[I]n a non-slave state, the individual embodying the investment cannot be bought and sold. But even if he could, the security would not be comparable. The productivity of ... physical capital does not ... depend on the co-operativeness of the original borrower. The productivity of the human capital quite obviously does.... A loan to finance the training of an individual who has no security to offer other than his future earnings is therefore a much less attractive proposition than a loan to finance, say, the erection of a building....

‘A further complication is ... the inappropriateness of fixed money loans to finance investment in training. Such an investment necessarily involves much risk. The average expected return may be high, but there is wide variation about the average’ (Friedman 1955, p. 137).

The solution proposed by Friedman is that the government would provide the investment capital, in return for which:

‘[t]he individual would agree in return to pay to the government in each future year *x* per cent of his earnings in excess of *y* dollars for each \$1,000 that he gets in this way. This payment could easily be combined with payment of income tax and so involve a minimum of additional administrative expense’ (ibid. p. 140).

Thus the efficiency case for income-contingent repayments is that they address important capital market imperfections: borrowers from disadvantaged backgrounds may be badly-informed about the value of a degree; and all borrowers face substantial uncertainty. Thus there are technical problems on the demand side of the market for loans and, as a result, borrowing to finance investment in human capital will be inefficiently low.

On the supply side, lenders are uncertain about the riskiness of an applicant for a loan and will therefore charge a risk premium. A risk premium assessed by a well-informed lender

is efficient (analogous to higher automobile insurance premiums for bad drivers). But lenders are not well informed about the riskiness of an applicant. The problem is compounded by the potential for adverse selection, since the borrower is better-informed than the lender about his or her degree of riskiness. For example, the lender cannot be certain that the borrower will become an accountant rather than an actor, nor that the borrower will work hard. Adverse selection leads to two sets of ill-effects. Private lenders will charge a risk premium that is inefficiently high. In addition, they face incentives to lend only to the best risks (analogous to incentives to cream skimming facing private medical insurers). An obvious way to do so is to lend only to students who can provide security, for example from a home owning parent.

In sum, borrowing to finance a degree has technical characteristics that differ substantially from borrowing to buy a house. Conventional loans are the wrong model for investment in human capital. They lead to inefficiently low borrowing and lending. They are also inequitable, in that these efficiency problems impact more on people from poor backgrounds, women, and ethnic minorities, who may be less well-informed and therefore less prepared to risk a loan. In addition, these groups are likely to be on the wrong end of cherry picking by lenders. The interest of lenders is in secure loans; the national interest is in the optimal quantity and mix of investment in human capital. In a world of perfect information the two interests coincide; with imperfect information they do not.

Characteristic 2: large enough

A second feature of well-designed loans, is that the loan should be large enough to cover fees and, in developed countries, living costs, thus providing efficient consumption smoothing, resolving student poverty and promoting access by making higher education free at the point of use.

Characteristic 3: a rational interest rate

Finally, loans should attract an interest rate broadly equal to the government's cost of borrowing. The question of interest rates bears examination. A number of countries, including the United Kingdom, offer loans at a zero real interest rate, a lower rate than the government has to pay to borrow the money.⁶ Thus there is a blanket interest subsidy. In a

⁶ Australia has a system in which students can pay a tuition charge (say A\$6,000) either through a loan with a zero real interest rate or by paying tuition charges upfront at a 25 per cent discount (i.e. A\$4,500). Thus

system with income-contingent repayments, this policy achieves not a single desirable objective. The subsidy is enormously expensive in fiscal terms. Because of the resulting fiscal pressures, loans are too small, harming access. The subsidies also crowd out university income, harming quality. Finally, the subsidies are deeply regressive.

The regressivity point merits attention.

- The subsidies do not help students (graduates make repayments, not students).
- In a well-designed system, they give relatively little help to low-earning graduates, since unpaid debt is eventually forgiven.⁷
- They do not help high-earning graduates early in their careers – with income-contingent loans, monthly repayments depend only on earnings; thus the interest rate *has no effect on monthly repayments*, but only on the duration of the loan.
- Thus the major beneficiaries are successful professionals in mid career, whose loan repayments are switched off earlier because of the subsidy than would otherwise be the case. This is not the target group that policy makers had in mind.

In contrast, *targeted* interest subsidies have much to commend them.

In sum, income-contingent repayments improve efficiency by protecting borrowers and lenders from the uncertainty of a loan that is not secured by physical collateral: borrowers are protected because monthly repayments are calibrated to the borrower's subsequent earnings, and lenders are protected from the risk of an unsecured loan, not least because repayments are collected alongside income tax. Income-contingent repayments also protect access because the loan has built-in insurance against inability to repay. Note that what is being discussed is not a tax, which goes on forever, but a genuine loan, where repayments cease once principal plus interest have been repaid. Income-contingent repayments have a profound effect that is insufficiently understood.

students pay a zero real interest rate at the margin but also a fixed element (in that they are liable to repay A\$6,000 – A\$1,500 more than those who pay upfront). The effect of the discount is to introduce a positive real interest rate on average. The balance between the marginal element (the zero real interest rate) and the fixed element (the discount) determines the size of the resulting real interest rate. Irrespective of the balance, a marginal subsidy is likely to be distorting even if offset by an average charge.

⁷ In the UK, any loan that has not been repaid after 25 years is forgiven. Income-contingent repayments protect against low current income, the 25-year rule against low lifetime income.

2.4 The resulting policy strategy

These theoretical considerations suggest a general strategy for efficiency and equity with three elements: variable fees, well-designed loans, and active measures to promote access. The strategy is potentially applicable to all countries that have the capacity to implement it, a centrally important topic discussed in section 4.

Element 1: Variable fees

There are three arguments for variable fees (OECD, 2004, Ch. 4; 2005, Ch. 3; 2008):

- They promote quality by making funding open ended⁸, thus increasing the volume of resources going to higher education.
- They promote quality by strengthening competition, thus improving the efficiency with which the extra resources are used.
- Counter-intuitively they are also fairer – why should a student at a small local university be required to pay the same fee as one at a world-class institution?

The argument for competition is rooted in the idea that students in higher education are broadly well-informed and that their information can be further improved. The argument is not for law-of-the jungle competition but for regulated markets.

The obvious argument against fees is that they deter students from poor backgrounds. That is true of upfront fees, but not where students go to university free and make a contribution only after they have graduated. This brings us to the second part of the strategy.

Element 2: A well-designed loan scheme

Student support is through loans with income-contingent repayments. The loan entitlement should be large enough to cover fees and, if possible, also living costs, and should carry a rational interest rate. However, if someone has extended spells out of the labour force, her loan can spiral upwards. Thus, though there is a strong case against blanket interest

⁸ If there are no fees the Ministry of Finance controls the total volume of resources going to higher education. With fees set centrally by central government the same is true; if rising fee income is offset by declining taxpayer funding, the total volume of resources going to higher education does not change (this is what happened in Australia over the 1990s). With variable fees, in contrast, universities have an instrument with which they can respond to any decline in public funding, hence funding becomes open ended.

subsidies, there are good arguments for targeted interest subsidies for people with low earnings or out of the labour force.

If loans are large enough to cover fees, the package resembles ‘free’ higher education financed through taxation. Students pay nothing at the time they go to university. Part of the cost is paid through taxation and part through their subsequent income-contingent repayments. The viewpoint from the Ministry of Finance is somewhat different. Though loans bring in private resources in the longer-term, a loan system, by definition, has up-front costs because it lends the money first and receives repayments later. Thus, depending on a country’s fiscal situation, there can be advantages if students can borrow from private sources, but – particularly in a developing country – private lenders will charge a substantial risk premium unless there is a government guarantee; and if there is a government guarantee, the loans will be classified as public spending. As discussed later in the paper, potential solutions exist in this highly technical area, but require considerable care in design.

Element 3: Action to promote access

Assume that all students are well-informed and with a good school education. In that case, a good income-contingent loan is all that is needed. However, in most countries not all students are well-informed. In particular, the group for whom we want to promote access is not well-informed. More is needed. Most people argue that what is needed is ‘free’ higher education. The evidence, however, points in a different direction. The primary driver of participation in higher education is attainment in school. The sharp socioeconomic gradient in participation in the UK has already been noted. Yet controlling for the quality of high-school grades, the gradient disappears – of those with good high-school graduation grades, 90 per cent progressed to higher education, irrespective of socioeconomic background (UK Office for National Statistics (2004, Figure 2.15).

What does this imply for policy to improve participation? Exclusion, it can be argued, has four roots: lack of education, lack of information about university, lack of aspirations, and lack of money. A well-designed strategy should address all four.

Raising attainment: access fails when someone drops out of school early, usually for reasons that started much earlier. More resources are needed earlier in the system, not least

because of the growing evidence (Feinstein 2003) that the roots of exclusion lie in early childhood. A central element in widening participation is to strengthen pre-university education, from nursery school onwards.

Increasing information and raising aspirations: a series of policies address both. Action to inform school children and raise their aspirations is critical. Relevant activities include mentoring by university students, visit days, Saturday schools, summer schools, and the like.

More money: policies include financial support to encourage teenagers to complete high school and grants and scholarships to cover some or all costs at university. Both policies could be supported by financial incentives to universities to widen participation.

3 Policy design: lessons from international experience

There are important lessons about tuition fees (section 3.1) and about student loans (section 3.2). It is also useful to inquire about other sources of private finance (section 3.3).

3.1 Lessons about fees

As noted earlier, competition benefits consumers where they are well-informed. This line of argument suggests that each university should be able to set the level of its tuition fees and other charges. That, however, does not mean that the optimal solution is complete deregulation. Liberalising fees in a ‘big-bang’ way can be politically destabilising. In 1992, New Zealand introduced fees set by universities, but made mistakes. First, reform was to some extent big-bang. Student loans were new, and fees, though not new, were fully liberalised. Second, though the system included targeted interest subsidies, more could have been done to assist low earners. Third, the government failed to explain – and to continue to explain – the reforms and, in particular, the considerable advantages of income-contingent repayments. As a result, as nominal student debt increased over time, so did political pressures. The scheme was diluted in 2000.

A second lesson is that the opposite policy direction – no liberalisation – is also a mistake. Higher education with no or low fixed fees create two problems. Quality suffers because the education budget has to compete with other budgetary imperatives; and within

the education budget, universities compete with nursery education, school education and vocational training. As a result, real funding per student tends to decline. Access also suffers. If places are scarce, it tends to be middle-class students who get them; and if places are not scarce, the need to finance a mass system typically creates concerns about quality and means that resources to promote access are limited.

3.2 Lessons about loans

Discussion focuses on four lessons: income-contingent loans do not harm access; interest subsidies are expensive; positive real interest rates are politically feasible; and the design of the student loan contract matters.

Income-contingent loans do not harm access. Australia introduced a system of income-contingent loans in 1989 to cover a newly-introduced tuition charge. Chapman and Ryan (2003) point to increased participation overall since 1989 and, superimposed on that trend, that women's participation grew more strongly than men's, and that the system did not discourage participation by people in the lowest socioeconomic groups. This result is what theory would predict: income-contingent repayments are designed explicitly to reduce the risks borrowers face; and fees supported by loans free resources to promote access.

A second lesson is that interest subsidies are expensive. The UK system charges an interest rate equal to the inflation rate, i.e. a zero real rate, which is less than the government has to pay to borrow the money. The interest subsidy is expensive: for every 100 the government lends, between 30 and 35 is never repaid simply because of the interest subsidy (Barr, 2002, paras. 33-37). In other words, the interest subsidy converts nearly one-third of the loan into a grant. New Zealand offers parallel evidence (see Barr 2004a).

However, positive real interest rates are politically feasible; examples include Hungary, The Netherlands, Norway and Sweden. It is interesting that in those countries, in contrast with the UK, the interest rate has not been the subject of much political discussion.

Finally, contract design is important. International labour mobility is high and likely to increase, creating problems of default when a person emigrates. In Australia, loan repayments are part of a person's tax liability, so that someone outside Australia is not liable

to make repayments. With interest subsidies this is a particularly costly mistake. In the UK, the individual loan contract includes the collection of repayments through the tax system, but does not exempt a person outside the country. Though default and administrative costs for people working abroad are somewhat higher, the effect is not large. There is no question of emigration causing a repayment black hole.

3.3 Why not other sources of private finance?

Why the emphasis on private finance through student loans? There are, of course, other potential sources of private finance.

- Family resources: parents may wish to help their children and the children may wish to accept that help. But not all parents are willing or able to help, and those least likely to do so are those with little or no experience of university. Major reliance on family resources thus runs counter to widening participation.
- A student's earnings while a student: time spent earning money is at the expense of studying and other aspects of student life. There is nothing wrong with this approach, but taken too far it conflicts with the quality of study.
- Employers: it is often argued that employers should contribute. But with today's fluid labour markets, the incentive facing each employer is to let others pay for training and then try to poach the resulting trained workers. As a standard proposition in economic theory, given the presence of an externality, employer contributions will be sub-optimal.
- Entrepreneurial activity by universities: this approach is often advocated; however, few universities make much money this way, and many waste resources trying. Again, there is nothing wrong with this approach, but its usefulness is overestimated.
- Philanthropic donations: often advocated, the benefits from this approach, again, are overestimated. The approach works well for some US universities, but produces major resources for very few institutions even in the USA, and outside the US, as with entrepreneurial activities, would usually run at a loss if the relevant resources were accounted for properly.⁹

⁹ There is an incentive to overstate the resources brought in by fundraisers. The relevant amount is not total donations, but only donations that would not have happened without the effort of the fundraisers. There is also

In sum, the potential for other sources of private finance should not be over-estimated. Loans, i.e. the student's future earnings, are the only large-scale and socially equitable source of private finance – provided they can be implemented effectively.

4 Lessons about implementation¹⁰

4.1 Implementation: the policy maker's blind spot

As mentioned at the start of the paper, strategic policy design is important but, on its own, not enough. Implementation is of co-equal importance. Loans are not easy to implement, so the international landscape is littered with failed schemes. Many countries have a woeful record of collecting repayments. It is one thing to design a good loan system, quite another to make sure that the money is paid promptly and accurately to the right people and that repayments are collected effectively. After introductory discussion, section 4.2 considers the prerequisites for an effective loan system, section 4.3 outlines the tasks that are necessary to create and run a scheme, section 4.4 illustrates some of the problems that can arise where implementation fails, and section 4.5 discusses an implementation myth.

Effective reform rests on a tripod of skills: strategic policy design, political implementation, and administrative/technical implementation.¹¹ In many ways, policy design is the easy task. The more difficult part is to make a scheme work in practice, both in political and administrative terms.

Most people are not aware of implementation or, where they are, underestimate what is involved. The idea that if one understands a policy one can establish a programme for implementing it – a view to which academics are perhaps particularly prone – is generally false. A person with one of the skills frequently fails to grasp the importance of the other two. Academics frequently ignore politics and administration. Politicians may give too little weight to the coherence of a policy strategy or to meeting its administrative requirements, for

often double counting, e.g. where the research arm of a university and the fundraising arm both claim an incoming amount in full.

¹⁰ I am grateful to Hugh Macadie for the material on which sections 4.2 and 4.3 draw.

¹¹ For fuller discussion, see Barr and Crawford (2005, Ch. 16)

example by allowing enough time and including an adequate administrative budget. Technical experts may take a narrow approach or oppose reforms for other reasons.

4.2 Prerequisites for a loan system

Political prerequisites

Implementing student loans has obvious political dimensions. Though largely taken for granted once they have become established, their initial introduction was turbulent in many countries. In the UK, the introduction of student loans in 1990 provoked enormous demonstrations, though today, loan design is part of my undergraduate teaching. In 2004, in the crucial Parliamentary vote on a bill to introduce variable tuition fees, a government with a Parliamentary majority of 160 won by 5 votes. In Australia, similarly, the proposal to introduce an income-contingent charge in 1989 to pay for part of tuition costs provoked considerable commotion, but the system is now regarded as part of the landscape.

The experience of the UK and Australia illustrates the need for robust political capacity. That capacity is necessary not only at the time the scheme is introduced, but on a continuing basis. As the New Zealand case shows, initial reform momentum can falter for lack of continuing action by government to sustain support. Political pressures and populist politics combined to introduce expensive and regressive blanket interest subsidies.

Technical prerequisites

A country should not embark on a loan scheme unless and until it has:

- A reliable method of identifying individuals, a responsibility of national government.
- The capacity to maintain records of amounts borrowed, cumulative borrowing and interest charges, and the value of each person's repayments. This task is the responsibility of the loans administration.
- The capacity to collect repayments. Income-contingent repayments are best collected by the tax or social security authorities. Relying on educational institutions to collect loan repayments does not work well. In addition to collecting repayments within the country, it is necessary also to have the capacity to collect repayments from graduates working in other countries.

- The capacity to track the income of each borrower. Ideally this is the task of national government through personal income tax or social security contributions.

The first three elements apply to any loan scheme. As discussed in more detail in section 4.5, a country that cannot implement income-contingent repayments will generally also have difficulties collecting conventional loan repayments.

4.3 The necessary tasks

If a country has the technical capacities outlined above, a further series of requirements have to be in place (a) to establish a loan scheme and (b) to run it.

Establishing an effective scheme

In order to establish a new scheme:

- Enough time must be allowed for from the passage of legislation to the delivery of loans to the first cohort of borrowers. A large number of schemes fail at this first hurdle.
- Strong political sponsorship is essential: someone must have the vision and power to ensure that the policy happens as proposed.
- Clear ownership of the scheme also essential, e.g. the Ministry of Education.
- The introduction of a loan system is not an event, but a process. Thus political support has to be strong when the system is being established and continuing when it is in operation.

A further series of requirements are more narrowly technical, including ensuring that there are enough people with the necessary skills, legislative preparation, IT development, and effective project management.

A number of problems are common.

- The political timetable for the introduction of a scheme is often incompatible with the timetable necessary for administrative purposes. A besetting problem of UK governments is that they consistently underestimate the time, skills and energy necessary to make policy work. The UK is far from alone in making this error.

- Policy makers may introduce changes to the scheme once work is under way. Such changes are often incompatible with the planned administrative structure.
- Ownership of the scheme may be unclear or diffuse.

Running a scheme

As already noted, running a scheme once it has been established involves identification of the student, record keeping (amounts borrowed, repayments, accumulation of interest), and collection of repayments within the country and from graduates working abroad.

More specifically, at the time a student first takes out a loan it is necessary to establish her identity reliably; to provide her with information about her entitlement and about the operation of the loan; to establish the size of the loan to which she is entitled, which will require information about the degree she is taking (fees may be higher for some subjects than others), the university at which she is studying (some universities may be more expensive than others, either in terms of fees or living costs), and perhaps also her own income and that of her parents (if the size of the loan to which a student is entitled is income tested); and to establish that she actually turns up at the relevant university.

During the time a student is at university, it is necessary to establish that she continues her studies (and perhaps to keep track of her grades), and to keep track of the dates and amounts of further borrowing.

After the student has left university, it is necessary to

- Keep track of him or her through changes of name, address, job, family circumstance (e.g. if this is relevant to qualifying for a targeted interest subsidy), and country;
- Collect repayments, liaising as necessary with the tax authorities if that is the main route by which repayments are collected;
- Collect repayments in other ways for people who are outside the country;
- Ensure that any concessions on repayment are granted;
- Pursue delinquent repayments;
- Answer queries;
- Record repayments and calculate the outstanding balance;

- Keep borrowers notified of the balance of their loans;
- Arrange for collection of repayments to cease once the loan has been repaid..

Depending on how the loan scheme is financed, the loans administration may also need the skills to operate in financial markets.

Different way of implementing income-contingent repayments

Ideally, income-contingent repayments should be collected alongside income tax or social security contributions on the basis of a person's current earnings. Thus repayment instantly and accurately reflect changes in a person's economic circumstances.

However, this approach – that in Australia, New Zealand and the UK – is administratively demanding. A different approach – less good in policy terms, but less demanding administratively and hence perhaps more realistic – is to base a person's loan repayments on his or her last completed tax return. Since tax returns are filed only at the end of the tax year, and then require time for the authorities to process them, repayments reflect a person's earnings only with a lag. This is not a major problem where earnings do not change much, but fails to give automatic protection where a person's income falls, for example, when someone loses their job or leaves paid work to have a child. For such cases, it is necessary to have an additional procedure whereby the person can apply for a reduction of his or her loan repayment. This is the arrangement in Sweden (which certainly has the capacity to collect repayments on a current basis) and Hungary (where policy makers intend to move to collection on the basis of current income once they have sufficient confidence in the robustness of the – still new – system of personal income tax).

The least demanding way to approximate income-contingency is the system in The Netherlands. The default arrangement is that the borrower repays in equal annual instalments for a fixed period after graduation (i.e. mortgage-type repayments). But the system includes provision for someone with low earnings to be allowed a lower repayment. Note, however, that this approach does not avoid the need to measure a person's income – a task that many countries are not able to do well.

4.4 Illustrations

Merely to list these requirements indicates the size of the task. The following tales illustrate the importance of implementation and the predictable problems that arise when policy makers ignore practicalities or accept excessively optimistic predictions about the ease of solving implementation problems.

- Some institutions have a large peak in communications, e.g. tax returns around the filing deadline, or student loan applications at the start of the academic year. How does a paper-based system deal with tasks like opening large numbers of envelopes?
- In an electronic system, the analogous question is whether the system can cope with a huge peak without crashing.
- If a loan scheme processes loan applications by optically scanning handwritten paper applications, can the system cope with an application that has spent two weeks folded in a student's pocket or has a large coffee stain on it?
- Does the system have a way of coping where an applicant for a loan misspells (paper based) or mistypes (electronic) his or her own name (this is not fanciful)?
- Can the system cope with a massive peak of phone enquiries, for example by automatically moving staff at the student loans administration from other tasks to the phones at such times. Again this is not fanciful. If any element in the system breaks down (e.g. a delay in disbursing loans), there will be a surge of telephone enquiries; if nothing is done, a breakdown in disbursement is rapidly followed by a breakdown in the system of telephone enquiries.

Given the wide array of institutional requirements both to establish and to run a scheme,

‘it is not surprising that successful income-contingent loans in advanced economies – including Australia, New Zealand, the Netherlands, Sweden, and the United Kingdom – are not echoed in poorer countries. Chile and South Africa have such schemes on a small scale, with repayments collected by universities, a method that has proved unsatisfactory. Both schemes have met with some success, but would be fiscally costly on a larger scale. Thailand is planning to introduce an income-contingent loan scheme in 2006, the success of which will depend greatly on the effectiveness of

income tax collection. Designing a cost-effective repayment mechanism in poorer countries should be at the top of the policy-maker agenda' (World Bank 2006, Box 3.7).

4.5 'Banks are good at collecting repayments': An implementation myth

It is often argued that one way to sidestep these problems is to ask banks to organise the scheme as a conventional loan, with fixed monthly repayments and a short repayment duration. This approach, it is argued, does not depend on tax collection, and can therefore be effective in a country without an effective income tax system. That argument is profoundly mistaken.

Mortgage repayments require a fairly sophisticated collection mechanism

Commercial banks have expertise in collecting repayments for loans which are (a) short term and/or (b) secured on a physical asset. This is the point Friedman made 50 years ago. Neither applies to student loans. There are good reasons for wanting student loans to have a fairly long duration: it is efficient if the lifetime of a loan bears a rational relationship to the lifetime of the asset being financed by the loan – thus there are 25-year home loans but 3-year car loans; and a longer repayment period makes possible smaller monthly repayments and/or larger loans. In addition, as noted, there is no security for borrowing to finance human capital. For both reasons, collection by banks is likely to be administratively demanding and require some sort of government guarantee. However:

Government guarantees to private lenders create problems

If the guarantee is not generous, banks will decline to get involved. But if the guarantee is sufficiently generous, it creates problems of moral hazard, since banks have no incentive to pursue repayments vigorously, not least because they have no desire to alienate people who will become their best customers. Thus the incentive structure is inimical to effective collection, leading to high default rates.

A second problem arising from government guarantees is what is known as the classification problem. There are international guidelines for national accounting which determine whether spending is public or private (IMF 2001; for non-technical discussion, see Barr, 2001, Ch. 14). If students borrow money from banks, but the government guarantee is

generous, the government, in effect, takes the risk of default. Thus there is no risk transfer and, under international guidelines, lending by banks to students counts as *public* borrowing. The US system – with a government guarantee for loans that are classified as private – ignores the rules. Ignoring the rules is not an option for developing countries.

The classification problem is central to discussion of ways of bringing private finance into postcompulsory education as, for example, in Hungary. This topic is rarely discussed and little known, but a developing country ignores it at its peril.

A public collection agency?

On the face of it, public collection of conventional repayments might work better. However, this approach requires considerable administrative capacity. Even where that administrative capacity exists, the public sector ends up running a student loan collection agency *and* a tax collection system, raising the question of whether resources devoted to collecting mortgage-type student loan repayments might not be used better to bolster the effectiveness of the tax system. In the United Kingdom, the need for the Student Loans Company to conduct an annual reconciliation of individual accounts with the tax authorities helped to strengthen the effectiveness of both institutions.

Mortgage repayments require a capacity to implement an income test

Whether collected by a public or private agency, mortgage repayments require an income test. If repayments (say \$100 per month) are unrelated to a person's income, a mechanism is needed to protect people with low or no earnings, for equity reasons, to ensure that the scheme remains politically viable, and to protect the credibility of the collection mechanism. But the corollary is that the agency organising repayments has to be able to establish a person's income. This is a difficult task of measurement and enforcement even in an advanced country, let alone in a poorer country which does not have an effective tax system (which was the argument for having mortgage-type loans in the first place). An income test, in short, will be administratively demanding and costly. With a mortgage scheme, these costs will be *in addition* to those of the tax system.

In sum, mortgage-type loans, for the well-established reasons discussed earlier, work well for physical assets such as housing. With lending for human capital, in contrast, the

theoretical arguments suggest that they expose both borrower and lender to excessive risk and uncertainty. The outcome is inefficient because it wastes talent and inequitable because capital market imperfections bear most heavily on the least well-off. Separately, mortgage loans are considerably more demanding administratively than is generally realized.

5 The resulting system

It is important to be clear that the resulting system is not – and should not be – a free market. It is a regulated market. Universities set fees, but with a maximum fee level established by government. There is continued taxpayer support for teaching. Students apply to the institutions and courses of their choice.

Lessons about the role of government

Economic theory and international experience both suggest that a well-designed system has a continuing important role for government:

- To provide taxpayer support for higher education;
- To regulate the system, both through a maximum level of fees and by ensuring that there is effective quality assurance (the role of government is to make sure that quality assurance happens, not necessarily to provide the service itself);
- To set incentives, e.g. larger subsidies for certain subjects;
- To ensure that there is a good loan scheme; and
- To adopt policies to widen participation.

Lessons about the design of student loans

Economic theory offers a series of conclusions.

- Loans should have income-contingent repayments
- Untargeted interest subsidies prevent the achievement of any desirable policy objective. The default interest rate should be the government's cost of borrowing, in combination with targeted interest subsidies.
- If untargeted interest subsidies are avoided, there should ideally be no income test for loan entitlement.

- There needs to be a thoughtful choice of the level of income at which loan repayments start and the repayment rate as a fraction of a person's income.
- The design of the loan contract should ensure that emigrants, and others outside the tax net, are required to make repayments.

International experience offers complementary lessons.

- Income-contingent loans do not harm access (Australia, New Zealand, UK, Hungary).
- Interest subsidies are expensive (New Zealand, UK).
- Positive real interest rates are politically feasible (Netherlands, Sweden, Norway, Hungary).
- The design of the loan contract matters.
- The design of the loan matters: it is possible, with care, to design a system with income-contingent repayments but mainly private finance, as in Hungary.

References

- Barnes, John and Barr, Nicholas (1988), *Strategies for Higher Education: The Alternative White Paper*, Aberdeen University Press for the David Hume Institute and the Suntory-Toyota International Centre for Economics and Related Disciplines, London School of Economics and Political Science.
- Barr, Nicholas (1999), 'Comments on "Economic Policy and Equity: An Overview" by Amartya Sen', in Tanzi, Vito, Chu, Ke-young, and Gupta, Sanjeev (eds), *Economic Policy and Equity*, Washington DC: International Monetary Fund, pp. 44-8.
- Barr, Nicholas (2000), 'The benefits of education: what we know and what we don't', in *Economic Growth and Government Policy*, Papers presented at a HM Treasury seminar held at 11 Downing Street on 12 October 2000, London: HM Treasury, pp. 33-40, downloadable from <http://www.hm-treasury.gov.uk/media/132BF/252.pdf>
- Barr, Nicholas (2001), *The Welfare State as Piggy Bank: Information, risk, uncertainty and the role of the State*, Oxford and New York: Oxford University Press, downloadable from <http://www.oxfordscholarship.com/oso/public/content/economicsfinance/0199246599/toc.html>
- Barr, Nicholas (2002). 'Funding Higher Education: Policies for Access and Quality', House of Commons, Education and Skills Committee, *Post-16 Student Support*, Sixth Report of Session 2001-2002, HC445, (TSO, 2002), pp. Ev 19-35.
- Barr, Nicholas (2004a), 'Higher education funding', *Oxford Review of Economic Policy*, Vol. 20, No. 2, Summer, pp. 264-283.
- Barr, Nicholas (2004b), *The Economics of the Welfare State*, 4th edition, (Oxford University Press and Stanford University Press, 2004) (also in Korean).
- Barr, Nicholas (2008), 'Financing Higher Education: Lessons from Developed Economies, Options for Developing Economies', in Johannes Linn and Boris Pleskovic (eds), *Annual World Bank Conference on Development Economics 2008, Regional: Higher Education and Development*, Washington, DC: World Bank.
- Barr, Nicholas and Crawford, Iain (2005), *Financing Higher Education: Answers from the UK*, London and New York: Routledge.
- Barr, Nicholas and Diamond, Peter (2008), *Reforming pensions: Principles and Policy Choices*, New York and Oxford: Oxford University Press.
- Blaug, Mark (1976), 'The Empirical Status of Human Capital Theory: A Slightly Jaundiced Survey', *Journal of Economic Literature*, September, pp. 827-56, reprinted in Blaug, Mark (1987), *The Economics of Education and the Education of an Economist*, Aldershot: Edward Elgar, pp. 100-128.
- Blaug, Mark (1985), 'Where Are We Now in the Economics of Education?', *Economics of Education Review*, Vol. 4, No. 1, pp. 17-28, reprinted in Blaug, Mark (1987), *The Economics of Education and the Education of an Economist*, Aldershot: Edward Elgar, pp. 129-140.

Chapman, Bruce and Ryan, Chris (2003), 'The access implications of income contingent charges for higher education: Lessons from Australia', Australian National University, Centre for Economic Policy Research, Discussion paper no. 463, April.

Feinstein, Leon (2003), 'Inequality in the Early Cognitive Development of British Children in the 1970 Cohort', *Economica*, 70/277, 73-98.

Friedman, Milton (1955), 'The Role of Government in Education', in Solo, Robert A. (ed.), *Economics and the Public Interest*, New Brunswick, New Jersey: Rutgers University Press, pp. 123-44.

Glennister, Howard (1993), 'The Economics of Education: Changing Fortunes', in Barr, Nicholas, and Whynes, David (1993), *Issues in the Economics of the Welfare State*, London: Macmillan, pp. 176-199.

International Monetary Fund (2001), *Government Finance Statistics Manual 2001*, Washington DC: International Monetary Fund, downloadable from <http://www.imf.org/external/pubs/ft/gfs/manual/index.htm>.

OECD (2004), *OECD Economic survey of the UK 2004*, Paris: OECD.

OECD (2005), *OECD Economic survey of the UK 2005*, Paris: OECD.

OECD (2006), *Education at a Glance: OECD Indicators 2006*, Paris: OECD.

OECD (2008), *Thematic Review of Tertiary Education: Synthesis Report*, Paris: OECD.

Sen, Amartya K. (1999), 'Economic Policy and Equity: An Overview', in Tanzi, Vito, Chu, Ke-young, and Gupta, Sanjeev (eds), *Economic Policy and Equity*, Washington DC: International Monetary Fund, pp. 28-43.

UK Education and Skills Select Committee (2002), *Post-16 Student Support*, Sixth Report of Session 2001-2002, HC445, London: TSO

UK Office for National Statistics (2004), *Focus on Social Inequalities, 2004 edition*, London: TSO.

World Bank (2006), *World Development Report 2007: Development and the Next Generation*, Washington DC: World Bank.